SRI BALAJI VIDYAPEETH

(Deemed to be University Declared u/s 3 of UGC act 1956)

Accredited by NAAC with 'A' Grade

Pondicherry – 607402.

www.sbvu.ac.in

MAHATMA GANDHI MEDICAL COLLEGE & RESEARCH INSTITUTE, PONDICHERRY

FACULTY OF ALLIED HEALTH SCIENCES

B.Sc. CLINICAL NUTRITION

2019 -2020 ONWARDS

FIRST, SECOND & THIRD YEAR SYLLABUS AND REGULATIONS

CHOICE BASED CREDIT SYSTEM (CBCS) PATTERN SYLLABUS

(As approved in the Academic Council at the meeting held on 22-05-2019)

Revisit of the syllabus and Examination pattern

(As approved in the Academic Council at the meeting held on 28-09-2020)

INDEX

FOREWORD

In recent years, several innovative and need based undergraduate courses in the realms of Faculty of Allied Health Sciences have been promulgated. These courses are primarily oriented towards augmenting the Core academic courses in the Health Care sector.

Although, Allied Health Science courses are in place at several institutes county wide, mention must be made of the fact that only a few Health Science Universities offer courses in Allied Health Sciences under a holistic umbrella. It is in the fitness of things that Allied Health Science courses are being offered in Nodal and Thrust areas at Sri Balaji Vidyapeeth starting from Certificate programme through Doctoral studies.

The Undergraduate programme of Allied Health Science courses leading to B.Sc degree has been very carefully planned taking all the three components into due consideration, namely academics, patient care and research. Competency assumes great importance as the graduates coming out of these programmes would either directly or indirectly assist the Clinicians in day to day activities.

With this in view, the thrust has been laid on a common syllabus for all B.Sc programmes during the first year of study. These subjects offered in the first year are oriented Basic Medical Sciences, besides English as a mode of communication which is vital for affording Global Placements to our successful candidates. Furthermore all programmes are designed in Choice Based Credit System (CBCS) made to suit the convenience of the students. The proficiency and competence of the Undergraduates is fortified by the promulgation of a unique internship cum research programme.

I wish all students success in their studies and career.

Prof. N. Ananthakrishnan

Dean – Faculty, SBV

POLICY ON COURSES OFFERED UNDER FACULTY OF ALLIED HEALTH SCIENCES

PREAMBLE

Sri Balaji Vidyapeeth, Deemed to be University, established under Section 3 of UGC Act, 1956, Accredited by NAAC with A Grade offers various courses under the Faculty of Medicine, Faculty of Dentistry, Faculty of Nursing Sciences and Faculty of Allied Health Sciences.

"Allied Health Professions are a distinct group of health professionals who apply their expertise to prevent disease transmission, diagnose, treat and rehabilitate people of all ages and all specialties. Together with a range of technical and support staff they may deliver direct patient care, rehabilitation, treatment, diagnostics and health improvement interventions to restore and maintain optimal physical, sensory, psychological, cognitive and social functions." - Organization of International Chief Health Professions Officers (ICHPO).

In March 2011, the Ministry of Health and Family Welfare nominated the Public Health Foundation of India (PHFI) as its technical partner and constituted the National Initiative for Allied Health Sciences (NIAHS) secretariat with a mandate to develop a framework to improve allied health training, education and regulation in the country. (Yet to be notified by Government of India).

Sri Balaji Vidyapeeth has introduced several innovative need based courses under the Faculty of Allied Health Sciences at Undergraduate and Postgraduate levels keeping in mind the initiative of Ministry of Health & Family Welfare, Government of India. In an era marked by expanding global job opportunities, these courses are bound to create an awareness among the students to suit themselves in the Health Care Team. Curricula have been designed in an objective manner and are aimed at cognitive, affective and psychomotor domains of learning. Furthermore all courses are designed in Choice Based Credit System (CBCS) made to suit the convenience of the students.

The Undergraduate courses mainly concentrate in creating professionals who form the part of the Health Care Team. The role of these professional is to ably assist the doctor in treatment as well as prognosis and in many a times form the core professional of the team. The proficiency and competence of the Undergraduates is fortified by the promulgation of a unique internship cum research programme.

The Postgraduate courses mainly aim at shaping a graduate into a full professional. Also these postgraduate courses help the graduates as well as the postgraduates to acquire specific skills on various adjunct therapies and techniques.

SUPPLY AND DEMAND

The starting of the new courses will entirely depend on

a. Demand for the course as seen by the enrolment at other institutes.
b. Employability after the qualification.

At present, the shortage of quality human resources is one of the major challenges faced by the public health domain in India. To redress the imbalance in human resources, the Working Group on Medical Education Training and Manpower Training of the Planning Commission (1984) prioritized training of para-professional and auxiliary personnel as follows:

- Training and development of auxiliary health professionals
- Training and development of para-health professionals
- Basic and pre-service/induction training in health care and health management
- Continuing education in health profession education.

Many new health occupations (Physician's Assistant, Optometrists, Medical Imaging Technologists, and Laboratory Technologists etc) have access over several common features in Allied Health Sciences including Basic Medical Sciences which are being effectively addressed. These processes have received support from administrators who are constantly searching for economic qualified and quality labor.

Service users are becoming more empowered through the consumerism of health, which has resulted in better access to information and user-consultation in service development and delivery. Each of these factors has the potential to influence the roles of existing professional groups and presents a challenge to workforce planners. In India, students are not aware of all the allied health courses available in the medical education system. Their career choices are generally influenced by their parents and peer groups, who themselves are unaware of the prospects in this area. By understanding that an entry-level position is just a first step, youth can realistically plan for their future and have a better understanding of what is needed for long-term success. This approach also benefits employers who need a steady inflow of workers at all levels of their organization.

POLICY ON ELIGIBILITY, ADMISSION, & COURSE DURATION OF UG DEGREE COURSES

At Sri Balaji Vidyapeeth, we empower the departments of all the constituent colleges to contribute to the development of innovative, need, value based and job oriented courses taking into considerations the interests of the stakeholders.

The Undergraduate Degree courses (B.Sc.) are presently being offered under the Choice Based Credit System (CBCS) mode as per the Guidelines of UGC. The duration of the course will be Three years with a compulsory internship of 1 year (Non Stipendiary) in any of the tertiary health care institute of the University/ Trust. The proficiency and competence of the Undergraduates is fortified by the promulgation mandatory for appearing at the University Examinations. The maximum time limit for completion of the course will be Six years. However, the Dean / Principal, AHS has the discretionary powers to extend the course duration on valid grounds (Health, Maternity, Natural Disaster, etc.).

The First year of B.Sc. (AHS) courses will be common for all the disciplines. Though the disciplines will be provisionally allotted at the time of admission itself, upon

successful completion of the First year the candidates may opt for a change in the discipline or the college which will be permitted depending on the vacancy and on merit based on the First year marks.

Fourth year – Internship Programme

One-year compulsory internship in various intensive care units, outpatient departments, research center under Sri Balaji Vidyapeeth during which the students get to hone the skills and knowledge acquired in the three years of study. This year ensures their readiness to approach a patient in any setting. The students should also complete a short duration project (in their areas of interest) and also maintain and submit a log book. The degree will be awarded only upon the successful completion of the course including the internship period. The one-year compulsory internship includes postings at the respective department.

Eligibility for Admission

A candidate seeking admission in the B.Sc. Allied Health Sciences courses shall be completing the age of 17 years as on December of the admission year. The candidate shall have passed the Higher Secondary Examinations conducted by the State Board or the Central Board or its equivalent. The candidate should have studied English as one of the papers and passed the same. The candidate should have had Biology, Physics & Chemistry and have passed the same in their qualifying Examinations. Mathematics as a subject is mandatory for B.Sc. Optometry, Medical Imaging Technology and Clinical Research.

The candidate should have secured 50 percent as aggregate in the subjects of English, Biology, Physics and Chemistry at the Higher Secondary Examinations. A relaxation of 5 percent in the minimum required (50%) shall be awarded to the candidates belonging to SC/ ST communities and physically challenged candidates (Disability more than 40%). The candidates seeking relaxation should necessarily submit the relevant certificates issued by the concerned Government authorities while applying for the course and mention about the same in their application.

Lateral Entry

Candidates who have Diploma of Two years in the concerned subject from a recognized University can seek Lateral Entry to the second year of the concerned courses provided that they have studied Anatomy, Biochemistry, Physiology, Microbiology and Pathology as individual papers during their Diploma Course.

Note: The candidates who have completed their Diploma Course through Distance Education modes are not eligible to seek admission through Lateral Entry mode.

Shorter intrinsic training programmes of duration few weeks to a month or so will be conducted by the departments under the Supervision of the concerned HOD / Dean / Principal.

POLICY ON CHANGE OF NAME/DATE OF BIRTH

The name and date of birth of candidates will be registered in the records of the University as given in their H.S.C. Mark Statement/Transfer Certificate only. No request will be considered later, to correct the spelling of the name of the candidates.

The parents and candidates are requested to verify and confirm these entries in the H.S.C. Mark Statement / Transfer Certificate at the time of receipt of the same. Once admitted to a course of study in the University, date of birth as furnished in the HSC/School record of student and submitted to the University at the time of admission, shall be taken as final proof and no subsequent request for change of date of birth will be entertained by the University at any time under any circumstance, either during the course of study or after the completion of such study. The student should take utmost care while entering their details in SBV GARUDA portal at the time of their registration. They are responsible for any data mismatch at later stage.

Every student shall give an undertaking to this effect duly countersigned by his/her parent or guardian at the time of admission.

PAYMENT OF TUITION AND OTHERFEES

Every student shall pay tuition fee and other fee, as prescribed by the University, within the due date notified. The fees are subject to revision as per rules of the University. All fees, once paid to the University, will not be refunded or adjusted for any other purpose under any circumstance.

RULES FOR DISCONTINUANCE FROM COURSE OF STUDY

Where any student applies for discontinuance, or without any application discontinues on his/her own, from the course to which he/she has been admitted to, for any reason, either after the cut-off date prescribed by the statutory authorities/ University for admission to the first year of the course concerned or where the seat is rendered vacant without having any chance of being filled up with any other candidate from waiting list etc., such students will have to remit the tuition fee and other applicable fees for the **'Entire/Remaining Course Period'**. Unless and until payment of all the prescribed fees for the entire/remaining course period is made to the University account, such student shall not be entitled to any certificate including transfer certificate, mark sheets etc., to be issued by the College/ University and to get back his/her original certificates deposited with the University at the time of admission. All students and parent will be required to furnish a declaration agreeing to the above said conditions at the time of admission.

POLICY ON RAGGING

Ragging is strictly prohibited in the University Campus. Sri Balaji Vidyapeeth strictly enforces anti-ragging measures and the campus is free from any form of ragging. Any violation will be dealt with according to the law in force and as per directives of the Supreme Court of India. The University has adopted the —Medical Council of India (Prevention and Prohibition of ragging in Medical College / Institutions) Regulations, 2009 and —UGC Regulations on curbing the menace of Ragging in Higher Educational

Institutions, 2009 and these Regulations shall be applicable to all students. These Regulations are available in the University Website.

IMPORTANT NOTE

All admissions are subject to fulfillment of all the prescribed eligibility conditions by the candidate. If it is found either at the time of admission or at a later stage, that the candidate has given false information/forged certificates or concealed material information, his/her admission shall be cancelled and the student shall be dismissed from the college immediately.

The University reserves the right to change the curriculum, course structure and the rules relating to admission, examinations, fee structure, refunds, etc.

All disputes arising in the interpretation and implementation of the provisions will be referred to the Vice-Chancellor of Sri Balaji Vidyapeeth and Vice-Chancellor's decision shall be final and binding.

In respect of matters relating to or arising out of this prospectus the jurisdiction shall lie in Puducherry alone.

FUTURE PLANS

It is planned to conduct an informal market survey and start AHS Certificate & M.Sc courses.

OUTLINE OF THE CHOICE BASED CREDIT SYSTEM (CBCS) FOR UNDERGRADUATE DEGREE PROGRAMME

Credit System Credit System (CBCS): The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).This is to enhance the quality and mobility of the students within and between the Universities in the country and abroad.

Credit hours
16 Theory classes = 1 credit
32 Practical/Tutorial/Clinical training/Research project = 1 credit

Subjects	Credits
Each core subjects	6 Credits
Ability Enhancement Compulsory course (AECC)	2 Credits
Skill Enhancement course (SEC)	2 Credits
Generic Elective course (GE)	4 Credits
Discipline Electives (DE)	4 Credits

Core course: A Hard core course may be a Theory, Practical (lab), clinical rotation/field work or Research Project Work which are compulsory component studied by candidate to complete the requirement of their programme.

Discipline Elective (DE) Course: An elective course which is supportive or related to the discipline/subject (i.e. supportive to core course) is called a Discipline Elective (DSE) Course.

Generic Elective (GE) Course: An elective course which is unrelated to the discipline/subject (i.e. unrelated to core course) to expand their knowledge chosen by a candidate is called a Generic Elective.

Skill Enhancement Courses (SEC): This course chosen by candidate which provides additional value-based and skill-based knowledge to increase their employability.
NPTEL/ SWAYAM / MOOC/ Other value-added online courses

COLLEGES	PROGRAMMES WHICH INVOLVE CREDIT TRANSFER
Mahatma Gandhi Medical College and Research Institute & Shri Sathya Sai Medical College and Research Institute	B. Sc. (AHS)

Each Undergraduate student of B.Sc (AHS) is recommended to earn a minimum of **EIGHT credits** from the online courses offered through SWAYAM - NPTEL – MOOCs platform during their Course period. It is to be noted that the student earns the credit prior to the starting of their internship.

PROGRAMME	DESIRABLE CREDITS	NUMBER OF COURSES
B.Sc. (AHS)	Minimum - 8 credits	Minimum - 4 Maximum - 6

It is required of the Undergraduate students (B.Sc – AHS) that in addition to their curricular requirement of the programme, it is recommended for enhancing job opportunities for the student to earn minimum of prescribed credits from the online courses offered through SWAYAN - NPTEL – MOOCs platform that will be transferred
into the students' Statement of Marks, issued during the final year of their study. This has to be completed prior to the starting of their internship programme and students have to be informed that **those who do not earn the minimum credits prescribed by SBV, it will be mentioned NIL for the details on credits transferred from ONLINE courses in their FINAL year statement of marks issued by SBV.**

Credit points during Internship

For the 16 UG Internship programmes, there is a Minimum of 40 Credit points to a maximum of 45 Credit points which the students have to obtain. Credit points will be assessed based on the student's satisfactory attendance, performance in the Clinical /Camp postings / Seminars /Presentation of the logbook & Research project.

CRITERIA FOR UNIVERSITY EXAMINATIONS

Eligibility / Maximum Duration for the Award of the Degree

a) The candidates shall be eligible for the bachelor degree when they have undergone the prescribed course of study for a period of not less than four years (3 Years + 1 Year Internship) in an institution approved by the university and have passed the prescribed examination in all subjects.

b) A student who does not meet the minimum attendance requirement in a year must compensate the inadequacies before appearing examination.

To reaffirm the passing minimum in the University Examinations for all the Undergraduate courses offered under the Faculty of Allied Health Sciences.

- A candidate shall secure a minimum of 50% aggregate in University Core theory/ Elective theory Exams and Internal Assessment put together.
- A candidate shall secure a minimum of 50% aggregate in University Practical and Internal Assessment put together.
- For Skill based electives, a candidate shall secure a minimum of 50% aggregate in University Practical cum Viva Exams and Internal Assessment put together.

Retotaling / Revaluation and Grace Mark

There is no provision for **Retotaling / Revaluation for AHS programme.**

Grace marks up to a maximum of five marks may be awarded at the discretion of the university to a student who has failed and shall be distributed among the failed subjects.

SCHEME OF EXAMINATION

1) **Attendance Requirements**: 80% hours of learning in each Core Subjects / Electives / Practical's /Postings for appearing for the university exams.
2) **Minimum marks required to be eligible for University Examination**: 35% marks in the internal assessment (Theory / Practical) are required for the candidate to be eligible to appear in the University Examinations.
3) **Passing Minimum**: 50% aggregate both in theory and practical's including internal assessment marks is required for a candidate to pass in the University Examinations.
4) **Submission of Record Note Books for practical examinations**

Candidates appearing for practical examinations should submit bonafide Record Note Books prescribed for practical examinations, otherwise the candidates shall not be permitted to appear for the practical examinations.

GRADING

Marks obtained by candidate	Equivalent grade letter	Grade descriptor	Grade point
85 % & above	O	Outstanding	10
75-84	A+	Excellent	9
65-74	A	Very good	8
60-64	B+	Good	7
55-59	B	Above average	6
50-54	C	Average pass	5
49 & below	F	Reappear	0
	AB	Absent	0

A student obtaining **Grade F** shall be considered failed and will be required to reappear in the examination.

Conversion formula for Percentage to CGPA
Percentage divided by 9.5 = CGPA

Award of Class

Class division will be based on CGPA grade

≥ 7.8 grade point = Distinction Division
≥ 6.8 and < 7.7 grade point = First class Division
≥ 6.3 and < 6.7 grade point = Second class Division
≥ 5.2 and < 6.2 grade point = Third class Division
< 5.2 and below – Fail

Computation of SGPA and CGPA will be in accordance with the UGC Guidelines & Recommendations. It is a measure of overall cumulative performance of a student over all exams. The CGPA is the ratio of total credit points secured by a student in various courses in all exams and the sum of the total credits of all courses in all the University exams. It is expressed up to two decimal places.

Cumulative Grade Point Average (CGPA): It is a measure of overall cumulative performance of a student over all exams. The CGPA is the ratio of total credit points secured by a student in various courses in all exams and the sum of the total credits of all courses in all the University exams. It is expressed up to two decimal places.

Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.

Transcript: Based on the credits earned, a transcript shall be issued to all the registered students after the completion of the program indicating the hours of study and structure of the curriculum delivery as prescribed in his/her curriculum and completed by the student. The transcript will display the course details, including course code, title, and number of credits, hours and type of contact hours in a semester.

INTERNAL ASSESSMENT

1. Continuous Internal Assessment (CIA) for all AHS programs with a minimum of 4 Assessments per year.
2. Internal Assessment will be done in each subject according to the scheme of examinations. The IA marks will be on the basis of performance in the assignment, class tests and practical test in the clinical areas.

Evaluation of Clinical Rotation

Lab, Clinical cum Community postings - To conduct practical's or viva based on the Heads of the concerned department's decision and the total 100 marks to be sent to COE through proper channel to find a place in the transcript.

Question Paper Pattern

The following question paper patterns shall be followed for CBCS pattern syllabi for the candidates admitted from the academic year 2019-20 onwards.

CORE SUBJECTS

For **UG NON-SEMESTER COURSES -** Each Core Subjects University Exam carries -100 marks of 80(Theory) + 20 (IA marks) which consists of

Theory – 80 marks			
I	Essay-type questions of either / or type -(like 1.a (or) 1.b)	2 (of either / or type)	2 x 10=20
II	Short answer questions	6 (*1 choice)	5 x 6=30
II	Very Short answer questions	12 (*2 choice)	10 x 3=30

The University duration of 80 marks – 3 Hours For courses having Section A & Section B Subjects

For **Section A & Section B** Subjects University Exam carries - 50 marks for each Section consisting of 40 (Theory marks) + 10 (IA marks)

Theory – 40 marks			
I	Essay-type questions of either / or type -(like 1.a (or) 1.b)	1 (of either / or type)	1 x 10 = 10
II	Short answer questions	5 (*2 choice)	3 x 6= 18
II	Very Short answer questions	5 (*1 choice)	4 x 3 = 12

ELECTIVE SUBJECTS

For all UG NON SEMESTER **COMPULSORY, GENERIC & DISCIPLINE** Elective University Exam papers carries- 50 marks of 40 (Theory)+10 (IA marks) which consists of

Theory – 40 marks			
I	Short answer questions	5 (*3 choice)	5 x 6=30
II	Very Short answer questions	5 (*2 choice)	5 x 2=10

*** Number of choices given**

- For **SKILL BASED ELECTIVES** from 2019-20 batch onwards all UG AHS courses will have 40 marks as university Practical cum Viva examination & 10 marks as Internal Assessment = 50 marks.
- 50 marks of the **COMPULSORY, GENERIC, DISCIPLINE & SKILL BASED ELECITIVES** which will be converted to 100 marks in the transcript.

CONDONATION FOR SHORTAGE OF ATTENDANCE

Condonation of shortage of attendance in aggregate up to 10% in each Year may be granted by the college Academic Committee and as per regulations of university.

PROGRAM OUTCOME - B.SC CLINICAL NUTRITION

At the end of the 3+1 Year internship of Clinical Nutrition Should be able to

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship.

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation, maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system's approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian. The students should know the role of the information communication technologies in agriculture and allied sector should be able to familiar with different extensions tools also know the Information Communication based technologies to successfully run any extension based projects.

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due Counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, Counselling & Guidance, Public health & hygiene, Psychology and Sociology.

I YEAR

FACULTY OF ALLIED HEALTH SCIENCES

SRI BALAJI VIDYAPEETH

(Deemed to be University)

Accredited by NAAC with 'A' Grade

COMMON SYLLABUS FOR ALL FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES

CORE SUBJECTS

1. Anatomy
2. Physiology
3. Biochemistry
4. Pathology &Microbiology

ELECTIVES

Ability Enhancement compulsory course (AECC)

1. English

Skill enhancement course (SEC) – Choose any TWO

1. Culinary Skills for optimal nutrition
2. Enhancing soft skill &personality
3. Basics of Yoga &Practice
4. Speaking effectively

Generic Elective Course (GEC) – Choose any ONE

1. Basics of Hospital Administration
2. Counseling and Guidance
3. Lifestyle Disorders

SCHEME OF CREDIT BASED ACADEMIC CURRICULUM

Faculty Code	Category	Course Title	Hours					Credits				
AHS	**Core theory CCT**	**Subjects**	**Theory**	**Practical**	**Tutorials**	**Lab training**	**Total hours**	**Lecture (L)**	**Practical**	**Tutorials**	**Lab training**	**Credits**
AHS	CN-1	Anatomy	80		32			5		1		6
AHS	CN-2	Physiology	80		32			5		1		6
AHS	CCT-3	Biochemistry	80		32			5		1		6
AHS	CN -4	Pathology						5		1		6
AHS		Microbiology	40		16							
AHS	Lab training CN 1 to 4					192					6	6
AHS	AECC	English	16	34				1	1			2
AHS	SEC – 1-3	Student‘s choice	16	32				1	1			2
AHS	SEC – 1-3	Student‘s choice	16	32				1	1			2
AHS	GEC 1-3	Student‘s choice	64					4				4
			432	**98**	**128**	**192**	**850**	**27**	**3**	**4**	**6**	**40**

SCHEME OF EXAMINATION AHS - I YEAR BASIC SCIENCES

Papers	Subject	Theory		Practical		Theory	Practical	Grand Total (900)	Min marks to pass % (450)
		UE	IA	UE	IA	UIA*	UIA*		
CN-1	Anatomy	80	20					100	50
CN-2	Physiology	80	20					100	50
CN-3	Biochemistry	80	20					100	50
CN-4	Pathology	40	10					100	50
	Microbiology	40	10						
CN -LT	Lab training Core 1 to 4						100	100	50
AECC	Ability enhancement Compulsory Course- English	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
GEC	Generic elective	80	20					100	50

***UIA - University Internal Assessment only for Lab Trainings (No Final University Examination).**

Passing criteria -50 % aggregate both in theory and practical's including internal assessment marks

For all elective course, 40 marks for university theory and Practical cum Viva examination & 10 marks as Internal Assessment = 50 marks which will be converted to 100 marks in the transcript

ANATOMY

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES – ANATOMY

NAME OF THE SUBJECT PAPER	**: ANATOMY**
DURATION OF THEORY CLASSES	**: 80 Hrs**
DURATION OF TUTORIAL SESSIONS	**: 32 Hrs**
DURATION OF LAB TRAINING	**: 40 Hrs**
EXAMINATION	**: 100 Marks (80 U + 20IA)**
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	**: 3 Hrs**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: I YEAR**

COURSE DESCRIPTION

The course is designed to assist students to acquire knowledge of the normal structure of human body and its functions. To ensure that the students understand the alteration in anatomical structure and function in disease in the practice of accident and emergency care technology.

OBJECTIVES

At the end of the course, the student will be able to

1. Describe the anatomical terms, organization of human body and structure of cell, tissue, membranes and glands.
2. Describe the structure and functions of bones and joints.
3. Describe the structure and functions of systems in body. Have knowledge about Applied Anatomy

COURSE OUTCOMES FOR ANATOMY

At the end of the course, students will be able to...

AN-AHS-CO1: Explains the Gross and Microscopic structure of human body.

AN-AHS-CO2: Explains the normal structure and integration of the functions of the organs and systems on basis of the structure of Human body.

AN-AHS-CO3: Explains the clinical correlation of the organs and structures involved and interprets the anatomical basis of the disease presentations.

AN-AHS-CO4: Knows about the General development of human body.

AN-AHS-CO5: Outlines the knowing of the hard & soft structures of the body.

UNIT	TITLE	THEORY + TUTORIALS (80 + 32)HOURS
I	**(a) INTRODUCTION TO HUMAN BODY AS AWHOLE** • Terms of location, positions and planes • Cell and its organelles • Epithelium – Definition, classification, description with examples and functions. • Glands–Classification, description of Serous and Mucous glands with examples. • Basic tissues – Classification with examples. **(b) LOCOMOTION ANDSUPPORT** • Cartilage – Different types with examples and Histology. • Bone – Classification, Names of bone cells, parts of Long bone, Microscopy of Compact bone, Names of all bones, Vertebral column, Intervertebral disc, Fontanelles of Fetal Skull. • Joints–Classification of Joints with examples, Synovial Joints (in detail for Medical Imaging Technology students) • Muscular system: Classification of Muscular tissue and histology. • Names of the muscles of the body.	20 + 8
II	**UNIT (a) CARDIO VASCULAR SYSTEM** • Heart Size, Location, Chambers – Exterior & Interior – conducting System and Valves • Blood supply of heart • Systemic & Pulmonary circulation • Branches of Aorta, Common Carotid artery, Subclavian artery, Axillary artery, Brachial artery, Superficial Palmar arch, Femoral artery and Internal Iliac artery. • Peripheral pulse • Inferior Venacava, Portal vein and Porto systemic anastomosis. • Great Saphenous vein • Dural Venous Sinuses • Lymphatic System – Cisterna Chyli and Thoracic duct. • Names of regionally mphatics, axillary and inguinal mph nodes in brief. **(b) RESPIRATORYSYSTEM** • Parts of Respiratory System, Nose, Nasal Cavity, Larynx, Trachea, Lungs, Broncho pulmonary segments • Histology of Trachea, Lung and Pleura • Names of Para nasal air sinuses	20 + 5
III	**(a) GASTRO- INTESTINAL SYSTEM – (10 +5hrs)** • Parts of GIT, Oral cavity (Tongue, Tonsil, Dentition, Pharynx, Salivary glands, Waldeyer‘s ring) • Oesophagus, Stomach, Small & Large Intestine, Liver, Gall Bladder, Pancreas **(b) URINARY SYSTEM - – (5hrs)** • Kidney, Ureter, Urinary bladder, Male & Female Urethra	10 + 5

IV	**(a) REPRODUCTIVE SYSTEM – (10 +2hrs)** • Parts of Male Reproductive system, Testis, Vas deferens, Epididymis, Prostate • Parts of Female Reproductive System, Uterus, Fallopian tubes, Ovary • Mammary gland **(b) ENDOCRINE GLANDS - (5hrs)** • Names of all Endocrine glands in detail on Pituitary Gland, Thyroid Gland, Parathyroid gland and Suprarenal Gland.	10 + 5
V	**NERVOUS SYSTEM – (15 +2 hrs)** • Cerebrum, Cerebellum, Mid brain, Pons, Medulla Oblongata, Spinal cord with spinal nerve • Meninges, Ventricles and Cerebrospinal fluid • Names of Basal nuclei • Blood Supply of Brain • Cranial Nerves	10 + 5
VI	**(a) EMBRYOLOGY** • Spermatogenesis and Oogenesis • Ovulation, Fertilization • Fetal Circulation • Placenta **(b) COURSE SPECIFICTOPICS** • Skin • Eye • Arterial System and Venous Drainage System in detail	10 + 4

LAB TRAINING (40 hrs)

- Histology of Types of Epithelium
- Histology of Serous, Mucous and Mixed Salivary gland
- Histology of the types of Cartilage
- Demo of all bones showing parts, radiographs of normal bones &Joints
- Histology of Skeletal (TS & LS), Smooth and Cardiac muscle
- Demonstration of Heart and Vessels of the body
- Histology of Large artery, Medium sized artery and vein, Large Vein
- Microscopic appearance of Large and Medium sized Artery and Vein, Large Vein
- Demonstration of all muscles of the body
- Pericardium
- Histology of Lymph node, Spleen, Tonsil and Thymus
- Demonstration of parts of Respiratory system
- Normal Chest radiograph showing Heart shadows
- Histology of Lung and Trachea
- Normal Angiograms
- Histology of Lymphatic tissues
- Radiographs of Abdomen – IVP, Retrograde cystogram
- DemonstrationofpartsoftheUrinarysystemandHistologyofKidney,Ureter and Urinary bladder

- Demonstration of Male and Female Pelvis with organs in situ.
- Histology of Male and Female Reproductive organs
- Histology of Pituitary, Thyroid, parathyroid and Suprarenal glands
- Histology of peripheral nerve and optic nerve.
- Demo of all parts of brain

METHODS OF TEACHING

- Lecture cum discussion
- Demonstration
- Lab visit
- Practical work record

METHODS OF EVALUATION

- Written Test
- Laboratory observation Book
- Assignments
- Oral Presentations

REFERENCE BOOKS

- Cohen, Memmler: Structure & Function of Human Body, Lippincott Williams & Wilkins; Tenth edition(2012)
- Waugh: Ross & Wilson Anatomy & Physiology in health and illness Penguin Books Ltd(2010)
- Tortora: Anatomy & Physiology, John Wiley & Sons(2012)

B.Sc. ALLIED HEALTH SCIENCES – ANATOMY - BLUE PRINT

Unit No.	Unit	Weightage	Marks Allotted	Knowledge / Recall			Understanding			Application		
				LAQ	SAQ	VSAQ	LAQ	SAQ	VSAQ	LAQ	SAQ	VSAQ
1	I	14 %	12	…	1	1	---	---	1	---	---	---
2	II	20 %	16	1		1	1*		----	---	---	1
3	III	20 %	15	1*	1	1	--	1	----	---	---	1*
4	IV	20 %	16	--	--	1	1	1*	1*	---	----	1
5	V	14 %	12	---	1	---	---	--	1	---	---	1
6	VI	12 %	9	---	1	---	---	--	1	---	---	--

LONG ANSWER QUESTIONS

S.No	Unit wise	Type of Question	Question has to ask
1	CVS / Respiratory System / GIT	Knowledge / Understanding	2
2	Urinary system / Reproductive system / Endocrine system	Knowledge / Understanding	2

SHORT ANSWER QUESTIONS

S. No	Unit wise	Type of Question	Question has to ask
1	Unit - I	Recall	1
2	Unit - II	Understanding	-
3	Unit – III	Understanding + Recall	2
4	Unit – IV	Understanding / Recall	1
5	Unit – V	Understanding	1
6	Unit – VI	Understanding / Recall	1

VERY SHORT ANSWER QUESTIONS

S.No	Unit wise	Type of Question	Question has to ask
1	Unit – I	Understanding / Recall	2
2	Unit – II	Understanding + Recall	2
3	Unit – III	Understanding + Recall + Application	2
4	Unit – IV	Understanding + Recall + Application	3
5	Unit – V	Understanding + Application	2
6	Unit – VI	Understanding / Application	1

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions : 10 X3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100marks

MODEL QUESTION PAPER
FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES
ANATOMY

Time:3 Hours **Maximum Marks:80**

Illustrate your answers with suitable diagrams where ever necessary.

LONG ANSWER QUESTIONS - (**Write any Two**) (**2 X 10 =20)**

1. (A) Explain the Gross features of Right atrium. **(OR)**
   (B) Explain the Gross features of Stomach.
2. (A) Explain the Gross features of Kidney. **(OR)**
   (B) Explain the Gross features of Thyroid gland.

SHORT ANSWER QUESTIONS - (Write any Five) **(5 x 6=30)**

1. Discuss the Classification of joints with its examples.
2. Discuss the boundaries and contents of superior Mediastinum.
3. Discuss the gross features of Right lung.
4. Discuss the external & internal features of 2nd part of Duodenum.
5. Discuss the location, external features of urinary bladder.
6. Discuss the supports of uterus.

VERY SHORT ANSWER QUESTIONS - (Write any Ten) **(10 x3 =30)**

1. Write a note on Sesamoid bone.
2. Trace the conducting system of Heart.
3. List out the paranasal air sinuses.
4. Write a note on Pancreatic duct.
5. List out the parts & functions of extra hepatic biliary apparatus.
6. Write a note on Trigone of urinary bladder.
7. Enumerate the Ovarian follicles.
8. Enumerate the hormones of Adrenal gland.
9. Enumerate the layers of Scrotum.
10. List out the meningeal layers & its modifications.
11. Structure of thin skin.
12. Write a note on Fertilization

PHYSIOLOGY

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES – PHYSIOLOGY

NAME OF THE SUBJECT PAPER	**: PHYSIOLOGY**
DURATION OF THEORY CLASSES	**: 80 Hrs**
DURATION OF TUTORIAL SESSIONS	**: 32 Hrs**
DURATION OF LAB TRAINING	**: 38 Hrs**
THEORY EXAMINATION	**: 100 Marks (80 U + 20IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: NIL**
DURATION OF THEORY EXAMINATION	**: 3 Hrs**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: I YEAR**

COURSE DESCRIPTION

The course is designed to assist students to acquire the knowledge of the normal physiology of various human body systems and understand the alternation in physiology in disease and practice of accident and emergency care technology

COURSE OBJECTIVES

At the end of the course, the student will be able to

- Describe the physiology of cell, tissues, membranes and glands.
- Describe the physiology of blood and functions of heart.
- Demonstrate blood cell count, coagulation, grouping, Hb; BP and Pulse monitoring
- Describe the physiology and mechanism of respiration.
- Demonstrate Spirometry
- Describe the physiology of Excretory system

COURSE OUTCOMES FOR PHYSIOLOGY

At the end of the course, students will be able to...

PHY-AHS-CO1: Understand normal structure and functioning of the organs and organ systems of the body

PHY-AHS-CO2: Understand the regulatory mechanisms in normal and physiological variations.

PHY-AHS-CO3: Understand age-related physiological changes in the organ functions that reflect normal growth and development.

PHY-AHS-CO 4: Understand the physiological basis of diseases.

PHY-AHS- CO 5: Interpret laboratory data pertaining to normal function of organ and organ system.

UNIT	TITLE	THEORY + TUTORIALS (80+32) HOURS
I	**a. General physiology (5 + 2hrs)** • Structure and functions of cell and cell organelles • Transport across cell membrane • Homeostasis: definition and feedback mechanisms **b. Hematology (10 + 2hrs)** • Composition and function of blood and body fluids • Plasma proteins and their functions • RBC: morphology, production, functions and fate • Anemia: etiological & morphological classification • Immunity : Types, mechanism of immune response • Hemostasis and anticoagulants • Blood groups: Types, cross matching and clinical importance	15 +4
II	**Cardiovascular physiology (10 + 5 hrs)** • Functional anatomy • Conductive system of heart: origin, spread of cardiac impulse • Properties of cardiac muscle • ECG: leads, principles of normal recording. Normal waves and interpretations • Cardiac cycle • Heart sounds, Physiological basis of murmur • Cardiac output: definition, factors affecting, factors regulating and its measurement • Blood pressure: total pressure, lateral pressure, importance of different pressure, measurements, factors controlling BP • Shock: definition &types.	10 + 5
III	**Respiratory physiology (10 + 5 hrs)** • Functional anatomy • Mechanism of respiration • Lung volumes and capacities: definition, normalvalues, measurements and clinical importance • Transport of gases: oxygen and carbon dioxide • Control of respiration: neural and chemical regulation. • Dyspnoea, Asphyxia, cyanosis, periodic breathing • Hypoxia : definition and types	10 + 5
IV	**a. Gastro-intestinal physiology (5 hrs)** • GI secretions: saliva, gastric juice, pancreatic juice, liver& gallbladder • GI motility: deglutition, gastric motility and emptying,	15 + 3

	intestinal motility • GI hormones: Gerstein, Secretin, CCK – PZ, motilin, Inhibin **b. Renal physiology (10 + 3 hrs)** • Nephrons: structure, types and functions • Juxta glomerular apparatus • RBF: definition, normal values, factor affecting • GFR: definition, normal values factor affecting and factors regulating, measurement. • Renal handlings of solutes : Na+ , Cl- ,Glucose, water (diuretics, diuresis), H+, ammonia • Renin-angiotensin- aldosterone mechanism • Concentration of urine – countercurrent multiplier and countercurrent exchanger. • Micturition • Renal dialysis	
V	**a. Endocrine physiology (10 + 3hrs)** • Pituitary gland: hormones secreted and their functions, applied: dwarfism, gigantism, Diabetes Insipitus. • Thyroid gland: hormones secreted and their functions, applied: hypothyroidism, hyperthyroidism • Parathyroid gland: hormones secreted and their functions • Adrenal gland: hormones secreted and their functions • Pancreas: hormones secreted and their functions, applied: Diabetes Mellitus **b. Reproductive physiology (5 + 2hrs)** • Male reproductive system: spermatogenesis ,endocrine functions of testis • Female reproductive system: oogenesis, ovulation, functions of estrogen and progesterone. • Menstrual cycle: ovarian cycle, uterine cycle, hormonal changes, abnormalities of menstruation • Contraception	15 + 5
VI	**a. Nerve-Muscle physiology (5 + 5 hrs)** • Neurons: structure, types, properties, degeneration and regeneration • Neuromuscular junction: transmission of impulse and its clinical applications • Skeletal muscle: structure , muscle proteins, contraction& relaxation, types of contraction **b. Central nervous system (5 + 3hrs)** • Organization of nervous system • Synapse: types, functions • CSF :functions • Cerebral cortex: Broca`s area and their functions • Cerebellum: lobes &function • Basal ganglia: nucleus & functions, Parkinsonism	15 + 10

	• Hypothalamus: functions **c. Special senses (5 + 2 hrs)** • Vision: Errors of refraction, visual pathway and effects of lesion • Hearing: functions of middle ear, Conductive deafness and nerve deafness. • Smell and taste: receptors and pathways	

LAB TRAINING (38 hrs)

- Hemoglobinometry
- White Blood Cell Count
- Red Blood Cell Count
- Determination of Blood Groups
- Leishman's Staining and Differential WBC Count
- Determination of Packed Cell Volume
- Erythrocyte Sedimentation Rate(ESR)
- Determination of Clotting Time, Bleeding Time
- Recording of Blood pleasure
- Auscultation for Heart sounds
- Artificial Respiration
- Determination of Vital capacity.

METHODS OF TEACHING

- Lecture cum discussion
- Demonstration
- Lab visit
- Practical work record

METHODS OF EVALUATION

- Written Test
- Laboratory observation Book
- Assignments
- Oral Presentations

REFERENCE BOOKS

1. Basics of Medical Physiology D.Venkatesh /H.H.Sudhakar Wolters Kluwer Third Edition.
2. Waugh: Ross & Wilson Anatomy & Physiology in health and illness Penguin Books Ltd (2010).
3. Principles of Physiology, Singh (H).

PHYSIOLOGY - BLUEPRINT

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	General physiology	15	19%			2+1*
	Hematology			1*	1	1
II	Cardiovascular physiology	16	20%	1	1	
III	Respiratory physiology	16	20%	1	1	
IV	Gastro-intestinal physiology	12	15%		1	1+1*
	Renal physiology			1*		1
V	Endocrine physiology	12	15%		1	1
	Reproductive physiology					1
VI	Nerve-Muscle physiology	09	11%			1
	Central nervous system				1*	1
	Special senses					1
Note: * represents question of choice						

- The duration of Examination (University) is Three (3) hours.
- The total marks for the University Examination will be 100marks.

  Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of4)

  Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

  Very Short Answer Questions : 10 X3 = 30 marks (Choice 10 out of 12)

  TOTAL = Theory 80 + IA 20 = 100mark

MODEL QUESTION PAPER
FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES
PHYSIOLOGY

Total marks: 80 **Duration: 3hours**

LONG QUESTION ANSWER **(2 X 10 =20)**

1. a) Define Erythropoiesis? Describe its stages. Mention the factors influencing it. **(OR)**
   b) Define blood pressure. Write its normal range. Briefly explain short term regulation mechanism of blood pressure.
2. a) Explain how oxygen is transported in blood. Explain oxygen dissociation curve. List the factors shifting this curve to right&left. **(OR)**
   b) Define Glomerular filtration rate (GFR). Write its normal value. Explain the factors affecting it.

SHORT QUESTION ANSWER – Answer any 5 **(5 X 6 =30)**

1. Define hemostasis. Briefly explain blood clotting mechanism.
2. Define cardiac output. Give its normal value. Describe the factors regulating it
3. Draw normal spirogram indicating static lung volumes and capacities.
4. Briefly explain the mechanism of HCl secretion in stomach.
5. Name the anterior pituitary hormones. Briefly explain functions of growth hormones.
6. Briefly describe stages of Spermatogenesis.

VERY SHORT ANSWER – Answer any 10 **(10 X 3=30)**

1. Write the functions of Golgi apparatus
2. Briefly explain osmosis
3. Briefly describe the function of Na^+ K^+ ATPase pump
4. What are anticoagulants? Name any two.
5. Write any 3 functions of saliva
6. Name any two GI hormones. Write any one function of them.
7. Name the cells of Juxta glomerular apparatus & mention their function
8. List the 3 functions of thyroid hormone
9. Name natural contraceptive methods
10. Classify muscle proteins
11. Classify glial cell. Write any two functions of it.
12. What is myopia? How it is corrected

BIOCHEMISTRY

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES – BIOCHEMISTRY

NAME OF THESUBJECTPAPER	**: BIOCHEMISTRY**
DURATION OF THEORY CLASSES	**: 80hrs**
DURATION OF TUTORIAL SESSIONS	**: 32hrs**
DURATION OF LAB TRAINING	**: 38Hrs**
THEORY EXAMINATION	**: 100 marks (80 U + 20IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: Nil**
DURATION OF THEORY EXAMINATION	**: 3 hrs**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: IYEAR**

COURSE DESCRIPTION

The course is designed to assist students to acquire the knowledge of the normal biochemical functioning of human body and alterations.

OBJECTIVES

At the end of the course, the student will be able to

1. Identify the basic principles of biochemistry.
2. Synthesize the knowledge of these principles in various situations.

COURSE OUTCOMES FOR BIOCHEMISTRY

At the end of the course, students will be able to...

BIO-AHS-CO1: Correlate the integration of various aspects of biomolecules and its lab diagnosis

BIO-AHS-CO2: Explain biochemical basis and rationale of clinical laboratory tests for inborn errors of metabolism, and interpret the results.

BIO-AHS-CO3: Correlate the results of these investigations with the primary disorders of each human body system.

BIO-AHS-CO4 Follow good clinical laboratory practice as well as to handle the biological samples collected

BIO-AHS-CO5: Learn how to collect the samples and to process it for diagnostic purposes

UNIT	TITLE	THEORY + TUTORIALS (80 +32) HOURS
I	**(i) INTRODUCTION TO BIOCHEMISTRY** • Biophysical aspects of Biochemistry: Theory of acids and bases, Ionization of acids, Dissociation of water, Hydrogen ion concentration and concept of pH, Dissociation of acids and bases, Basic concepts in Acidosis and Alkalosis (Respiratory and Metabolic) • Concept of buffering, Definition of buffers and Buffering Capacity, Chemical and Physiological buffers, Henderson Hassel Balch equation and pH – pK relationship, • Glass electrode and determination of pH, Acid Base titration. **ii) PROTEINS** • Proteins: Chemistry, Classification, properties and biomedical importance of Proteins. • Hydrolytic products of proteins • Classification of Amino acids and important properties **iii) ENZYMES** • Definitions of Catalyst, Enzymes, Apo enzyme, Coenzyme, Holoenzyme, Cofactors and prosthetic group • Active site • Systematic classification of Enzymes • Factors influencing Enzyme kinetics • Enzyme units	18 + 6
II	**i) CARBOHYDRATES** • Carbohydrates: Chemistry, Classification, properties and biomedical importance of carbohydrates. **ii) NUCLEOPROTEINS** • Purine and Pyrimidine bases • Ribose and Deoxy Ribose • Definition of Nucleosides and Nucleotides • Structure of DNA • Types of RNA • Biologically significant Nucleotides	15 + 5
III	**LIPIDS** • Definition of Fats and Oils • Classification of Lipids • Saturated and Unsaturated Fatty acids • Properties of Lipids • Biomedical importance of Lipids with special reference to Phospho Lipids, Glycolipids and Cholesterol.	15 + 7
IV	**ENGERY METABOLISM AND NUTRITIONAL BIOCHEMISTRY** • Calorific value, Respiratory Quotient, Resting Metabolic expenditure, Specific dynamic action • Energy requirements • Complex Carbohydrates and Role of Dietary fiber • Essential Fatty acids • Essential amino acids	20 + 6

	• Positive and Negative Nitrogen balance • Protein Energy Malnutrition • Biochemical functions of Vitamins • Biochemical functions of major and trace elements	
V	**(i) CLINICAL CHEMISTRY** • Serum Osmolality: Significance and measurement • Electrophoresis: Principles, Methodology and Diagnostic significance • Principles and applications of Patrician Chromatography • Simple tests to identify Carbohydrates, Lipids and Proteins in biological fluids • Qualitative estimation of Glucose, Proteins, Cholesterol, Urea, Creatinine and Uric acid and their diagnostic significance **(ii) ENVIRONMENTALCHEMISTRY** • Definition of Pollutants • Impact of Terrestrial, Water and air pollutants • Bio pesticides Chemistry, Metabolic Transformation in the living system and role in Chemical Pathology • Influence of Non-Biodegradable domestic utility items and its role in metabolic disorders • Carcinogens and mutagens: qualitative and molecular pathology involved in mutagenesis and carcinogenesis • Plastics and its impacts on Society • Biomedical Waste and its management	12 + 8

LAB TRAINING (38 hrs)

- Simple Color reactions of Carbohydrates and Proteins
- Qualitative estimations of Glucose, Urea, Creatinine, Total Protein and Cholesterol
- Normal constituents of Urine
- Abnormal(pathological)Urine
- Glucose Tolerance Test and its significance
- Demonstration of Electrophoresis and Interpretation of important clinical conditions based on Electrophoresis appearance
- Demonstration of Paper Chromatography and its utility in the diagnosis of inborn errors of metabolism

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

REFERENCE BOOK

1. Essential of Biochemistry for B.Sc. Nursing Students Harbanslal, first edition.
2. Biochemistry U.Sathya Narayana, U.Chakrapani, fifth edition

B.Sc. ALLIED HEALTH SCIENCES – BIOCHEMISTRY (I Year) BLUE PRINT

Unit No.	Weightage	Marks Allotted	Knowledge/ Recall			Understanding			Application		
			LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)
I	30 %	25		1	1	1	1				
II	20%	19	1		2			1			
III	15%	12	1*	1	2						
IV	15 %	9	1*	1*	2			1			
V	20%	15		1	1 + 1*		1	1*			

The duration of Examination (University) is Three (3) hours.
The total marks for the University Examination will be 80 marks.

Long Answer Questions : 2X 10 marks = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5X 6 marks = 30 marks (Choice 5 out of 6)

Very Short Answer Questions : 10 X 3 marks = 30 marks (Choice 10 out of12)

TOTAL = Theory 80 + IA 20 =100marks

MODEL QUESTION PAPER
FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES
BIOCHEMISTRY

TIME: 3 HOURS **MAXIMUM MARKS:80**

A. Long answer question **(2 X10=20)**

1. a) Write in detail about the Hetero polysaccharides and mention its importance.

(Or)

b) How is acid base balance maintained in the body?

2. a) Define and classify Lipids with suitable examples.

(Or)

b) Write in detail about the RDA, dietary sources, and biochemical role and deficiency manifestations of folic acid.

B. Short answer questions -Answer any 5 questions **(5X 6=30)**

1. Mention dietary sources and functions of cholesterol
2. Define Chromatography & write any4applications
3. Classify Carbohydrates with a suitable example
4. Classify Enzymes systematically by providing one example under each class.
5. Define carcinogen and name any three agents that cause carcinogenesis.
6. List down the sources, regulation and functions of Calcium

C. Very Short answer questions –Answer any10 questions **(10 x 3=30)**

1. Define Respiratory quotient
2. Define buffer
3. List any two functions of trace elements.
4. List any two impacts of plastics on society
5. Mention the essential fatty acids and its importance
6. List any 2 functions of phospholipids
7. Name one test to identify plasma proteins and urea.
8. Define osmolality
9. Mention any one cardiac glycoside with its function
10. Draw a neat labeled diagram of DNA
11. Define mutarotation
12. List any two functions of Fat soluble vitamin

GENERAL MICROBIOLOGY

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES – GENERAL MICROBIOLOGY

NAME OF THE SUBJECT PAPER	**: GENERAL MICROBIOLOGY**
DURATION OF THEORY CLASSES	**: 40 hrs**
DURATION OF TUTORIAL SESSIONS	**: 16 hrs**
DURATION OF LAB TRAINING	**: 38 Hrs**
EXAMINATION	**: 50 marks (40 U+10 IA)**
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	**: 1 ½ hrs**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: I YEAR**

COURSE DESCRIPTION

The course is designed to assist students to acquire understanding of fundamentals of microbiology and identification of microorganisms. It also provides opportunities for practicing infection control measures in hospital setting.

COURSE OBJECTIVES

At the end of the course, the student will be able to:

1. Identify common disease producing microorganisms
2. Explain the basic principles of microbiology and their significance in health and disease. Demonstrate skill in handling specimens.
3. Explain various methods of disinfection and sterilization
4. Identify the role of the nurse in hospital infection control system.

COURSE OUTCOMES FOR GENERAL MICROBIOLOGY

At the end of the course, students will be able to...

MIC-AHS-CO1: Sterilize the articles with physical and chemical methods

MIC-AHS-CO2: Perform with suitable culture media, methods for growth of the bacteria and perform staining techniques for identification of bacteria

MIC-AHS-CO3: Learn the structure, function of immune system and immunity by its antigen-antibody reactions

MIC-AHS-CO4: Learn the how to collect & process the specimen for the diagnostic purposes

MIC-AHS-CO5: Learn about the identification of fungal infections from clinical specimens and various antifungal agents used for the fungal infections.

MIC-AHS-CO6: Learn the laboratory diagnosis of Parasitic and Viral infections

MIC-AHS-CO7: Learn about the treatment and post exposure prophylaxis (PPE) of viral infections

UNIT	TITLE	THEORY + TUTORIALS (40 +16) HOURS
I	**GENERAL BACTERIOLOGY** ▫ Historical introduction Classification of Microorganisms based on size, shape and structure ▫ Anatomy & Physiology of Bacteria : Nutrition, Growth ▫ Microscopy, staining techniques & Culture media, culture methods ▫ Sterilization (physical &chemical methods) Infection	8 +2
II	**IMMUNOLOGY** ▫ Immune response ▫ Immunity ▫ Hyper sensitivity, Autoimmunity ▫ Complement ▫ Antigen antibody reactions	7 + 2
III	**SYSTEMATIC BACTERIOLOGY** ▫ Introduction : Collection transport & processing of bacteriological clinical specimen in general ▫ Pyogenic cocci ▫ Spore baring bacilli Clostridium +Bacillus ▫ Enterobacteriaceae- E.coli, Klebsiella, Salmonella, Shigella ▫ Vibrio, Pseudomonas **MYCOLOGY** ▫ Introduction, classification of fungi, laboratory diagnosis in general ▫ Fungi of medical importance-Opportunistic fungi	8 + 3
IV	**BASICS OF PARASITOLOGY** ▫ Introduction to Parasitology, Classification, Protozoa-I – Entamoeba histolytica ▫ Protozoa-II, Plasmodium spp. ▫ Cestodes: general, T.solium&T.saginata, E.granulosus ▫ Nematodes: Introduction &Classification - Intestinal -Ascaris, Ancylostorma, Strongyloides - Tissue-W.bancrofti	7 +3
V	**VIROLOGY** ▫ Classification & General properties of Viruses, Virus Host interactions & Lab diagnosis in general ▫ DNA Viruses : Pox viruses &Adenoviruses, Herpes viruses ▫ Hepatitis virus, HIV ▫ Rabies , Polio, Arbo viruses common in India – Dengue, Chickenkuniya , Japanese encephalitis, KFD	6 + 4
VI	**HOSPITAL INFECTION AND CONTROL** ▫ Causative agents and methods of transmission ▫ Systematic investigation of hospital infection ▫ Prevention and control of Hospital infections ▫ Environmental Hazards resulting from biomedical waste and preventive measures.	4 + 2

LAB TRAINING (38 hrs)

- Introduction & visit to microbiology lab + Morphology of bacteria + Identification of bacteria (Culture plates & Basic biochemical reactions)
- Gram stain, Acid fast Stain
- Spotters , Instruments, Culture media inoculated &un inoculated
- Applied Immunology(Bacterial)
- Serological tests – CRP, ASO, RPR, Widal Applied Immunology (Virology) Serological tests: HIV, HBsAg(Rapid Tests)
- Stool Examination for eggs + Parasitology specimens

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory Observation Book
3. Assignments
4. Oral Presentations

REFERENCE BOOKS

1. Ananthnarayan R: Textbook of Microbiology.(2017)
2. Pommerville J. C: Fundamentals of Microbiology. Jones and Bartlett learning(2013)
3. ApurbaSastry, SandhyaBhat. Essentials of Microbiology.
4. Text book of Concise Microbiology by C.P.Baveja, Latest edition

BLUE PRINT - B.Sc ALLIED HEALTH SCIENCES –GENERAL MICROBIOLOGY (I Year)

Unit No.	Unit	Weightage (%)	Marks Allotted	Knowledge/ Recall			Understanding			Application		
				LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)
I	GENERAL BACTERIOLOGY	8	3	1*								1
II	BASICS OF IMMUNOLOGY	15	6			1*		1				
III	SYSTEMATIC BACTERIOLOGY	25	10				1				1*	
IV	BASICS OF PARASITOLOGY& MYCOLOGY	22	9					1				1
V	VIROLOGY	22	9		1							1
VI	HOSPITAL INFECTION AND CONTROL	8	3		1*				1			
	TOTAL	**100**	**40**									

The duration of Examination (University) is One and Half (1 ½) hours.
The total marks for the University Examination will be 40marks.

Long Answer Questions : 1X10mark = 10 marks (Choice 1 out of2)
Short Answer Questions : 3X6marks = 18 marks (Choice 3 outof5)
Very Short Answer Questions : 4 X3 marks = 12marks (Choice 4 out of5)
TOTAL = 40 marks

MODEL QUESTION PAPER
FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES
GENERAL MICROBIOLOGY

Time: 1½Hours **Maximum Marks: 40**

Illustrate your answers with suitable diagrams wherever necessary.

(A) Long answer questions **(1 X 10=10)**

1. Describe the commonly used chemical disinfectants and their applications in the hospital.

(OR)

2. Classify Mycobacterium. Give an account on pathogenesis and laboratory diagnosis of pulmonary tuberculosis. Add a note on BCG vaccine.

(B) Short answer questions -Answer any 3 questions marks **(3 X6=18)**

1. Define immunity. Describe acquired immunity.
2. Types of HAI & mention the causative agents.
3. Name the UTI cause bacteria. How to collect urine & laboratory diagnosis of *E.coli*.
4. Life cycle of malaria parasite in human.
5. Write about Modes of transmission of HIV.

(C) Very Short answer questions –Answer any 4 questions **(4 x3 =12)**

1. Mention different color coded bags for biological waste management used in hospital with the viruses.
2. Prophylaxis of hepatitis B.
3. List FOUR bacteria causing wound infection.
4. Name the opportunistic fungi.
5. Name four arbo viral diseases common in India.

GENERAL PATHOLOGY

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES – GENERAL PATHOLOGY

NAME OF THE SUBJECT PAPER : GENERAL PATHOLOGY

DURATION OF THEORY CLASSES : 40hrs

DURATION OF TUTORIAL SESSIONS : 16hrs

DURATION OF LAB TRAINING : 38Hrs

EXAMINATION : 50 marks (40 U + 10IA)

NO UNIVERSITY PRACTICAL EXAMINATION

DURATION OF THEORY EXAMINATION : 1 ½hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : IYEAR

COURSE DESCRIPTION

To make the student to understand pathology laboratory reports, the normal ranges of investigations, severity and specificity of disease conditions which will help him perform International Classification of diseases to clinical pertinence.

COURSE OBJECTIVES

On completion of this subject, the student will be able to:

- Differentiate between symptoms and diseases
- Understand the needs of mandatory diagnostic procedures
- Demonstrate an understanding of the pathology of common diseases
- Understand various pathology laboratory reports
- Know about the possibilities and consequences of nosocomical infections, needle prick injuries etc., in a health care facility

COURSE OUTCOMES FOR GENERAL PATHOLOGY

At the end of the course, students will be able to...

PAT-AHS-CO1: Learns the pathophysiology of disease and its causes and progression

PAT-AHS-CO2: Learns the etiologies, the pathogenesis, and the host response specific to a particular organ system

PAT-AHS-CO3: Learn about lab investigations and techniques in Hematology.

PAT-AHS-CO4: Learns to perform cross matching, coombs test, blood grouping and TTI

PAT-AHS-CO5: Learns the diagnosis of disease based on the laboratory analysis of bodily fluids

UNIT	TITLE	THEORY + TUTORIALS (40 +16) HOURS
I	**GENERAL PATHOLOGY (12 +3 HOURS)** Basic Concepts in Cellular Adaptions • Cell injury and Cell death • Over view of Cellular adaption Basic Principles in Inflammatory Process • General features of acute and Chronic inflammation repair. • NEOPLASIA • Definition of Neoplasia • Differences between Benign and Malignant tumors • Nomenclature	10 + 5
II	**HAEMATOLOGY** **Structure and functions of Blood cells** • Objective use of anticoagulants • Mechanisms of Haemostasis • Tests to monitor Coagulation • Blood Grouping and Blood Bank (Basic aspects on Blood Components) • Basic concepts in Anemia • Basic Concepts of Leukemia	10 + 3
III	**BIOMEDICAL WASTE MANAGEMENT AND ENVIRONMENTAL PATHOLOGY** • Biomedical waste management from perspectives of Pathology • Environment and Disease – Smoking hazards, Asbestosis and Silicosis Occupational Exposure	5 + 2
IV	**CLINICAL PATHOLOGY** • Collection, transport, preservation and processing of Clinical Specimen • Clinical Pathology of specialized Body Fluids(CSF), Synovial fluid, Pleural Fluid • Urine Examination(Urinalysis)	5 + 2
V	**OVERVIEW OF SYSTEMIC PATHOLOGY** • Rheumatic Heart Disease ineffective endocarditic, atherosclerosis, IHD – Basic Concepts. • Lungs : Pneumonia, COPD, Asthma, ARDS – Basic Concepts • Gastrointestinal tract – Peptic Ulcer, Carcinoma Stomach, Carcinoma Colon –Basic Concepts. • Liver: Hepatitis, Cirrhosis, Gall Bladder –basic	10 + 4

	Concepts. • Brain Tumor. • Kidney – Renal Calculi, Hydronephrosis, renal Tumor – Basic Concepts. • FGT – Leiomyoma, Endometrial hyperplasia, Endometrial Cancer, Cervical Cancer –Basic Concepts. • FGT – Ovarian Tumor classifications – Basic Concepts. • Breast – Benign and Malignant tumors – Basic Concepts • Bone Tumors – Basic Concepts	

LAB TRAINING (38 hrs)

1. Blood Grouping and Rh typing
2. Urine Routine
3. Hb, TLC,DLC
4. Gross Specimens
5. Slides

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

REFERENCE BOOK

1. Culling Histopathology techniques
2. Bancroft Histopathology techniques
3. Todd & Sanford Clinical Diagnosis by laboratory method
4. Dacie & Lewis – Practical Haematology
5. RamanicSood, Laboratory Technology (Methods and interpretation) 4thEd.

B.Sc. ALLIED HEALTH SCIENCES – PATHOLOGY (I Year)-BLUE PRINT

Unit No.	Unit	Weightage	Marks Allotted	Knowledge/ Recall			Understanding			Application		
				LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)
I	a) BASIC CONCEPTS IN CELLULARADAPTIONS b) BASIC PRINCIPLES IN INFLAMATORY PROCESS c) NEOPLASIA	37.5%	15	1*	2	1	-	1*	1*	-	-	-
II	HAEMATOLOGY	22.5%	9	-	1	1	-	-	-	-	-	-
III	BIOMEDICAL WASTE MANAGEMENT AND ENVIRONMENTAL PATHOLOGY	7.5%	3	-	-	-	-	-	1	-	-	-
IV	CLINICAL PATHOLOGY	7.5%	3	-	1*	1	-	-	-	-	-	-
V	OVERVIEW OF SYSTEMIC PATHOLOGY	25%	10	1	-	-	-	-	-	-	-	-

The Duration of Examination (University) is One and Half hours (1 ½) hours.

The total marks for the University Examination will be 40 marks.

Lon Answer Questions : 10X1marks = 10 marks (Choice 1 out of 2)

Short Answer Questions : 3 X6marks = 18 marks (Choice 3 out of5)

Very Short Answer Questions : 4 X3marks = 12 marks (Choice 4 out of5)

TOTAL = 40 marks

MODEL QUESTION PAPER
FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES
GENERAL PATHOLOGY

Time: 1½Hour **Maximum Marks: 40**

Illustrate your answers with suitable diagrams wherever necessary.

(A) Long Answer Questions **(1X10=10)**

1. Mention the types of necrosis with examples

(Or)

2. Describe about Myocardial infarction

(B) Short Answer Question **(3X6=18)**

Answer any THREE of the following

1. Tabulate the difference between Benign and Malignant tumors
2. Define anemia. Mention types of anemia, on the basis of Etiology.
3. Explain the mode of spread of tumors in brief.
4. Explain granulomatous inflammation with a neat labeled diagram
5. Describe the method of collection, transport and preservation of CSF

(C) Very Short Answer Questions **(4X3=12)**

Answer any FOUR of the following

1. Define Apoptosis.
2. Enumerate two colors coding for various biomedical waste disposal with examples.
3. Define cross matching
4. Mention two types of Necrosis.
5. Define Pneumonia.

I YEAR ELECTIVE COURSES

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES
ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) - ENGLISH

NAME OF THE SUBJECT PAPER	**: ENGLISH**
DURATION OF THEORY CLASSES	**: 16hrs**
DURATION OF PRACTICAL SESSIONS	**: 34hrs**
EXAMINATION	**: 100 marks (80 U + 20 IA)**
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	**: 1 ½ hrs**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: I YEAR**

COURSE OUTCOMES FORENGLISH

ENG-CO1: Speak and write grammatically correct sentences in English

ENG-CO2: Develop effective writing skills needed for clinical task

ENG-CO3: Build fluency in English needed for clinical tasks

SYLLABUS
(THEORY& PRACTICALS = 16 +34 Hours)

COURSE DESCRIPTION

This course is designed to build spoken and written English competency of the students needed to function effectively in academic setup.

OBJECTIVES

On completion of this subject, the student will be able to:

1. Speak and write grammatically correct sentences in English.
2. Develop effective writing skills.
3. Build fluency in English

UNIT: I GRAMMAR

1. Remedial Grammar : Parts of speech; Types of sentences, question tags
2. Modal verbs;
3. Tenses
4. Concordance

UNIT: II VOCABULARY

1. Word formation – prefixes and suffixes
2. Medical terminology
3. Words often misused or confused
4. Idioms and phrases

UNIT: III WRITING SKILLS

1. Letter writing - permission, leave and other official letters
2. Note making methods
3. Jumbled sentences -cohesion
4. Paragraph Writing

UNIT: IV SPOKEN COMMUNICATION

1. Pronunciation of commonly mispronounced words
2. Day today conversation
3. Telephonic conversations
4. Group Discussions

UNIT: V LISTENING AND READING SKILLS

1. General Listening and reading comprehension

Textbook Recommended

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.
2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES
SKILL BASED ELECTIVE COURSE (SBEC) – CULINARY SKILLS FOR OPTIMAL NUTRITION

NAME OF THE SUBJECT PAPER : CULINARY SKILLS FOR OPTIMAL NUTRITION

DURATION OF THEORY CLASSES : 16 Hrs

DURATION OF PRACTICAL SESSIONS : 32Hrs

PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY THEORY EXAMINATION

DURATION OF EXAMINATION : 1 ½ Hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT: I YEAR

COURSE OUTCOMES

NUTRI-CO1: Understand the basic food groups, their nutrient composition and function for balanced healthy diet for people of all ages & patients on dietary management for healthy life.

THEORY & PRACTICALS (DURATION 16 + 32 Hours)

UNIT-I INTRODUCTION TO FOODS AND NUTRITION

- Food-Definition of foods, nutrition and nutrients characteristics of good health
- Relation of nutrition to good health-optimal nutrition, malnutrition and over nutrition
- Classification of foods based on major nutrient content
- Food selection-factor responsible for food selection

UNIT-II FOODS GROUPS

- Basic four and five food groups-cereals, millets pulses, fruits and vegetables, fats and oils, sugar and jaggery.
- Foods and nutrients, Functions of food- energy yielding, body building and protective foods, balanced diet, vegetarian and non-vegetarian foods
- Functional Foods-Dietary supplements
- Food Adulterations-Common adulterants and method of identification, nutrition labeling and food standards

UNIT-III METHODS OF COOKING, PRESERVATION AND SENSORY EVALUATION

- Principles and techniques of sensory evaluation, Interpretation tools
- Cooking methods-moist heat, dry heat advantages and disadvantages, changes during cooking, nutrient preservation while cooking
- Preservation techniques advantages and disadvantages

UNIT-IV NUTRITIONAL REQUIREMENTS AND MEAL PLANNING

- Basic nutritional requirements through different stages of life cycle, basic principles of meal planning, revisiting concept of balanced diet.

PRACTICALS

- Introduction to cutlery and crockery
- Introduction to weights and measures
- Art of table setting
- Market survey on food labeling
- Preparation of few commonly consumed cereal preparation
- Preparation of few commonly consumed pulse dishes
- Vegetable cooking without nutrient loss
- Preparation and display of fruits salads
- A day‘s menu for an adult sedentary worker
- A day‘s menu for an 8-montholdinfant
- Nutritious snacks for preschooler
- Nutritious lunch for school going boys and girl
- Consistency modified menu foran80-year-old
- Simple test to identify food adulteration
- Sensory evaluation of prepared items

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

Reference book

1. Srilaksmi.B. : Food science; seventh edition(2012)
2. Jacqueline B .Marcus :Culinary Nutrition: The science and practice of healthy cooking:(2014)

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES
SKILL BASED ELECTIVE COURSE (SBEC) – ENHANCING SOFT SKILL & PERSONALITY

NAME OF THE SUBJECT PAPER : Enhancing soft skill & personality

DURATION OF THEORY CLASSES : 16Hrs

DURATION OF PRACTICAL SESSIONS : 32Hrs

PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY THEORY EXAMINATION

DURATION OF EXAMINATION : 1 ½ Hrs.

YEAR : I YEAR

COURSE OUTCOMES

ESSP-CO1: Foster healthy attitude and develop effective inter and intra personal skills to be an effective team worker in both academic and professional setup.

LEARNING OBJECTIVES

This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

SYLLABUS

UNIT: I ASPECTS OF COMMUNICATION

1. Importance of communication, Process, Barriers
2. Nonverbal Communication

UNIT: II SPEAKING

1. Opening and Closing conversations
2. Introductions and Address Systems
3. Expressing Courtesy
4. Giving Compliments and replying to Compliments
5. Presentation Skills
6. Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

1. White washing the Fence – Episode from Tom Sawyer by Mark Twain
2. Bacon's Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

1. Letter writing - Letter of Complaints, Inviting and Declining an invitation
2. Memos and Email
3. Editing- Grammar, Spelling & Punctuation, Use of Dictionary &Thesaurus.

UNIT – V SOFT SKILLS

1. Active Listening Skills
2. Assertive Skills
3. Negotiation and Persuasive Skills
4. Interview Skills

Reference Books

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.
2. English and soft skills by S.P. Dhanavel, Orient Black Swan
3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited.
4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

Learning Outcome

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES
SKILL BASED ELECTIVE COURSE (SBEC) – SPEAKING EFFECTIVELY

NAME OF THE SUBJECT PAPER : SPEAKING EFFECTIVELY

DURATION OF THEORY CLASSES : 16Hrs

DURATION OF PRACTICAL SESSIONS : 32Hrs

PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY THEORY EXAMINATION

DURATION OF EXAMINATION : 1 ½ Hrs.

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT: I YEAR

COURSE OUTCOMES

SPEAK-CO1: Speak and write grammatically correct sentences in English and Build fluency in English needed for clinical tasks.

LEARNING OBJECTIVES

- Advance the students intellectual curiosity, competency and skills in preparation for employment
- Develop critical thinking, creativity and effective communication

SYLLABUS

1. Communication Skills

- Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills

- Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills

- Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health

- Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

- Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation

6. Seminar presentations

- Use of computers present data and information on recent topics

LEARNING OUTCOMES

At the completion of the course, the students will-

- Develop good written and oral communication abilities
- Develop an understanding of team building and leadership skills
- Develop knowledge regarding capacities needed to work independently within diverse work environments

TEXT BOOKS

1. Professional Writing Skills, A self-paced training Programme by Janis Fisher Chan and Diane Lutovich.

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan.

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES
SKILL BASED ELECTIVE COURSE (SBEC) – BASICS OF YOGA AND PRACTICE

NAME OF THE SUBJECT PAPER : BASICS OF YOGA AND PRACTICE

DURATION OF THEORY CLASSES : 16Hrs

DURATION OF PRACTICAL SESSIONS : 32Hrs

PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY THEORY EXAMINATION

DURATION OF EXAMINATION : 1 ½ Hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : IYEAR

SYLLABUS & COURSE OUTCOMES FOR BASICS OF YOGA & PRACTICE (YOGA)

YOGA CO1: Understand the respiratory system, types of breathing and benefits of meditation.

Unit	TIME(HRS)	CONTENT
1	1	Introduction to Yoga philosophy, psychology and lifestyle
2	1	A brief outline of the history of Yoga.
3	1	Cultivation of correct psychological attitudes
4	1	Asanas : Definition, Types, scope and limitations of Asanas
5	1	Pranayamas and their significance in Yogic curriculum, Types & phases of Pranayama.
6	1	Dharna and Dhyana as the keys to unlocking human potential.
7	1	Study of various aspects of Yoga: Kriyas, Bandhas, Mudras
8	1	Yoga defined as ―Integration‖ and ―Harmony‖
9	1	Meaning of the term ―Positive Health‖
10	1	Yoga, a tool to restore homeostasis
11	1	Integration of Yoga into Health Professions Education
12	1	Order of teaching the Yogic practices; Do‘s and Dont‘s of specific Yoga techniques.
13	2	Applied aspects of Yoga in various human activities like therapeutics, education and sports
14	2	Introduction to yogic concept of health and disease

Unit 15: Introduction to Yogic techniques: Methods and practices (32 hours)
Asanas (26 hrs):

- Aruna Surya Namaskar
- Ardha – Padmasana/Padmasana
- ArdhakatiChakrasana
- PadaHasta
- PavanaMuktasana
- Trikona
- Navasana
- Ardha –Shalabhasana
- Shalabhasana
- Makarasana
- Bhujangasana
- Dhanurasana
- Vakrasana
- Vrikshasana
- Ushtrasana
- Gomukasana
- Yoga Mudra.
- Natarajasana
- Chakra sana
- Sarvangasana
- Matsyasana
- Halasana
- Shavasana

Pranayama (6 hrs)

- Vibhaga Pranayama
- Pranava Pranayama
- Savitri Pranayama
- Chandra and SuryaNadi Pranayama
- Nadi–Shuddhi
- Sheetali and Sitkari

TEXT BOOKS

- Dayanidy G and Bhavanani AB. CYTER Practical Book. Pondicherry, India: Dhivyananda Creations;2016.
- A primer of Yoga Theory – Dr Ananda Balayogi Bhavanani, Dhivyananda Creations,Pondicherry-13
- Fundamentals of Yoga History- Compilation by Meena Ramanathan
- Basic Hatha Yoga lessons (Tamil) – Dr Ananda Balayogi and Meena Ramanathan, Puducherry

BOOKS RECOMMENDED FOR STUDIES AND REFERENCE

1. A yogic approach to stress-Dr Ananda Balayogi Bhavanani, Ananda Ashram, Pondicherry
2. Asana, Pranayama, Mudra and Bandha. Swami Satyananda, Bihar School of Yoga,Monger
3. ASANAS : WHY? AND HOW? – byShri. O.P. Tiwari.Kaivalyadhama,Lonavla.
4. Hatha Yoga practices of the Gitananda tradition by Dr Ananda Balayogi Bhavanani
5. Ramanathan Meena. Applied Yoga: Applications of Yoga in Different Fields of Human Activities. 3rdEd; Pondicherry, India: Sri BalajiVidyapeeth;2018
6. PRANAYAMA – by Swami Kuvalayananda. Kaivalyadhama, Lonavla.
7. Yoga and sports- Swami Gitananda and Meenakshi Devi, Ananda Ashram, Pondicherry.

SYLLABUS FOR I YEAR

B.Sc. ALLIED HEALTH SCIENCES

GENERIC ELECTIVE COURSE (GEC) – BASICS OF HOSPITAL ADMINISTRATION

NAME OF THE SUBJECT PAPER : BASICS OF HOSPITAL ADMINISTRATION

DURATION OF THEORY CLASSES : 64Hrs

THEORY EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY PRACTICAL EXAMINATION

DURATION OF THEORY EXAMINATION : 1 ½ HRS

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : I YEAR

COURSE OUTCOMES

HSM CO1: To familiarizes students with the basics concepts, policies of hospital management regarding the occupational safety, organizational behavior & quality management.

COURSE OBJECTIVES

- To provide orientation about the hospital functions
- To familiarize students with the basics concepts of hospital management

THEORY (DURATION 64 Hours)

UNIT: I ORGANISATION OF A HOSPITAL AND ITS DEPARTMENTS

1. Organogram
2. Vision, Mission &Values, Logo
3. Patient Service Points – Clinical & Non-Clinical (OPD‘s, A&E, MHC, Wards, ICU‘s, OT‘s, etc.)
4. Scope of Services (Medical &Supportive Services)

UNIT: II HOSPITAL POLICIES & PROCEDURES

1. Registration Process
2. OP/IP Billing
3. Admission Process
4. Discharge Process
5. Financial counseling
6. Visitors Policy
7. Feedback forms.

UNIT: III MEDICAL RECORS MANAGEMENT/LEGAL ASPECTS

1. Types of Medico legal cases 2.SOP‘s for handling MLC

3. Medical Records -Forms, consents, registers used in hospitals

UNIT: IV QUALITY MANAGEMENT

1. Quality – Brief Introduction
2. Code of Conduct for health care professionals
3. Patient rights &responsibilities
4. Incident Reporting
5. Quality indicators
6. List of Licenses to be obtained to run a Hospital College
7. Accreditation–ISO/NABH/JCI

UNIT: VOCCUPATIONAL SAFETY

1. Biomedical Waste Management
2. Hospital Spill Management
3. Usage of PPE
4. Emergency Codes
5. Fire Safety Management
6. Hospital Infection Control

UNIT: VI ORGANISATIONAL BEHAVIOUR

1. Communication with patients/health care professionals
2. Grooming standards
3. Time Management
4. Grievance Handling, Interdisciplinary Committee
5. Leadership

LEARNING OUTCOMES

Students will have an overview of hospital functions, processes and patient management.

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES
GENERIC ELECTIVE COURSE (GEC) – COUNSELING AND GUIDANCE

NAME OF THE SUBJECT PAPER	**: COUNSELING AND GUIDANCE**
DURATION OF THEORY CLASSES	**: 64Hrs.**
EXAMINATION	**: 50 Marks (40 U +10IA)**
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	**: 1 ½ Hrs.**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: I YEAR**

COURSE OUTCOMES

CG CO1: To assess a person's needs and understand their personal characteristics that will help in personal growth, wellbeing and improving their relationships with others.

LEARNING OBJECTIVES

- To understand theoretical foundations of counseling psychology
- To examine briefly the major perspectives of Counselling and to apply based on the client's needs
- Toassessone_sownneedsandmotivationsandpersonalcharacteristicsthatwill help in personal growth and wellbeing.
- To understand basic counseling skills as practiced by an effective counsellor.
- To discuss special settings and populations where Counselling could be effectively used.
- To explore ethical and legal issues for the practice of counseling profession.

SYLLABUS

UNIT I:

Introduction and definition of Counselling and Guidance, Counsellor Preparation, Qualifications, Qualities, Legal and Professional ethics

UNIT- II:

Different approaches to counselling, goals in counselling, role and functions of the counsellor.

UNIT- III:

Micro skills in Counselling- relationship building strategies and methods: Opening techniques, attending skills- verbal and non-verbal communication, Listening skills:

Open questions and closed questions, Encouragement, Paraphrasing, Reflection, Summarization, influencing skills-Reframing, genuineness and Self-disclosure.

UNIT-IV:

Macro skills in Counselling, empathy, advanced empathy, Confrontation & challenging, Resistance, transference and counter-transference

UNIT-V:

Counselling situations and Counselling across life-span.

Learning Outcome

At the end of this course, the students will be able to:

Demonstrate basic knowledge in counseling (concepts, theories, ethical issues, basic skills, etc.)

SYLLABUS FOR I YEAR
B.Sc. ALLIED HEALTH SCIENCES
GENERIC ELECTIVE COURSE (GEC) – LIFESTYLE DISORDERS

NAME OF THE SUBJECT PAPER : LIFESTYLE DISORDERS

DURATION OF THEORY CLASSES : 64Hrs

EXAMINATION : 50 Marks (40 U +10IA)

NO UNIVERSITY PRACTICAL EXAMINATION

DURATION OF THEORY EXAMINATION : 1 ½ Hrs.

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : I YEAR

COURSE OUTCOMES

LD CO1: To understand the relevance, significance and implications of lifestyle disorders for the betterment of human life quality.

THEORY (64 Hours)

UNIT I Modern Life style disorders

Desk bound and sleeping habits, junk food, anxiety. Food poisoning, Acidity.

UNIT II Dietary disorders

Food groups and concept of a balanced diet, obesity, metabolic syndrome, hypertension- their causes and prevention through dietary and lifestyle modifications

UNIT III Social health problems

Smoking, alcoholism, drug dependence and Acquired Immune Deficiency Syndrome (AIDS).

UNIT IV Gastrointestinal disorders

Stomach disorders-Gastritis, Ulcer, Amoebiasis, Constipation, piles
Common ailment- cold, cough, fevers, diarrhea, constipation- their causes and dietary

LEARNING OUTCOMES

To understand the relevance, significance and implications of lifestyle disorders for the betterment of human life quality

Text Books

1. Text book of Clinical Biochemistry-Carl.A. Burtis and EdwardR.Ashwood
2. Text Book of Medical Biochemistry–Dr.M.N.Chatterjee and Rane Shinde

Reference Books

1. P. Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence Biochemistry with Clinical Correlation- Thomas M.Devl

II YEAR

B.Sc – CLINICAL NUTRITION
FACULTY OF ALLIED HEALTH SCIENCES
SRI BALAJI VIDYAPEETH
(Deemed to be University)
Accredited by NAAC with 'A' Grade

II- YEAR

CORE SUBJECTS

1. Nutritional biochemistry
2. Food science
3. Food microbiology
4. Basic dietetics

ELECTIVES

Ability Enhancement compulsory course (AECC)

1. Environmental studies

Skill enhancement course (SEC) – Choose any TWO

1. Good Clinical Laboratory practice
2. Computer Applications
3. Library and E-resource
4. Public Health and Hygiene

Generic Elective Course (GEC) – Choose any ONE

1. Basic Psychology
2. Sociology
3. Entrepreneurship essentials

AHS Course Content Second year B.Sc. Clinical Nutrition (CN)

Faculty code	Category	Course Title	Hours					Credits				
AHS	**Core theory CN**	**Subjects**	**Theory**	**Practical**	**Tutorials**	**Clinical training**	**Total hours**	**Lecture**	**Practical**	**Tutorials**	**Clinical training**	**Total credits**
AHS	CN-5	Nutritional Biochemistry	64	64				4	2			6
AHS	CN-6	Food science	64	64				4	2			6
AHS	CN-7	Food microbiology	80		32			5		1		6
AHS	CN-8	Basic dietetics	80		32			5		1		6
AHS	CN-CT 1	Clinical Training CN 5 to 8				192					6	6
AHS	AECC	Environmental Science	16	32				1	1			2
AHS	SEC – 1-3	Student‘s choice	16	32				1	1			2
AHS	SEC – 1-3	Student‘s choice	16	32				1	1			2
AHS	GEC - 1-3	Student‘s choice	64					4				4
			400	**224**	**64**	**192**	**880**	**25**	**7**	**2**	**6**	**40**

SCHEME OF EXAMINATION

Papers	Subject	Theory		Practical		Theory	Practical	Grand total 1100	Min marks to pass % (550)
		UE	IA	UE	IA	UIA*	UIA*		
CN -5	Nutritional Biochemistry	80	20	80	20			200	100
CN -6	Food science	80	20	80	20			200	100
CN -7	Food microbiology	80	20					100	50
CN -8	Basic dietetics	80	20					100	50
CN-CT 1	Clinical Training CN 5 to 8						100	100	50
AECC	Ability enhancement Compulsory Course – Environmental Science	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
GEC	Generic elective	80	20					100	50

For all elective course, 40 marks for university theory and Practical cum Viva examination & 10 marks as Internal Assessment = 50 marks which will be converted to 100 marks in the transcript.

NUTRITIONAL BIOCHEMISTRY

PAPER CN 5: NUTRITIONAL BIOCHEMISTRY

NAME OF THE SUBJECT PAPER	**: NUTRITIONAL BIOCHEMISTRY**
DURATION OF THEORY CLASSES	**: 64 HOURS**
DURATION OF PRACTICAL CLASSES	**: 64 HOURS**
UNIVERSITY THEORY EXAMINATION	**: 100 MARKS (80 U+ 20 IA)**
UNIVERSITYS PRACTICAL EXAMINATION	**: 100 MARKS (80U+20 IA)**
DURATION OF THEORY EXAMINATION	**: 3 HOURS**

COURSE DESCRIPTION

This course provides introduction to biochemistry of macro and micronutrients with a limited focus on medical aspects of nutrients deficiencies and metabolism. It also focuses on chemical structures, chemical properties, metabolism and function of macro and micronutrients.

OBJECTIVES

- To understand chemical structures and chemical properties of macro and micro nutrients.
- To study the processes involved in digestion and absorption of macro and micro nutrients
- Major pathways for metabolism of nutrients and key mechanism regulating these pathways.
- Essential functions of nutrients in human cells and tissues.
- Pathologies associated with nutrient deficiencies, nutrient, toxicities and with common metabolic disorders.

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship**.**

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in

food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation, maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system‘s approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian. The students should know the role of the information communication technologies in agriculture and allied sector Should be able to familiar with different extensions tools also know the Information Communication based technologies to successfully run any extension based projects

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling & Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

At the end of the course, students will be able to...

NB-AHS-CO1: To know the importance of nutrition.

NB-AHS-CO2: Summarize the deficiencies of nutrition

NB-AHS-CO3: Major pathways for metabolism of nutrients and key mechanism regulating this pathway.

NB-AHS-CO4: Essential functions of nutrients in human cells and tissues.

NB-AHS-CO5: Pathologies associated with nutrient deficiencies, nutrient, toxicitiesand with common metabolic disorders.

NB-AHS-CO6: It will be exposed classification, biochemical and required quantities of nutrients in diet

NB-AHS-CO7: It helps students to understand the nutritive roles of macro and micro nutrients

COURSE CONTENT

UNIT	TITLE	THEORY (64 HOURS)
I	**ENERGY** • Unit of energy, sources, determination of energy expenditure, energy value of foods • Measurement of total energy requirement, Resting energy expenditure, Physical Activity Level (PAL), • Factors affecting PAL, Basal Metabolic Rate, determination of BMR, SDA.	10
II	**BIOLOGICAL OXIDATION** • Electron transport chain – oxidation phosphorylation - inhibitors, Uncouplers, Brown adipose tissue & its significance	8
III	**METABOLISM OF MACRONUTRIENTS, INBORN ERRORS WITH NUTRITIONAL ASPECTS** **(a) CARBOHYDRATE** • Digestion and absorption, glucose transporters, glycolysis pathway, regulation and its energetics • TCA cycle and its energetics • Gluconeogenesis pathway and its regulation, Glycogen metabolism (glycogenesis, glycogenolysis) and its regulation • Glycogen storage disease, Significance of HMP Shunt pathway • Fructose and galactose metabolism and its inborn errors • Blood glucose regulation and GTT **(b) LIPIDS** • Digestion and absorption, oxidation of fatty acids, metabolism of ketone bodies and its biological significance, derivatives of cholesterol, lipoprotein metabolism and dyslipoproteinemia, lipid storage disorders. **(c) PROTEINS AND AMINOACIDS** • Digestion and absorption- production, transport and detoxification of ammonia with hyper ammonia, aromatic amino acid metabolism- phenylalanine and tyrosine metabolism and its inborn errors • Sulphur containing amino acid metabolism and its inborn errors, branched chain amino acid metabolism and its inborn errors.	20
IV	**ORGAN FUNCTION TESTS** • Liver functions tests • renal functions tests • Thyroid function tests	8
V	**WATER AND ELECTROLYTES** • Water, Sodium, Potassium: Distribution of water and Electrolytes, Functions, Sources, Requirements • Sodium - Potassium balance, Mechanism of Water Regulation • Water intoxication and dehydration, Water and electrolyte balance.	10

VI	**VITAMINS AND MINERALS** **(a) FAT SOLUBLE AND WATER SOLUBLE VITAMINS** • Chemistry, sources, RDA, functions, metabolism, deficiency manifestations, assessment of vitamin status and toxicity. **(b) MICRO AND MACRO MINERALS** • Sources, RDA, functions, metabolism, deficiency manifestations, assessment of mineral status and toxicity.	8

PRACTICALS (64 HOURS)

- Color reactions of carbohydrate.
- Color reactions of protein and amino acids.
- Identification of unknown substance present in a given sample (carbohydrate and proteins).
- Urine analysis- glucose, ketone bodies, blood, proteins, pH, specific gravity.
- Heme derivatives.
- Colorimeter- principles, components, applications.
- Quantitative analysis of Glucose, Total Protein, urea, creatinine
- Estimation of calcium in milk.
- Identification of calcium, iron and vitamins in given sample.

DEMONSTRATION

- Electrophoresis
- Paper Chromatography
- pH meter

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

TEXT BOOKS

1. Nutritional Biochemistry 1995, S. Ramakrishnan and S.V. Rao.
2. Vasudevan DM and Sreekumari S (2016), Textbook of biochemistry for medical students.
3. Lecture notes in Biochemistry 1984, J.K. Kandlish.
4. Text book of Biochemistry with clinical correlations 1997, T.N. Devlin.
5. Harper‘s Biochemistry, 1996, R.K. Murray et.al.

BLUE PRINT FOR PAPER 5 -NUTRIITONAL BIOCHEMISTRY

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Energy	09	11%		1	1
II	Biological oxidation	09	11%		1	1+1*
III	Metabolism of macro nutrients wit inborn error metabolism carbohydrate	32	43%	1		1
	lipids				1*	2
	Protein & aminoacids			1		1
IV	Organic function test	09	11%	1*	1	1
V	Water and electrolytes	12	15%		1	2
VI	Vitamins & minerals- Fat soluble &water soluble	09	11%	1*		1*
	Micro & macro minerals				1	1
Note: * represents question of choice						

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12

TOTAL = Theory 80 + IA 20 = 100 marks

PAPER CN-5 - NUTRITIONAL BIOCHEMISTRY
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

A) Long Answer Question (Any two) **(2x10=20)**

1. a. Enumerate the steps involved in Glycolysis with help of a flow chart. Explain energetic of anaerobic glycolysis.(or)

b. Define Vitamin A under the following headings- Sources, RDA, Absorption, and Transport. Explain Wald's Visula Cycle and deficiency manifestation of Vitamin

2. a. Explain how carbohydrates are digested and absorbed in the body with suitable illustration. Add a note on glucose transporters (or)

b. Explain the reactions of citric acid cycle with suitable illustration? Mention about the energetics involved in TCA cycle. List any two inhibitors of TCA cycle with their mechanism.

B) Short Answer (Answer any FIVE) **(5x6=30)**

1. Write the reference range for fasting plasma glucose in a healthy individual. List the hormones and their effects on regulation of blood glucose.
2. Draw a schematic diagram of Electron transport chain with inhibitors.
3. Name the ketone bodies. Describe the synthesis of ketone bodies.
4. How will you differentiate the types of jaundice by various biochemical tests?
5. Describe hormonal regulation of electrolytes balance in the body.
6. What is fluorosis? Mention the normal level.

C) Very Short Answer (Any Ten) **(10x3=30)**

1. Define SDA and mention its significance
2. Define uncoulplers and mention two suitable examples for uncouplers
3. List any TWO biologically important products synthesized from Tyrosine
4. Name the compounds derived from cholesterol
5. Mention the biochemical defect in a) Galactosemia b) Von- Gerk disease
6. Define creatinine clearance. Mention the normal range.
7. Mention the reference range of serum potassium and sodium level.
8. Mention any two functions of selenium
9. What is Pellagra?
10. What is Beriberi?
11. List any two significance of HMP shunt pathway.
12. Mention any two functions of Vitamin K

FOOD SCIENCE

PAPER CN- 6: FOOD SCIENCE

NAME OF THE SUBJECT PAPER	**: FOOD SCIENCE**
DURATION OF THEORY CLASSES	**: 64 HOURS**
DURATION OF PRACTICAL CLASSES	**: 64 HOURS**
UNIVERSITY THEORY EXAMINATION	**: 100 MARKS (80 U+ 20 IA)**
UNIVERSITYS PRACTICAL EXAMINATION	**: 100 MARKS (80U+20 IA)**
DURATION OF THEORY EXAMINATION	**: 3 HOURS**

COURSE DESCRIPTION

This course deals with fundamental biological, chemical, and physical scientific principles associated with study of foods composition, nutrition, food additives, food safety, food toxicology, and food processing and product development.

OBJECTIVES

- To discuss about the composition of food and method of preparation
- To aid in promoting interactions with the food constituents and reaction, effects on cookery
- To promote the knowledge of food product development with different methods of cookery
- To evaluate the different cooking and preliminary preparation and how to know retention of nutrients during processing.
- To discuss about the detection of toxic and adulterants of some common food sources.

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship**.**

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge

to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation**,** maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system‘s approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling & Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

At the end of the course, students will be able to...

FS-AHS-CO1: To discuss about the composition of food and method of preparation

FS-AHS-CO2: To aid in promoting interactions with the food constituents and reaction, effects on cookery

FS-AHS-CO3: To promote the knowledge of food product development with different methods of cookery

FS-AHS-CO4: To evaluate the different cooking and preliminary preparation and how to know retention of nutrients during processing.

FS-AHS-CO5: To discuss about the detection of toxic and adulterants of some common food sources.

FS-AHS-CO6: Understand the principles and current practices of processing techniques and the effects of processing parameters on product quality

FS-AHS-CO7: Be able to apply the principles of food science to control and assure the quality of food products

COURE CONTENT

UNIT	TITLE	THEORY (64 HOURS)
I	**INTRODUCTION TO FOOD SCIENCE** • Definition of food, functions of food, nutritional classification of foods – Energy yielding, Body Building and protective foods, classification of Food groups- ICMR five food group, basic 3, basic 4, basic 7, basic eleven and food pyramid. • Role of nutrition during disaster management/ special scenario. • Cooking- Definition, Objectives, Preliminary preparations, Methods of cooking –Moist heat methods, Dry heat methods, Microwave cooking, Solar cooking -advantages and disadvantages. Loss of nutrients during cooking.	**10**
II	**CEREALS AND PULSES** **(a) CEREALS** • Composition, Nutritive value and processing of wheat, rice, barley, rye, oats, millets and its products , convenient cereal products. • Cereal cooking and fermentations: Gluten formation, Factors that affect the gluten formation, Gelatinization and Factors affecting gelatinization and dextrinisation. Effect of cooking on the nutritive value of cereals. **(b) PULSES** • Composition and nutritive value, Digestibility of pulses, Processing, Toxic constituents, Pulses cookery – Effects of cooking, Factors affecting cooking quality, Role of pulses in cookery.	**15**
III	**VEGETABLES AND FRUITS** **(a)VEGETABLES** • Vegetables - Composition and Nutritive value, Pigments- Water soluble pigments – Anthocyanins, Betalins, Anthoxanthins, • Water insoluble pigments – Chlorophyll, Carotenoids. Enzymes, Flavour compounds and Organic acids of vegetables- Selection and Storage. Vegetable cookery –loss of nutrients and its prevention. **(b) FRUITS** • Composition and nutritive value, selection, post-harvest changes and storage, Ripening of fruits, Enzymatic and non-enzymatic browning and its prevention. Fruits cookery –loss of nutrients and its prevention.	**12**
IV	**(a) MILK AND MEAT PRODUCTS** **(a) MILK AND MILK PRODUCTS** • Composition, Nutritive value, preservation and Processing- classification, homogenization, pasteurization and freezing, Types, of Fermented and non-fermented milk products, Milk cookery - effect of heat, acid, enzymes, • Role of milk and milk products in cookery **(b) MEAT AND MEAT PRODUCTS**	**15**

	• **Meat: Classification**, structure, Composition and Nutritive value, Post mortem changes, ageing, smoking, Tenderizing, Curing, Selection and storage, Meat cookery- factors affecting the cooking quality of meat, changes during cooking. • **Poultry:** Classification, Processing, Composition and nutritive value, Storage. • **Sea foods: Classification**, Composition and Nutritive value, Selection, Storage • **Egg:** Structure, Composition and Nutritive value, Egg quality and evaluation, Egg cookery- effect of heat, effect of sugar, salt, acid and starch, Role of egg in cookery. Eggwhite foams, Iron sulphide formation	
V	**SUGAR AND RELATED PRODUCTS & NUTS AND OIL SEEDS**: Composition and Nutritive value, Specific nuts and oilseeds Toxic constituents. **(a) FATS AND OILS** • Composition and Nutritive value, Specific fats and oils, Refining and processing of edible oils, storage, Emulsions, Rancidity- Definition, types, prevention. Smoking point and Flash point. Role of fat and oil in cooking. **(b) SUGAR AND RELATED PRODUCTS** • Nutritive value, Properties, Sugar related products, Sugar cookery – Stages, Crystallization – factors affecting crystallization. Types of candies Crystalline – Fondant, Fudge. Non-crystalline – Brittle, Caramel. Role of sugar in cookery. **(c) SPICES, HERBS AND BEVERAGES** • **Spices:** Functions of spices, types, role of spices in cookery and their medicinal value. • **Herbs:** Types of herbs used in cooking and its characteristics and common uses. • **Beverages: -** Classification, nutritive value, Tea, Coffee, Chocolate, fruit beverages, Milk beverages, Carbonated beverages, Malted beverages, Non-alcoholic beverages and alcoholic beverages.	**12**

PRACTICALS (64 HOURS)

1. Detection of toxins and adulterants of some of the common foods.
2. Grouping of foods – Basic 4,5,7 and 11 b) Measuring of food – Solids, liquids and butter.
3. Sugar and Jaggery – Experimental cookery.
4. Different stages of crystallization of sugar and jaggery, preparation of candy, fondant, sweets.
5. Cereals and cereal products:

a) Experimental cookery of cereal: steaming, boiling and pressure cooking. Separation of gluten content of wheat.
b) Preparations – cereal based food items

c) Field visit
6. Pulses:
a) Experimental cookery of dhal – soaked, unsoaked, sprouted; effect of cooking dhal Sin hard water, soft water and with baking soda.
b) Preparations: pulses based food items
7. Vegetables and Fruits:
a) Experimental cookery
b) Vegetables& fruits – Preparations: Vegetable and fruits based food items.
8. Milk and Milk products:
a). Experimental cookery – coagulation of milk proteins
b). Preparation – milk based food items
c) Field visit
9. Egg:
a) Experimental cookery – Factors affecting coagulation of egg protein and foaming.
b) Preparation – egg based food items.
13. Fats and oils:
a) Experimental cookery – Determination of smoking point of common fats and oils.
b) Field visit
14. Beverages:
15. Preparation of coffee, tea and fruit juices.

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

TEXT BOOKS

1. Clarke. D, Herbert. E (1992).). Botton. E.R, (1999), Oils, Fats and Fatty Foods, their practical application, Biotech Publishing Company.
2. EcklesC.H, Combs. W.B, Macy. H (1998). Milk and Milk Products, MC Graw Hill Companies.
3. Gopalan. C, Ramashathri V.V, Balasubramanyan S.C (1996), Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR.
4. Manay N.S, Shadaksharaswamy. M (2005), Foods – Facts and Principles. New Age International Publishers.
5. Matz. S.A (1996). The Chemistry and Technology of Cereals and Food of Feed; Chapman and Hall, New York.
6. Peckham C.G, Greaves H.T (1979). Foundation of food preparations, Mac Millan Publishing Co, New Delhi.
7. Srilakshmi B. Food Science, New Age International (P) Ltd Publishers, third edition,

2005.
8. Swaminathan M. Essentials of Food and Nutrition, Vol I & II Bappo Publications, 1996.
9. Swaminathan M., Food Science, Chemistry and Experimental foods, Bappo Publishers company Ltd, 1997.

BLUE PRINT FOR PAPER 6- FOOD SCIENCE

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Introduction to food science	16	20%	1	1*	2+1*
II	Cereals	22	28%	1		1
	Pulses				1	1
III	Vegetables	18	23%	1*	1	1
	Fruits				1	1
IV	Milk and milk products	09	11%	1*		1*
	Meat products				1	1
V	Sugar related products	15	19%			1
	Nuts and oilseeds					1
	Spices and beverages				1	1
Note: * represents question of choice						

The duration of Examination (University) is Three (3) hours.
The total marks for the University Examination will be 100 marks.
Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)
Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)
Very Short Answer Questions : 10 X3 = 30 marks (Choice 10 out of 12)
TOTAL = Theory 80 + IA 20 = 100 marks

PAPER CN -6 FOOD SCIENCE
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

(A) Long Answer Question (Any one) **(2x10=20)**

1. a) write the complete structure of wheat

(Or)

b)Explain detail about extruded product

2. a)Explain the processing and storage method of different types of poultry.

(Or)

b) Write the role of milk in the preparation industrial foods

(B) Short Answer (Answer any five) **(5x6=30)**

1. Explain basic five food groups
2. Write the functions of food
3. Explain the structure and composition of Rice with diagram.
4. Enumerate the changes during boiling with vinegar and cooking soda in green leafy vegetable cookery.
5. Explain the preservative method of fruits and vegetables
6. Explain oil refining process

(C) Very Short Answer (Any Ten) **(10x3=30)**

1. Objectives of cooking.
2. List the merits and demerits of boiling.
3. What is meant by extruded foods?
4. Define ripening.
5. Write two types of preservation used to preserve the rancidity of the oil.
6. Define gelatinization
7. What is Pasteurization
8. What is meant by rigor Moris?
9. Explain the process of iron Sulphite formation in egg.
10. List any two artificial sweeteners.
11. Write any two medicinal values of Indian spices.
12. Explain the reason behind how the coffee acting as a refresher.

FOOD MICROBIOLOGY

PAPER CN- 7: FOOD MICROBIOLOGY

NAME OF THE SUBJECT PAPER	**: FOOD MICROBIOLOGY**
DURATION OF THEORY CLASSES	**: 80 hrs**
DURATION OF TUTORIAL CLASSESS	**: 32 hrs**
UNIVERSITY THEORY EXAMINATION	**: 100 marks (80 U + 20IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: Nil**
DURATION OF THEORY EXAMINATION	**: 3 hrs**

COURSE DESCRIPTION

This course briefly discusses the pathogenic and spoilage microorganisms in foods. Influence of the food system on the growth and survival of microorganism. To learn the beneficial microorganism and control of microorganism in effect of food spoilage and preservation methods.

OBJECTIVES

- To identify the important pathogens spoilage microorganism in foods the conditions under which they grow
- Identify the condition under which the important pathogens are inactivated, killed or made harmless in foods
- Utilize laboratory techniques to identify microorganism in foods
- Understand the principles involving food preservation via fermentation process
- Understand the role and significance of microbial inactivation, adaptation
- And environmental factors on growth response of microorganism in various environment
- Able to identify the conditions including sanitation practices, under which the important pathogens and spoilage microorganism are commonly inactivated
- Killed or made harmless in foods

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship.

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation

and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation, maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system‘s approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian. The students should know the role of the information communication technologies in agriculture and allied sector Should be able to familiar with different extensions tools also know the Information Communication based technologies to successfully run any extension based projects

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling & Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

CO1: Discuss the interactions between microorganisms and the food environment, and factors influencing their growth and survival.

CO2: Know the significance and activities of microorganisms in food.

CO3: Learn the characteristics of foodborne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.

CO4: To know the effects of fermentation in food production and how it influences the microbiological quality and status of the food product.

CO5: Discuss the microbiology of different types of food commodities

CO6: Discuss the rationale for the use of standard methods and procedures for the microbiological analysis of food.

COURSE CONTENT

UNIT	TITLE	THEORY+TUTORIAL (80+32HOURS)
I	**INTRODUCTION AND IMPORTANCE TO FOOD MICROBIOLOGY** • Introduction to importance of micro -organisms in foods – Bacteria, yeast, Virus, Fungi Classification and their role in food industry. Food handling method.	**15+6**
II	**FOOD TOXICITY&CLASSIFICATION OF TOXINS** **(a) Natural toxins in food** • Natural toxins of importance in food- toxins of plant and animal origin; microbial toxins (e.g., bacterial toxins, fungal toxins and Algal toxins), natural occurrence, toxicity and significance, determination of toxicants in foods and their preservation. **(b) Food allergies and sensitivities** • Natural sources and chemistry of food allergens, true/untrue food allergies, handling of food allergies, food sensitivities (anaphylactic reactions, metabolic food disorders and idiosyncratic reactions), Safety of children consumables, GM foods -Safety, toxicity and allergenisity.	**12+7**
III	**CULTIVATION OF MICROORGANISMS** • Nutritional requirements of microorganisms, types of media used. Primary sources of microorganisms in foods, physical and chemical methods used in the destruction of microorganisms (Sterilization and Disinfection).	**14+10**
IV	**FOOD CONTAMINATION & PRESERVATION** • Extrinsic and intrinsic parameters affecting growth and survival of microbes, use of high and low temperature, dehydration, freezing, freeze drying, Irradiation and preservatives in food preservation.	**19+4**
V	**FOOD SPOILAGE AND FOODS BORNE HAZARDS** (a)**CONTAMINATION AND SPOILAGE OF DIFFERENT KINDS OF FOODS AND THEIR PREVENTION**. • Cereal and cereal products, vegetables and fruits, fish and other sea foods, meat and meat products, eggs and poultry, milk and milk products, canned foods. (b) **PUBLIC HEALTH HAZARDS DUE TO CONTAMINATED FOODS**. • Foods borne infections, diseases and toxications – symptoms mode and sources of transmission and methods of prevention investigation and detection of food borne disease outbreak and international and national agencies to control food hazards. Food acts in India.	**20+5**

TEXT BOOKS

1. Frazier, WC and Westholf, DC (1988): Fourth Edition, Food Microbiology, McGraw Hill Inc.
2. Jay James, M (1986): Third Edition, Modern Food Microbiology, Van No strand Reinhold company Inc.
3. Pelczar, MI and Reid RD (1978): Microbiology McGraw Hill Book Company, New York.
4. Benson Harold, J (1990) Microbiological applications, Wn C Brown Publishers, USA. Collins, C H and Lyne, PM (1976): Microbiological Methods, Butters worth, London

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments

BLUE PRINT FOR PAPER CN 7-FOOD MICROBIOLOGY

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Introduction to food microbiology	6	8%		1	1*
II	Food toxicity and classification of toxins (a)Natural toxins in food	22	28%	1	1*	1*
	(b) Food allergies and sensitivities				1	2
III	Cultivation of microorganism	12	15%		1	2
IV	Food contaminants and preservation	6	8%	1*		2
V	Food spoilage and food hazards (a)contamination of spoilage of different foods and their prevention	34	43%	1	1	2

	(b)Public health hazards due to contaminated foods			1*	1	2
Note: * represents question of choice						

The duration of Examination (University) is Three (3) hours.
The total marks for the University Examination will be 100 marks
Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)
Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)
Very Short Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12)
TOTAL = Theory 80 + IA 20 = 100 marks

PAPER CN 7 - FOOD MICROBIOLOGY
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

(A) Long Answer Question (Any one) **(2x20=10)**

1. a) Explain the extrinsic and intrinsic parameter affecting growth and survival of microbes

(OR)

b) Explain the methods used in the destruction of micro organisms

2. a) Write determination of hazards of HACCP method

(Or)

b) Classify the natural toxins present in the food

(B) Short Answer (Answer any five) **(5x6=30)**

1. Explain the importance of microorganisms in foods
2. Types of bacteria used in food industry
3. Write the determination of toxins in food and their management
4. Write the physical and chemical method for the destruction of microorganism.
5. Role of temperature in controlling microorganism
6. Write the objectives of food preservation

(C) Very Short Answer (Any Ten) **(10x3=30)**

1. Define food toxicity.
2. Write any two examples for GM foods.
3. List any four media used for microorganism cultivation
4. Write the nutrients required for the growth of microorganism
5. Role of dehydration in destruction of microorganism
6. Write any two method food preservation
7. What is a perishable food?
8. Write any two methods to analyze the quality of egg
9. Define HACCP
10. What is food borne disease?
11. Objectives of FSSAI
12. Role of moisture in growth of microorganism

BASIC DIETETICS

PAPER CN -8 : BASIC DIETETICS

NAME OF THE SUBJECT PAPER	**: BASIC DIETETICS**
DURATION OF THEORY CLASSES	**: 80 HRS**
DURATION OF PRACTICAL SESSIONS	**: 32 HRS**
UNIVERSITY THEORY EXAMINATION	**: 100 MARKS (80 U + 20 IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: NIL**
DURATION OF THEORY EXAMINATION	**: 3 hrs**

COURSE DESCRIPTION

This course develop specific nutrition related practices or behaviors to change habits that contributes to poor health, done by creating a motivation for change among people to establish desirable food and nutrition behavior for promotion and protection of good health.

OBJECTIVES

- To study the different disorder related to deficiency of nutrients and their dietary management
- To discuss the methods of menu planning with food groups for chronic disorders
- Assess the individual nutrition needs and provide education including practical tips to meet their nutrition needs
- To develop basic counseling skills as dietitian
- To train students in the field of food service management

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship**.**

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders,

practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation, maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system's approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian.

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling & Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

CO1: To study the different disorder related to deficiency of nutrients and their dietary management

CO2: To discuss the methods of menu planning with food groups for chronic disorders and able to know implication of diet under diseased condition.

CO3: Assess the individual nutrition needs and provide education including practical tips to meet their nutrition needs

CO4: To develop basic counseling skills as dietitian prescribe individualized diets

CO5: To train students in the field of food service management

CO6: To develop basic counseling skills as nutritionist

COURSE CONTENT

UNIT	TITLE	THEORYS (80 +32HOURS)
I	**INTRODUCTION TO DIETETICS** • Definition of dietetics and Diet therapy, Purpose and principles of therapeutic diets, factors considered in planning therapeutic diets , Dietician-Definition and Role of Dietician, specializations of dietician. • Routine hospital diets - regular diets, clear fluid diet, full fluid diet, soft diet, Modified diets, pre-operative diet, and post-operative diet. • Special feeding methods advantages and disadvantages	**20 + 7**
II	**DIET THERAPIES FOR INFECTIOUS DISORDER AND INBORN ERROR** • Diet in Infections and Fevers: Types, Aetiology, Metabolic changes, and Dietary management in typhoid, influenza, malaria, tuberculosis, and aids. • Aetiopathology, clinical features, complications and dietary managementFor Phenylketonuria, Maple Syrup Urine Disease (MSUD), Tyrosinemia, Homocystinuria, Galactosemia and Gout.	**20 + 7**
III	**DIET FOR OBESITY AND UNDERWEIGHT** • Diet in Obesity: Aetiology, Assessment, Types, Childhood and Adult Obesity, Complications, Management and preventive strategies of Obesity. Diet in Leanness: Aetiology, Nutritional requirement and Dietary management. Diet during eating disorders- anorexia, bulimia, binge eating.	**15 + 6**
IV	**FOOD ALLERGY AND NUTRIENT –DRU INTERACTION** • Diet in Food Allergy and food intolerance (hypersensitivity): Definition, etiology, food allergens, symptoms and diagnosis of food allergies, nutritional management, restricted diets, elimination diets and hypo-sensitization, prevention of adverse food reaction. Skin disturbances: Types, symptoms, Diagnosis and Treatment. • Drug-Nutrient Interactions,Nutrient – Nutrients interaction.	**15 + 6**
V	**NUTRITIONAL CARE FOR DEFICIENCY DISORDER** PEM, Nutritional anemia, vitamin-A deficiency, Iodine deficiency, calcium deficiency- Etiology, symptoms and dietary management	**10 + 6**

TUTORIALS (32 HOURS)

1. Standardization of common food preparations.
2. Planning, preparation and calculation of following diets:
   a) Normal diet.
   b) Liquid diet
   c) Soft diet
   d) Diet for fever
   e) Diet for obesity
   f) Preparation of blended food for enteral feeding
3. Low and medium cost diets for P.E.M., Anaemia & vitamin A deficiency.

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

TEXT BOOKS

1. Antia P. Clinical Dietetics and Nutrition, 2nd edition, Oxford university press.
2. Garrrow J.S, James W. P.T, Ralph A, (2000), Human Nutrition and Dietetics, 10th edition, Churchill Livingston, London.Guthrie H. A, Picciano M. F (1995), Human Nutrition, Mosby, St. Louis Missorie.
3. Michael Sharon (1994), Complete Nutrition, Avery publishing group. New York.
4. Mohan K. L, Krause M.V (2002), 2nd edition Food , nutrition and Diet Therapy,
5. W.S. Suders Co, Philadelphia.
6. Srilakshmi B, Dietetics (2006), New Age International Publishing Ltd.
7. Robinson C.H., Lawler M.R, Cheweth W.L; and Gaswick A.E, Normal and Therapeutic Nutrition ,17 th edition, Mac Milan Publishers.
8. Gopalan. C., and Balasubramanian, S.C. Ramasastri, B.V. and ViswesveraRao, Diet Atlas of India, ICMR, New Delhi, 1970.

BLUE PRINT FOR PAPER CN 8-BASIC DIETETICS

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Introduction to dietetics	12	15 %	1*	1	2
II	Diet therapies for infectious disorder and inborn error	22	27.5%	1	1+1*	2+1*
III	Diet for obesity and underweight	22	27.5%	1	1	2
IV	Food allergy	12	15%		1	2
V	Nutritional care for deficiency disorders	12	15%	1*	1	2+1*
Note: * represents question of choice						

PAPER CN -8: BASIC DIETETICS
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

A) Long Answer Question (Any one) **(2x10=20)**

1. a) Explain special feeding method.

(OR)

b) Write the Dietary management in typhoid

2. a) Role of exercise in reducing weight.

(OR)

b) Causes and treatment for PEM

B) Short Answer (Answer any five) **(5x6=30)**

1. Principle of diet therapy
2. Dietary management for AIDS patients
3. Causes for malaria
4. Dietary management for obesity
5. Explain the food allergy identification
6. Write briefly about eating disorders

(C) Very Short Answer (Any Ten) **(10x3=30)**

1. Define dietetics.
2. Define therapeutic diet.
3. Explain the clear fluid diet
4. Diet principle for fever?
5. Write a importance protein in underweight diet
6. Define BMI
7. List the animal food allergens
8. What is food intolerance?
9. What is lactose intolerance?
10. What is rickets?
11. Define food faddism
12. Write the skin disturbance caused because of food allergy.

II YEAR ELECTIVE COURSES

II YEAR ELECTIVE COURSE CONTENT
ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)
ENVIRONMENTAL STUDIES

NAME OF THE SUBJECT PAPER	**: ENVIRONMENTAL STUDIES**
DURATION OF THEORY CLASSES	**: 16 hrs**
DURATION OF PRACTICAL SESSIONS	**: 32 hrs**
EXAMINATION	**: 100 marks (80 U + 20 IA)**
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	**: 1 ½ hrs**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: II YEAR**

SYLLABUS

UNIT-I (Renewable and Non — renewable resources**)**

The multidisciplinary nature of environmental studies — Definition, scope and importance — Need for public awareness.

1 Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
2 Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
3 Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
4 Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
5 Energy resources: Growing energy needs, renewable and non-renewable energy resources, use of alternate energy sources, case studies.
6 Land resources: Land as a resource, land degradation, man induced Landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT-II (Ecosystems)

Concept of an ecosystem - Structure and function of an ecosystem Producers, consumers and decomposers — Energy flow in the ecosystem-Ecological succession- Food chains, food webs and ecological pyramids —Introduction, types, characteristic features, structure and function of the following ecosystem:

- Forest ecosystem
- Grassland ecosystem
- Desert ecosystem
- Aquatic ecosystems (Ponds, streams, lakes, rivers, ocean estuaries)

UNIT-III (Biodiversity and its conservation)

Introduction — Definition: genetics, species and ecosystem diversity

- Biogeographically classification of India
- Value of Biodiversity: Consumptive use, productive use, social, ethical aesthetic and option values

- Biodiversity at global, national and local levels
- India as a mega- diversity nation
- Hot-spots of biodiversity-Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

UNIT-IV (Environmental Pollution)

Definition- causes, effects and control measures of:

- Air pollution
- Water pollution
- Soil pollution
- Marine pollution
- Noise pollution
- Thermal pollution
- Nuclear pollution
- Solid waste Management: causes, effects and control measures of urban and industrial wastes — role of an individual in prevention of pollution —Pollution case studies — Disaster management: floods, earthquake, cyclone and landslides.

UNIT-V

Social Issues and the Environment: From unsustainable to sustainable development — Urban problems and related to energy — Water conservation, rain water harvesting, watershed management —Resettlement and rehabilitation of people; its problems and concerns. Case studies - Environmental ethics: issues and possible solutions climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.

- Wasteland reclamation — Consumerism and waste products —Environmental Protection Act — Air (Prevention and Control of Pollution) Act — Water (Prevention and control of Pollution) Act — Wildlife Protection Act — Forest Conservation Act - Issues involved in enforcement environmental legislation — Public awareness
- Human Population and the Environment: Population growth, variation among nations — Population explosion — Family welfare Programmes —Environment and human health- Human Rights - Value Education- HIV/ AIDS - Women and Child Welfare- Role of Information Technology in Environment and Human Health — Case Studies.

FIELD WORK

1. Visit to local area to document environmental assets- river/ forest/ grassland / hill / mountain
2. Visit to a local polluted site - Urban / Rural / Industrial / Agricultural
3. Study of common plants, insects, birds
4. Study of simple ecosystems- pond, river, hill slopes, etc.

TEXT BOOKS RECOMMENDED

1. Agarwal, K.C. Environmental Science, Nidi Publishers.
2. BharuchaErach, The Biodiversity of India, Mapin Publication.
3. Brunner RC, Hazardous waste incineration, McGraw Hill Publishers.
4. Iaclhav H, Environmental Protection and Laws, Himalaya Publication.
5. Odum EP, fundamentals of Ecology, WB Sannders Publication.

TEACHING LEARNING ACTIVITIES

The course content in Environmental Studies will be covered by:

1. Interactive Lectures
2. Group Discussions
3. Field Visits

SKILL- BASED ELECTIVE COURSES – II YEAR
GOOD CLINICAL LABORATORY PRACTICE

NAME OF THE SUBJECT PAPER	**: Good Clinical Laboratory practice**
DURATION OF THEORY CLASSES	**: 16 Hrs**
DURATION OF PRACTICAL SESSIONS	**: 32 Hrs**
PRACTICAL EXAMINATION	**: 50 Marks (40 U + 10 IA)**
NO UNIVERSITY THEORY EXAMINATION	
DURATION OF EXAMINATION	**: 1 ½ Hrs**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: II YEAR**

THEORY & PRACTICALS (DURATION 16 + 32 Hours)

Learning Objective

- To understand the relevance, importance and basic concepts of good laboratory practices
- To apply the knowledge to become familiar with the basic laboratory skills

UNIT I: INTRODUCTION

Introduction to Bioethics and Biosafety.Biosafety Guidelines and Regulations.Legal and Socio-economic Impacts of Biotechnology.Use of Genetically Modified Organisms and their Release in theEnvironment. Hazardous Materials used in Biotechnologytheir Handling andDisposal.

UNIT II: GOOD LABORATORY PRACTICE PRINCIPLE

Test Facility Organization and Personnel: Management responsibility, Study director_s responsibility, safety measures and personal responsibility. Quality assurance program. Facilities: Test System Facilities, Facilities for Handling test and Reference Substances. Archive Facilities. Waste Disposal, Animal Care Facilities, Animal Supply Facilities.

UNIT III: STANDARDED OPERATING PROCEDURES

Definition, Initiation of SOP, Preparation of SOP, Administration, Distribution and Implementation. Maintenance of laboratory records.Formatting SOP, Reagent/materials certification, Certification of analysts,Certification of laboratory facilities, Documentation and maintenance of record.

UNIT IV: DATE REPORTING AND STORAGE

Performance of study, Study plan, Conduct of study, Reporting of results. Archival storage of records and reports.

Learning Outcome

- To understand the implications of good laboratory practices

SKILL- BASED ELECTIVE COURSES – II YEAR
COMPUTER APPLICATIONS

NAME OF THE SUBJECT PAPER : COMPUTER APPLICATIONS

DURATION OF THEORY CLASSES : 16 Hrs

DURATION OF PRACTICAL SESSIONS : 32 Hrs

PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY THEORY EXAMINATION

DURATION OF EXAMINATION : 1 ½ Hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : II YEAR

THEORY & PRACTICALS (DURATION 16 + 32 Hours)

UNIT - I - Introduction to Computers

- Concepts of Computers
- Hardware and software trends and technology
- Classification of computers
- Application of computers in Laboratories

UNIT - II - Operating System

- Introduction
- Types of operating systems
- Windows

UNIT - III –Multimedia

- Types and uses
- Computer aided teaching and testing

UNIT — IV -Internet

- Introduction to Internet
- Use of Internet and e- mail
- Statistical packages

LIST OF PRACTICAL EXERCISES

1. Computer operating systems like MS~DOS and WINDOWS
2. Study of software packages like Chem Draw, Tinker and Microsoft package. Unit - Typing text in MS word- manipulating text- formatting the text – using different font sizes, bold, italics, Bullets and numbering – pictures, file insertion – aligning the text and justify – choosing paper size – adjusting margins- header and footer, inserting page numbers in a document – printing a file with options – using spell check and grammar – find and replace mail merge – inserting tables in a document.

Creating table in MS - Excel – cell editing – using formulas and functions – manipulating data with excel – using sort function to sort numbers and alphabets – drawing graphs and charts using data in excel – auto formatting – inserting data from other worksheets Preparing new slides using MS- POWER POINT – inserting slides – slide transition and animation – using templates – different text and font sizes – slides with sounds – inserting clip arts, pictures, tables and graphs – presentation using wizards.

Internet- using search engine – Google search – Exploring the text Explorer and Navigator – uploading and downloading of files and images E mail ID creation – sending messages – attaching files in E- mail

TEACHING LEARNING ACTIVITIES

The course content in Computer Applications will be covered by:

1. Interactive Lectures
2. Lab

SKILL- BASED ELECTIVE COURSES – II YEAR
Library and E-resource

NAME OF THE SUBJECT PAPER : Library and E-resource

DURATION OF THEORY CLASSES : 16 Hrs

DURATION OF PRACTICAL SESSIONS : 32 Hrs

PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY THEORY EXAMINATION

DURATION OF EXAMINATION : 1 ½ Hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : II YEAR

THEORY & PRACTICALS (DURATION 16 + 32 HOURS)

Course Objectives

- To enable the students to understand at different levels of information systems in the society
- and their functions.
- To enable the students apply their knowledge in various library practice.
- To enable the students to understand the basic concepts of the Health Sciences.

UNIT: 1

Evolution, growth and development of LIS in India-current trends.
Type of libraries: Academic, Public and special Libraries (Health Science Libraries).

UNIT: 2

Library concepts & Legislation: Five laws of Library science, Professional ethics of librarian, Delivery of books and newspaper act/Intellectual Property/Plagiarism.

UNIT: 3

Library Association and International Bodies: Library Association –ILA, IASCIC, ALA, IFLA and UNESCO, SALIS, MLAI (Medical Library Association of India).

UNIT: 4

Library Rules & Regulation, Stock Verification, Annual Reports, Budgets, Library buildings, furniture, equipment‘s.

SKILL- BASED ELECTIVE COURSES – II YEAR
PUBLIC HEALTH AND HYGIENE

NAME OF THE SUBJECT PAPER : Public Health and Hygiene

DURATION OF THEORY CLASSES : 16 Hrs

DURATION OF PRACTICAL SESSIONS : 32 Hrs

PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY THEORY EXAMINATION

DURATION OF EXAMINATION : 1 ½ Hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : II YEAR

THEORY & PRACTICALS (DURATION 16 + 32 Hours)

Learning objectives

- To understand the concepts, significance and relevance of public health and hygiene
- To understand the health hazards as associated with public health andhygiene

I Introduction

Definition and Concept of Public Health, historical aspects, public health system in India and in the rest of world

II Aspects of health

Indicators of health, Determinants of Health, (Social, Economic, Cultural, Environmental, Education, Genetics, Food and Nutrition).Burden and prevention of disease. Environmental health- sanitation, air, water pollution, waste management. Mental health.

III Epidemology

Introduction, principles and concepts, study design, analysis methods, presentation and interpretation of epidemiological data

IV Hygiene concepts

Definition, importance, personal hygiene, medical hygiene, food hygiene, industrial hygiene.

Learning outcomes

- To understand public health and hygiene issues, their relevance and significance as can be practiced in real-life situations.

Text Books

1. Introduction to Public Health, Raymond L. Goldsteen, Karen Goldsteen, David G. Graham, 2011, Springer publishing company
2. Introduction To Community Health Nursing, KasturiSundarRao, 4th edition, Bi Publications Pvt Ltd
3. Concepts of Epidemiology, Raj S Bhopal, 2002, Oxford University press

Reference Books

1. A Treatise On Hygiene And Public Health, BirendraNathGhosh, 9th edition, Calcutta Scientific Publishing Co
2. An Introduction to Public Health, Caryl Thomas, 1949, John Wright and Sons Ltd.,

GENERIC ELECTIVE COURSES – II YEAR
BASIC PSYCHOLOGY

NAME OF THE SUBJECT PAPER : Basic Psychology

DURATION OF THEORY CLASSES : 64 Hrs

EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY PRACTICAL EXAMINATION

DURATION OF THEORY EXAMINATION : 1 ½ Hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : II YEAR

THEORY (64 Hours)

LEARNING OBJECTIVES

After complete ting the course the student can able to

- To identify the emerging specialties
- To understand the behavior and mental processes
- How the theories and principles of psychology may be applied to individual, societal and global issue
- Explain the application of psychology in Allied Health Sciences

Unit I: Introduction

Introduction to applied Psychology, Scientific methods in Psychology, Application of Psychology: Psychology in Industry, community, family, education, health, self development, Human relations. Scope of psychology with special relevance to Allied Health Sciences.

Unit II: various cognitive processes and their application

Factors affecting learning, Importance of studying Psychology of learning in relation to Allied Health Sciences

Memory and forgetting, Kinds of remembering, the nature of forgetting, Improving memory, relevance to Allied Health Sciences

Intelligence, Normal distribution of intelligence levels, Intelligence Testing, Intelligence tests, Uses and abuses of intelligence tests, relevance of intelligence and aptitude for Allied Health Sciences

Unit-III: Life style, Health, Stress and Coping Behavior

Cultural evolution, Life style choices and consequences, Healthy and Unhealthy life styles. Nutrition, Physical fitness, Smoking and Drinking. Stress and Health, The biological basis of stress, Stress and Physical functioning, Coping with stress, Adjustment a lifelong process. Cognitive appraisal and Stress, Stressful life styles,

Coping with everyday stress, Sources of stress, Coping styles and Strategies, Stress inoculation training.

Unit IV : Psychology of Vulnerable Individuals

Psychology of the challenged, types of disability, effects of disability, psychology of women, women and health, dealing with alcoholics and their families, post-traumatic stress disorder, psychology of the sick and ill, how patients react to chronic illness, effects of illness and hospitalization

REFERENCE BOOKS

1. Clifford T. Morgan, Richard a. King, John R. Weis and John Schopler, —Introduction to Psychology‖ – 7th Edition. Tata McGraw Hill Book Co. New Delhi, 1993.
2. Ernest R. Hillgard, Richard C. Atkinson, Rita L. Atkinson, —Introduction to Psychology‖ 6th Edition, Oxford IBH publishing Co. Pvt. Ltd., New Delhi,1975.
3. Baron.A. Robert, Psychology, Pearson Education Vth Ed.,2002
4. Psychology –the science of behavior –fifth edition1982-Neil Carson-William Bulkist-Allyn and Bacon.

GENERIC ELECTIVE COURSES – II YEAR SOCIOLOGY

NAME OF THE SUBJECT PAPER : SOCIOLOGY

DURATION OF THEORY CLASSES : 64 Hrs

EXAMINATION : 50 Marks (40 U + 10 IA)

NO UNIVERSITY PRACTICAL EXAMINATION

DURATION OF THEORY EXAMINATION : 1 ½ Hrs

YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT : II YEAR

THEORY (64 Hours)

Unit 1: Sociology: Discipline and Perspective

- Thinking Sociologically
- Emergence of Sociology, Sociology as a science; Sociology and Common Sense
- Some Basic Concepts: Association; Aggregates: Community, Categories, Groups and its Forms; Status and Role; Norms and Values.
- Individual and Society; Socialization: Concept and Agencies; Culture –meaning and characteristics; Types of culture – popular, elitist, folk, and consumer cultures; Pluralism and Multiculturalism, Culture and Personality.

Unit 2: Sociology and Other Social Sciences

- Sociology and Social Anthropology
- Sociology & Psychology
- Sociology & History

Unit 3: Human Society

- Social Institutions and Social Processes
- Social control: meaning, agencies and mechanisms
- Conformity and Deviance.
- Social Change, definition, factors, Social Mobility Readings

1. Anthony Giddens : Sociology
2. G. Rocher: A General Introduction to Sociology
3. George Ritzer. Encyclopaedia of sociology
4. Harry M. Johnson Sociology

GENERIC ELECTIVE COURSES – II YEAR
ENTREPRENEURSHIP ESSENTIALS

NAME OF THE SUBJECT PAPER	**: Entrepreneurship essentials**
DURATION OF THEORY CLASSES	**: 64 Hrs**
EXAMINATION	**: 50 Marks (40 U + 10 IA)**
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	**: 1 ½ Hrs.**
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	**: II YEAR**

THEORY (64 Hours)

LEARNING OBJECTIVES

- To understand the fit between you and your entrepreneurial ambitions
- To find a problem worth solving
- To identify your customers
- To develop a solution for your customers' problems and problem solution
- To build and demonstrate an MVP
- To structure a business model around the problem, customer, and solution and present your Business Model Canvas

UNIT – I ORIENTATION

What is entrepreneurship – myths about entrepreneurship – impact of an entrepreneur and social entrepreneurship – wealth building and making an impact

IDEA/PROBLEM

What is a business opportunity and how to identify it - Methods for finding and understanding problems - (Observation, Questioning, DT, Jobs to be done (JTBD) - Introduction to Design Thinking - Process and Examples - Generate ideas that are potential solutions to the problem identified.

UNIT - II

CUSTOMER

The difference between a consumer and a customer (decision maker); Market Types, Segmentation and Targeting, Defining the personas; Understanding Early Adopters and Customer Adoption Patterns - Identify the innovators and early adopters for start-up - Basics of Lean Approach and Canvas; Types of Business Models (b2b; b2c)

UNIT – III

BUSINESS MODEL AND VALIDATION

Introduction to Risks; Identify and document your assumptions (Hypotheses); Identify the riskiest parts of Plan - Develop the Solution Demo - Sizing the Opportunity - Building an MVP (Minimum Viable Product)

UNIT – IV

MONEY AND TEAM

Revenue Streams: Basics of how companies make money - Understand income, costs, gross and net margins - Identify primary and secondary revenue streams - Pricing and Costs - Financing Your New Venture - Team Building: Role of a good team in a venture's success; What to look for in a team; How do you ensure there is a good fit? Defining clear roles and responsibilities

UNIT – V

MARKETING AND SALES

Positioning – channels and strategy – sales planning – Importance of project management to launch and track progress - Understanding time management, workflow, and delegation of tasks– Business regulation: Basics of business regulations of starting and operating a business - Importance of being compliant and keeping proper documentation

LEARNING OUTCOMES

- This course will give the students the foundational experience of the entire cycle of entrepreneurship, through a combination of theory and practice.
- Students will learn what it takes to be an entrepreneur, recognizing business opportunities and the basics to create launch and manage new businesses.
- The participating students will create a ‗campus venture‘or a "real" venture of their own to practice the concepts taught during the program. The course is built in a modular fashion such that colleges can tailor their offerings to cover either the entire offering (idea to an MVP) or limit to building a business model.

III YEAR

B.Sc. – CLINICAL NUTRITION
FACULTY OF ALLIED HEALTH SCIENCES
SRI BALAJI VIDYAPEETH
(Deemed to be University)
Accredited by NAAC with 'A' Grade

III YEAR

CORE SUBJECTS

1. Public health nutrition
2. Advanced nutrition
3. Advanced dietetics
4. Nutrition for life span

Discipline Elective Course (DEC) – Choose any TWO

1. Biomedical Waste Management
2. Community Nutrition
3. Extension Education
4. Family Resource Management

AHS COURSE CONTENT THIRD YEAR B.SC. CLINICAL NUTRITION (CN)

Faculty code	Category	Course title	Hours					Credits				
AHS	**Core theory CN**	**Subjects**	**Theory**	**Practical**	**Tutorials**	**Clinical training**	**Total hours**	**Lecture**	**Practical**	**Tutorials**	**Clinical training**	**Total credits**
AHS	CN-9	Public health nutrition	80		32			5		1		6
AHS	CN-10	Advanced nutrition	80		32			5		1		6
AHS	CN-11	Advanced dietetics	64	64				4	2			6
AHS	CN-12	Nutrition for life span	64	64				4	2			6
AHS	CN-CT 2	Clinical Training CN 9 to 12				256					8	8
AHS	DE 1-8	Student‘s choice	64					4				4
AHS	DE 1-8	Student‘s choice	64					4				4
			416	**128**	**64**	**256**	**864**	**26**	**4**	**2**	**8**	**40**

SCHEME OF EXAMINATION

Papers	Subject	Theory		Practical			Grand total (900)	Min pass marks (450)
		UE	IA	UE	IA	UIA*		
CN -9	Public health nutrition	80	20				100	50
CN -10	Advanced nutrition	80	20				100	50
CN -11	Advanced dietetics	80	20	80	20		200	100
CN -12	Nutrition for life span	80	20	80	20		200	100
CN-CT 2	Clinical Training CN 9 to 12					100	100	50
DEC	Discipline elective	80	20				100	50
DEC	Discipline elective	80	20				100	50

PUBLIC HEALTH NUTRITION

PAPER CN 9: PUBLIC HEALTH NUTRITION

NAME OF THE SUBJECT PAPER	**: PUBLIC HEALTH NUTRITION**
DURATION OF THEORY CLASSES	**: 80 hrs**
DURATION OF TUTORIALS	**: 32 hrs**
UNIVERSITY THEORY EXAMINATION	**: 100 MARKS (80 U + 20 IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: NIL**
DURATION OF THEORY EXAMINATION	**: 3 hrs**

COURSE DESCRIPTION

This course develops students understanding of public health nutrition with a focus placed on the importance of building a sustainable, nutritious and healthy food supply for community. Health equities, as explained by the social determinants of health and their impact on nutritional health and wellbeing are covered in detail. Consideration is given to factors which influence consumer food choices, dietary habits and food consumption patterns including social , cultural and environmental factors.

OBJECTIVES

1. Aims to improve the nutritional status of the entire population at large , with specific focus on those identified vulnerable in the population.
2. It also emphasizes on the prevention of disease rather than a curative approach and promote health
3. It covers the knowledge and research on nutrition problems and controlling these by intervention
4. It is an essential component in improving dietary habits and food choices in order to reverse the under nutrition and improve the nutritional diagnosis.
5. To know the organic and functional alterations of the individual and their relationship to the nutritional aspect.
6. To assess the elements of cellular pathology in relation to the various organic disorder and also identify the signs and symptoms of diseases.

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship.

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation, maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system‘s approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian.The students should know the role of the information communication technologies in agriculture and allied sector Should be able to familiar with different extensions tools also know the Information Communication based technologies to successfully run any extension based projects

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling & Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

At the end of the course, students will be able to….

CO1: Aims to improve the nutritional status of the entire population

CO2: It also emphasizes on the prevention of disease rather than a curative approach and promotes health

CO3: It covers the knowledge and research on nutrition problems and controlling these by intervention

CO4: It is an essential component in improving dietary habits and improves the nutritional diagnosis

CO5: To know the organic and functional alterations of the individual and their relationship to the nutritional aspect

CO6: To assess the elements of nutritional disorder provide through nutritional programme

COURSE CONTENT

UNIT	TITLE	THEORY (80+32 Hours)
I	**CONCEPT OF PUBLIC HEALTH NUTRITION** • Introduction to nutrition and health in national development. Relationship between health and nutrition. • Role of public nutritionist in the health care delivery system. • Farm to plate pathway	**16+5**
II	**NUTRITIONAL PROBLEMS OF PUBLIC HEALTH IMPORTANCE** • Nutritional problems existing in our country-etiology, prevalence, clinical manifestations, preventive and therapeutic measuresfor: • Protein energy malnutrition(PEM) • Iron deficiency anaemia • Iodine deficiency disorders • Vitamin deficiency disorders .	**10+5**
III	**METHODS OF ASSESSING NUTRITIONAL STATUS** • Sampling techniques, Identifications of risk groups, • Nutritional assessment- Diet surveys, anthropometric, clinical and biochemical estimation. Food balance sheet, ecological parameters and vital statistics. • Significance of nutritional assessment of community, improvement of nutrition of community.	**18+10**
IV	**NUTRITION EDUCATION** • Meaning, Importance, Principles and methods of planning, Executing and evaluating. • Problems encountered in nutrition education and strategies to overcome.	**16+5**
V	**COMMUNITY NUTRITION PROGRAMME** • Nutrition intervention schemes/programmes in the community. • Food security • National and International Agencies involved in improving nutrition status of community. Assessment of nutritional status by anthropometric measurement and diet history.	**20+7**

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

TEXT BOOKS

1. Berk, L. (2006). Child development. New York: Allyn& Bacon Hardamn, M.l., Drew, C.J., and Egan, M.W. (2005). Human Exceptionality: society, school and family. Boston: Allyn and Bacon.
2. Jaya and Subhadra, Parenting children below two years, Abacus Foundation, Coimbatore NasimSiddiqi, Suman Bhatia and SuptikaBiswas (2007) Early Childhood Care and Education – Book IV, DOABA HOUSE, New Delhi.
3. Santrock. (2006). Child Development. New York: McGraw- Hill.

BLUE PRINT FOR PAPER CN -9-PUBLIC HEALTH NUTRITION

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Concept of public health nutrition	15	18.7%		1+1*	3
II	Nutritional problems of public health importance	19	23.7%	1	1	1+1*
III	Methods of assessing Nutritional status	22	27.5%	1	1	2
IV	Nutrition Education	12	15%	1*	1	2
V	Community nutrition Programme	12	15%	1*	1	2+1*
Note: * represents question of choice						

The duration of Examination (University) is Three (3) hours.
The total marks for the University Examination will be 100 marks.
Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)
Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)
Very Short Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12)
TOTAL = Theory 80 + IA 20 = 100 marks

PAPER CN-9 - PUBLIC HEALTH NUTRITION
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

A) Long Answer Question (Any one) **(2x10=20)**

1. a) Explain the Nutritional problems in our country

(OR)

b) Elaborate the Nutritional assessment

2. a) Explain the nutrition education programs importance and types.

(OR)

b) Write detail about National and International Agencies

B) Short Answer (Answer any five) **(5x6=30)**

1. Role of public Nutritionist.
2. Write steps of food from farm to plate
3. Explain vitamin – A deficiency in community
4. Explain PEM manifestation and prevention
5. Explain the uses of diet survey
6. Write the national agencies to develop the nutritional status of the community

(C) Very Short Answer (Any Ten) **(10x3=30)**

1. Define community Nutrition
2. Relation between health and nutrition.
3. Define Nutrition
4. Causes of nutritional problem in our country
5. Write the symptoms of Marasmus
6. Write any two clinical method
7. Define vital statistics
8. What is nutrition exhibitions
9. What is visual aids
10. Objectives of ICDS
11. Explain vitamin B deficiency
12. Define diet survey.

FOOD SCIENCE-II

PAPER CN- 10: FOOD SCIENCE-II

NAME OF THE SUBJECT PAPER	**: FOOD SCIENCE -II**
DURATION OF THEORY CLASSES	**: 80 Hrs**
DURATION OF PRACTICAL CLASSSES	**: 32 Hrs**
UNIVERSITY THEORY EXAMINATION	**: 100 MARKS (80 U + 20 IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: NIL**
DURATION OF THEORY EXAMINATION	**: 3 hrs**

COURSE DESCRIPTION

This course develops students understanding of public health nutrition with a focus placed on the importance of building a sustainable, nutritious and healthy food supply for community. Health enquities, as explained by the social determinants of health and their impact on nutritional health and wellbeing are covered in detail. Consideration is given to factors which influence consumer food choices, dietary habits and food consumption patterns including social, cultural and environmental factors.

OBJECTIVES

- Aims to improve the nutritional status of the entire population at large , with specific focus on those identified vulnerable in the population.
- It also emphasizes on the prevention of disease rather than a curative approach and promote health It covers the knowledge and research on nutrition problems and controlling these by intervention
- It is an essential component in improving dietary habits and food choices in order to reverse the under nutrition and improve the nutritional diagnosis.
- To know the organic and functional alterations of the individual and their relationship to the nutritional aspect.
- To assess the elements of cellular pathology in relation to the various organic disorder and also identify the signs and symptoms of diseases.

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship**.**

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety

individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation**,** maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system's approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian.

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling & Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

At the end of the course, students will be able to...

CO1: Understand the source and variability of raw food material

CO2: Describe about the role of food additives, food safety, food adulteration and preservations

CO3: To enumerate the food fortification as means of improving nutrition with different techniques

CO4: Describe the role of functional foods in human nutrition throughout the life span

CO5: Know the spoilage and deterioration mechanisms in foods and methods to control deterioration and spoilage.

CO6: To discuss the microbial functions in foods and clinical functions in foods

COURSE CONTENT

UNIT	TITLE	THEORY (80 HOURS)
I	**FOOD ADDITIVES** Definition and Needs for food additives, Different food additives, Additives and food safety, unintentional additives. Food adulteration, Food preparation and preservations, Nutraceuticals, Nutri genomics	**12**
II	**FOOD FORTIFICATION AND ENRICHMENT** (a) **Food fortification** – Needs, Objectives, Principles and rationale, Selection and basis of fortificants, Fortification as means of improving nutrition, Advantages of fortification, Criteria for selecting vehicles for food fortification, Limitations, Design of fortification programme, General techniques of food fortification. (b) **Fortification with** vitamin A, Iron, Iodine, Safety in nutrient fortification, Multiple nutrient fortification, Nutrient interaction and bioavailability of nutrients from fortified foods, Quality assurance and control in food fortification, Steps in implementation of food fortification quality assurance programme (c) **Technology of fortifying cereals, beverages, snack products:** Characteristics of nutrients used in cereal fortification, Types and levels of micronutrients to be added, Fortification of breakfast cereals. **(d)Technology of fortifying beverages:** Importance of beverage fortification, Health benefits of beverage fortification. **(e)Snack products:** Rationale for micronutrient fortification of snack products, Merits and demerits of snack fortification, and bioavailability	**22**
III	**FUNCTIONAL FOODS AND NUTRACEUTICALS** **(A)Functional Food and Nutraceutical**-Definition, History of functional foods and classification .functional components from plant sources**:** a. Dietary fiber - Types and sources. b. Phenolic compounds – Phytoestrogens (Isoflavones, Lignans) Flavonoids – Quercetin, kempferol, Flavones – limonene, Flavols – Catechin, Phenolic acid – Ellagic acid, Caffeic acid c. Phytosterols and phytostenols d. Saponins and Tannins e. Carotenoids - Lycopene, Beta-carotene, Lutein and zeaxanthin **(B)Functional Components from Animal Sources** a. Proteins – lactalbumin, lactoglobulin, lactoferrin, immunoglobulins, b. Derived peptides – casein phospho peptides, glycomacro peptides, c. Lactose. Fat. Mineral – zinc, selenium, Calcium d. Dietary lipids - Conjugated Linolenic Acid, linoleic acid, oleic acid, GLA e. Omega 3 and Omega 6 Fatty Acids f. Structured Lipids	**25**
IV	**MICROBES AND FUNCTIONAL FOODS** • Prebiotics - Definition, role of prebiotic as functional ingredient. • Probiotics- Definition, role of probiotic as functional ingredient.	**10**

	• Synbiotics- Definition, role of probiotic as functional ingredient.	
V	**CLINICAL APPLICATION OF FUNCTIONAL FOODS** • Functional foods in oral and gut health • Functional foods in Obesity and Cardiovascular diseases • Functional foods in Nervous disorder • Functional foods in Bone health and Diabetes mellitus • Functional foods in cancer	**13**

PRACTICALS (32 HOURS)

- Preparation of fortifying cereals
- Preparation of fortifying beverages
- Preparation of fortifying snacks
- Development of functional foods for obesity
- Development of functional foods for cancer
- Development of functional foods for cardiovascular disease
- Development of functional foods for diabetes mellitus
- Development of functional foods for ortho disorder.

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

TEXT BOOKS

1. Garrow J.S., James W.P.T. and Ralph A. (2000), Human Nutrition And Dietetics, 10th edition, Churchill Livingstone.
2. Antia F.P and Philip A. (1998), Clinical Nutrition and Dietetics, 4th edition, Oxford Publishers.
3. Robinson C.H., Rawler M.R., Chenoweth W.L., Garwich A.E. (1986) ,Normal and Therapeutic Nutrition, 17th edition, Mac MillanPubliushing Co, New York.
4. Swaminathan M.(1974) , Adavanced Text Book On Food and Nutrition ,Volume 1
5. Manay S.N., Sadaksharaswami M. (1998), Food Facts and Principles, New age International Pvt. Ltd., New Delhi.
6. Bamji M., Prahlad N., Vinodhini R.(1998), Text Book of Human Nutrition, Oxford and IBH Publ. Co., New Delhi.
7. Vijaya D.T. (1993), Handbook of Nutrition and Dietetics.,Vora Medical Publ., Mumbai.
8. Indian Council of Medical Research (2010), Nutrient Requirements and RDA for Indians, ICMR.

BLUE PRINT FOR PAPER CN 10-FOOD SCIENCE -II

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Food additives	22	27.5%	1	1+1*	2+1*
II	Food fortification & Enrichment	12	15%	1*	1	2
III	Functional foods And nutraceuticals	22	27.5%	1	1	2+1*
IV	Microbes as functional foods	12	15%		1	2
V	Clinical applications of functional foods	12	15%	1*	1	2
Note: * represents question of choice						

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6) Very Short

Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

PAPER CN-10- FOOD SCIENCE-II
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

(A) Long Answer Question (Any one) **(2x10=20)**

1. a) what is food adulteration; give five examples of food adulteration?

(OR)

b) Write the technology used in food fortification of cereal products

2. a) How to extract the functional component of animal sources and explain any five animal functional components.

(OR)

b) How to prevent chronic disease with the help of functional food

(B) Short Answer (Answer any FIVE) **(5x6=30)**

1. Write the steps in implementation of food fortification quality assurance.
2. List the importance of beverage fortification
3. Write the objectives of food fortification Explain briefly about nutraceuticals.
4. Explain the functional components of plant source
5. Write the role of probiotic as functional ingredients
6. Write the role of functional foods in treating obesity

(C) Very Short Answer (Any Ten) **(3x10=30)**

1. Define additives.
2. List the benefits of fortification.
3. What are multiple nutrient fortifications?
4. Define functional foods
5. Role of dietary fiber in cardiac disease
6. What is Ellagic Acid, from where its derived
7. Define symbiotic
8. List any four food where prebiotic can be incorporated
9. Formulate any two functional foods for cancer patients
10. Role of functional food in reducing risk of chronic disease
11. Give three examples in which food Vitamin – D can be fortified and explain why?
12. Give three fortified foods for CVD, Diabetes and Obesity.

ADVANCED DIETETICS

PAPER CN-11- ADVANCED DIETETICS

NAME OF THE SUBJECT PAPER	**: ADVANCED DIETETICS**
DURATION OF THEORY CLASSES	**: 64hrs**
DURATION OF PRACTICAL SESSIONS	**: 64hrs**
UNIVERSITY THEORY EXAMINATION	**: 100 MARKS (80 U + 20 IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: 100 MARKS (80U+20 IA)**
DURATION OF THEORY EXAMINATION	**: 3 hrs**

COURSE DESCRIPTION

This course promotes the knowledge of diagnosis the disorders related to deficiency of nutrients or chronic disorders among the peer groups. Also enumerate the dietary management of chronic disorder and intervention of the therapeutic diet principles. The course has a special emphasis on child and adolescent nutrition and how to translate nutrition facts into classroom applications and school-based interventions. Course topics will include healthy food choices, nutrition guidelines, nutrients, energy balance and weight, child and adolescent nutrition, and nutrition education in the classroom, school-based nutrition interventions, and measuring outcomes of nutrition interventions.

OBJECTIVES

- Work to promote good health by teaching the public and other health professionals about diet and nutrition
- To establish good nutritional status and standard as an integral part of the health care provided to the population.
- To translate the science of nutrition in health and disease into practical information about food.
- Act as advisors to the trust on the nutritional standards and specifications for the food service to ensure that the needs of all patients can be met.
- Methods and tools used in screening and assessment of nutritional status of individuals and population groups are studied. Assessment methodology includes dietary surveys, computerized dietary intake analysis, anthropometric measures, biochemical measures and clinical evaluations.

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E-library. English, Computer and E-Library, Entrepreneurship**.**

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation, maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system‘s approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling & Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

At the end of the course, students will be able to...

CO1: Work to promote good health by teaching the public and other health professionals about diet and nutritionist.

CO2: To translate the science of nutrition in health and disease into practical information about food. **CO3**: Act as advisors to the trust on the nutritional standards and specifications for needs of all patients

CO4: Methods and tools used in screening and assessment of nutritional status of individuals and population groups are studied.

CO5: Assessment methodology includes dietary surveys, computerized dietary intake analysis, anthropometric measures, biochemical measures and clinical evaluations.

COURSE CONTENT

UNIT	TITLE	THEORY (64HOURS)
I	**DIET IN DISEASE OF GASTRO INTESTINAL DISEASE , LIVER AND GALL BLADDER** • Aetiology, Symptoms and dietary management of Oesophagitis, Gastro Oesophageal Reflux Disease (GERD), Dyspepsia, Gastritis, Peptic ulcer, Constipation, Diarrhoea, Ulcerative colitis, Flatulence, Irritable bowel syndrome, Inflammatory bowel disease, Diverticulitis, Dumping syndrome, Malabsorption syndrome – Lactose intolerance, Steatorrhoea, Celiac disease, Tropical sprue.	**17**
II	**DIET IN DIABETES MELLITUS AND CANCER** • Types, Aetiology, Symptoms, factors affecting normal blood sugar level, Diagnosis, Treatment, Dietary and life style modifications, food exchange system, Glycemic Index, Glycemic load, Complications of diabetes, Nutrition in complication of diabetes, hypoglycemic agents and supportive therapy. • Types of cancer, Risk factors, Symptoms, Metabolic alterations and Nutritional problems of cancer and cancer therapy, Medical Nutrition Therapy, Role of food in prevention of cancer	**13**
III	**DIET IN CARDIOVASCULAR AND RENAL DISEASE** • Aetiology, Symptoms, Risk factors, pathophysiology, dietary management and prevention of Atherosclerosis, Coronary Artery Disease, Myocardial Infarction, Ischemic Heart Disease, Rheumatic Heart Disease(RHD), Congestive Cardiac Failure (CCF), Hypercholesterolemia, Hypertension – classification, sodium restricted diet, dangers of severe sodium restriction • Causes, Symptoms and dietary management in Nephritis, Nephrosis, Acute and chronic renal failure, Renal calculi, Acid and alkali producing foods, End Stage Renal Diseases (ESRD), Dialysis	**15**
IV	**MEDICAL NUTRITION THERAPY IN CRITICAL CARE** Surgery- Physiological response and dietary management. Burns – Classification, complications, dietary management, mode of feeding and nutrition support. Trauma and Injury- physiological, metabolic and hormonal responses to injury, dietary management of trauma. Sepsis- Dietary Management	**10**
V	**DIET COUNSELING** • Nutrition and diet clinic, Patient checkup and Nutrition counseling- directive and non-directive, Strategies and goals of counseling and follow up. Psychology of feeding the patient. • Computer application: use of computers by Dietitian, Dietary computations, Dietetic management, education/training.	**9**

PRACTICALS (64 HOURS)

- Planning and preparing a therapeutic diet for diabetes mellitus.
- Planning and preparing a therapeutic diet for cardiac disease.
- Planning and preparing a therapeutic diet for gastric disorders.
- Planning and preparing a therapeutic diet for renal problem.
- Planning and preparing a therapeutic diet for liver disorders.
- Planning and preparing a therapeutic diet for cancer.

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

TEXT BOOKS

1. Mahan, L.K., Arlin, M.T., Krause's Food, Nutrition and Diet Theraphy, W.B. Saunders Company, London Publications, 8th edition, 1992.
2. Robinson, C.H., Chenoweth, W.L. and Garwivk, A.E. Normal and Therapeutic Nutrition, MacMillan Publishing Co., 17th edition, 1986.
3. Raheena, Begum, A textbook of Foods, Nutrition and Dietetics, Sterling Publishers, New Delhi, 1989.
4. Joshi, S.A., Nutriton and Dietetics, Tata McGraw Hill Publications, New Delhi, 2004.
5. Srilakshmi B., Dietetics, New Age International (P) limited Publications, 2004.
6. Paul. S., Textbook of Bio-Nutrition, Curing diseases through diet, CBS publications, first edition, 2005.

BLUE PRINT FOR PAPER-ADVANCED DIETETICS

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Diet in disease of gastro intestinal disease , liver and gall bladder	22	27.50%	1	1+1*	2+1*
II	Diet in diabetes mellitus and cancer	12	15%	1*	1	2
III	Diet in cardiovascular and renal disease	22	27.50%		1	2+1*
IV	Medical nutrition therapy in critical care	12	15%	1	1	2
V	Diet counseling	12	15%	1*	1	2
Note: * represents question of choice						

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

PAPER CN-11-- ADVANCED DIETETICS
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

(A) Long Answer Question (Anyone) **(2x10=20)**

1. a) Explain briefly about dietary management and role of exercise for type II diabetes mellitus.

(OR)

b) Write the dietary management for peptic ulcer

2. a) Explain the causing factor of CKD

(OR)

b) Write the types of feeding used in the Burns Patient

(B) Short Answer (Answer any five) **(5x6=30)**

1. Role of alcohol in developing liver disease
2. Explain the causing factor of CKD
3. Write the formation renal calculi
4. List the role of fiber in treating constipation
5. Explain the glycemic index and formula for calculating glycemic index
6. Write the role of sodium in cardiac disease.

(C) Very Short Answer (Any Ten) **(3x10=30)**

1. Define steatorrhoea.
2. Write the importance of protein in diabetic diet.
3. Write the causes of CVD
4. Write the symptoms of jaundice
5. What are the components of bile juice?
6. Write the dietary principle for CKD
7. Write any four risk factors for causing cancer
8. Write the role of protein in cancer?
9. Define sepsis
10. Explain MODS
11. Define congestive Cardiac Failure.
12. Write Biliary Tract Diseases.

NUTRITION FOR LIFE SPAN

PAPER CN 12: NUTRITION FOR LIFE SPAN

NAME OF THE SUBJECT PAPER	**: NUTRITION FOR LIFE SPAN**
DURATION OF THEORY CLASSES	**: 64hrs**
DURATION OF PRACTICAL SESSIONS	**: 64hrs**
UNIVERSITY THEORY EXAMINATION	**: 100 MARKS (80 U+20 IA)**
UNIVERSITY PRACTICAL EXAMINATION	**: 100 MARKS (80U+20 IA)**
DURATION OF THEORY EXAMINATION	**: 3 Hrs**

COURSE DESCRIPTION

This course discuss about the nutritional needs of humans as they move through the life cycle stages from pre-conception through elder years.it also examines conditions that may alter or substantially various stages and uses case study data to asses nutrition issues/conditions. Students will assess adequacy of diets well as design diets to meet needs during various life cycle stages.

OBJECTIVES

1. Describe the physiological basis for nutritionist needs of normal, healthy humans as they move through life cycle stages: pre-conception, pregnancy, lactation, infancy toddlers and preschool
2. Describe the conditions that substantially alter/impact nutrition for each life cycle stage.

Assess the quality of diets for the life cycle stages using variety of tools including the use of dietary analysis software

3. Design food plan to meet the needs of humans at various life cycle stages
4. Assess nutrition issues/condition and recommend nutrition intervention support

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship**.**

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation**,** maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system‘s approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian.

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling& Guidance, Public health & hygiene, Psychology and Sociology.

COURSE OUTCOMES

CO1: Describe the physiological basis for nutritionist needs of normal, healthy humans as they move through life cycle stages: pre-conception, pregnancy, lactation infancy toddlers and preschool

CO2: Describe the conditions that substanlly alter impact nutrition for each life cycle stage.

CO3: Assess the quality of diets for the life cycle stages using variety of tools including the use of dietary analysis software

CO4: Design food plan to meet the needs of humans at various life cycle stages

CO5: Assess nutrition issues/condition and recommend nutrition intervention support

COURSE CONTENT

UNIT	TITLE	THEORY (64HOURS)
I	**NUTRITION IN PREGNANCY AND LACTATION** • Food and nutrient requirements, physiological changes during pregnancy, developmental stages of the embryo, physiological costof pregnancy and complications in pregnancy. Impact of nutritional deficiency on the outcome of pregnancy, Nutritional and food requirements, Dietary guidelines, Dietary problems, Complications of pregnancy, GDM. • Food and nutrient requirements, physiology of lactation, composition of breast milk, influence of mother‘s diet on the quality and quantity of milk production and breastfeeding practices. Composition of breast milk, Breast feeding and its advantages, Pre-term milk (PTM),	**17**

	Expressed Breast Milk (EBM), Drip Breast Milk (DBM), Common problems during breast feeding, Contraindications to breast feeding.	
II	**NUTRITION THROUGH INFANCY** • Food and nutrient requirements, weaning, types of weaning foods and supplementary foods, Artificial feeding, Hazards of Bottle feeding, Feeding of the Preterm and LBW babies, Weaning, Feeding problems in weaning, Family Pot Feeding, Low cost supplementary foods, ARF	**15**
III	**NUTRITION DURING EARLY CHILDHOOD AND SCHOOL GOING CHILDREN** • Growth And Nutrient needs, Food Requirement, Dietary Guidelines, Feeding Problems, Nutrition Related Problems, Growth Monitoring. • Food and nutrient requirements, factors affecting eating habits, school lunch programme, importance of packed lunch.	**13**
IV	**NUTRITION IN ADOLESCENT AND ADULTHOOD** • Food and nutrient requirements, changes in growth pattern, puberty, menarche, changes in food habits, nutritional disorders, eating disorder • Food and nutrient requirements, changes in consumption pattern: physical, mental and social changes influencing meal pattern.	**10**
V	**NUTRITION IN OLD AGE** • Food and nutrient requirements, physical, physiological, biological and psychological changes influencing meal pattern. complication related to aging, aging factors	**9**

PRACTICALS (64HOURS)

1. Planning, preparing and serving a meal for low income family, middle income family and high income family.
2. Planning, preparing and serving a meal for a pregnant woman.
3. Planning, preparing and serving a meal for a lactating woman.
4. (a). Planning, preparing and serving a meal for an infant.
   (b). Planning and preparing an indigenous weaning mix.
5. Planning, preparing and serving a meal for a preschooler.
6. Planning, preparing and serving a meal for a school going child (boy and girl).
   (a). Planning, preparing and serving a meal for an adolescent
   (b). Planning and preparation of any five packed lunches
7. Planning, preparing and serving a meal for an adult (sedentary, moderate and heavy worker).
8. Planning, preparing and serving a meal for an adult (sedentary, moderate and heavy worker).

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

TEXT BOOKS

1. Berk, L. (2006). Child development. New York: Allyn& Bacon Hardamn, M.l., Drew, C.J., and Egan, M.W. (2005). Human Exceptionality: society, school and family. Boston: Allyn and Bacon.

2. Jaya and Subhadra , Parenting children below two years, Abacus Foundation, Coimbatore NasimSiddiqi, Suman Bhatia and SuptikaBiswas (2007) Early Childhood Care and Education – Book IV, DOABA HOUSE, New Delhi.

3. Santrock. (2006). Child Development. New York: McGraw- Hill.

4. Swaminathan, M. (1998). The first five years: a critical perspective on early childhood care and education in India. New York: Sage

BLUE PRINT FOR PAPER CN 12 -NUTRITION FOR LIFE SPAN

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4)	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	Nutrition in pregnancy & lactation	22	27.5%	1	1+1*	2+1*
II	Nutrition during infancy	12	15%	1*	1	2
III	Nutrition during early childhood & school going children	22	27.5%	1	1	2+1*
IV	Nutrition during adulthood & adolescence	12	15%	1*	1	2
V	Nutrition in old age	12	15%		1	2
*Note: * represents question of choice*						

The duration of Examination (University) is Three (3) hours.
The total marks for the University Examination will be 100 marks.
Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)
Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)
Very Short Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12)
TOTAL = Theory 80 + IA 20 = 100 marks

PAPER CN 12 - NUTRITION FOR LIFE SPAN
MODEL QUESTION PAPER

TIME: 3 HOURS **MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

(A) Long Answer Question (Any one) **(2x10=20)**

1. a) Write briefly about nutritional requirement and physiological changes during pregnancy

(OR)

b) Explain the weaning food planning, dietary guidelines and feeding problem

2. a) Explain the school lunch programme, importance of packed lunch

(OR)

b) Nutritional Requirement during the Period of puberty, menarche

(B) Short Answer (Answer any five) **(5x6=30)**

1. Explain the dietary complication during pregnancy.
2. List the advantages of breast milk
3. Explain the feeding problems of infants.
4. Write the dietary guidelines for planning a menu for pre- schooler
5. Write any four low cost supplementary foods?
6. List any four dietary guidelines for pre-school menu planning.

(C) Very Short Answer (Any Ten) **(3x10=30)**

1. Explain the dietary requirements for pre-schooler.
2. Explain school lunch programme
3. List the importance of packed lunch
4. Write the nutritional problem for adolescence
5. Explain the changes of organ function with ageing
6. Write the Complication of skipping breakfast for school going children
7. Write any four tips for packed lunch?
8. What are the physiological changes seen in the period of adolescence?
9. Define reference man?
10. What is Alzheimer‘s disease?
11. Define Colostrum
12. Define weaning.

DISCIPLINE ELECTIVE – III YEAR

B.Sc CLINICAL NUTRITION
Discipline elective I -Biomedical waste management

NAME OF THE SUBJECT PAPER	**: Biomedical Waste Management**
DURATION OF THEORY CLASSES	**: 64 Hrs**
THEORY EXAMINATION	**: 50 Marks (40 U + 10 IA)**
PRACTICAL EXAMINATION	**: NIL**
DURATION OF THEORY EXAMINATION	**: 1 1/2 Hrs**

Course Description
The increasing amount of Biomedical wastes (BMW) being generated is becoming a serious problem to hospitals and has significant adverse impacts on public health and occupational health if improperly handled. Biomedical waste requires utmost care in handling, collection, processing and disposal due to inherent hazards of the waste. The basic goal of the course is to provide the fundamentals of and biomedical wastes and various aspects of their management right from generation through collection and disposal. Special emphasis will be given to the system approach to managing these wastes to meet regulatory requirements.

Learning Objectives
- To sensitize the students about health care waste and its impact on health and environment.
- Acquaint the students to existing legislation, knowledge and practices regarding health care waste.

Learning Outcomes
At the end of the course the student will be able to
- Possess the knowledge on the sources of generation, of hazardous and non-hazardous waste in health care settings and research laboratories.
- Demonstrate understanding on the environmental and occupation hazards of improper BMW management.
- Understand the good practices for a systematic approach in the management of BMW
- Gain knowledge in various management strategies and technological solutions in BMW management, treatment and disposal.
- Be familiar with the applicable legislations and regulations for treatment and disposal.

SYLLABUS

1. Introduction to Hospital Waste
- Definition Classification of hospital wastes
- Types and composition: Types of solids, liquids, sharps, blood and blood tissue, radioactive material, biological and chemical material
- Hospital effluents: Nature and composition, Levels of Generation in a small clinic, nursing home, small and large hospitals, Storage of hospital waste; Types of bags and containers used for storage

2. Biomedical Waste Management Guideline
- Requirement
- Documentation of Biomedical waste types and guidelines

- Bio-medical wastes (Management & Handling) Rules, 1998; and amendments

3. Principles of Biomedical Waste Management

- Segregation of biomedical waste
- Handling and transport of hospital waste: Authorization and accidental spilling
- Methods / treatments required for disposal of pathogens
- Waste disposal methods
- Techniques of waste management
- Protocols for HW management

4. Waste prevention

- Waste reduction activities
- Waste recycling

5. Biomedical Waste Treatment Facility

- Introduction, location, land requirements
- Coverage area, types of equipment
- Infrastructure requirements
- Record keeping
- Waste collection, transport and storage facilities
- Precautions required

Text Books

1. Sustainable Biomedical Waste Management, P. K. Behera, 2nd Edition. 2008

2. Biomedical Waste Management, R. Radhakrishnan, 1st Edition, 2005

3. The Environmental Protection Act, 1986.

DEC I–Biomedical Waste Management
Model Question Paper

TIME: 2 HOURS **MAXIMUM MARKS: 40**

(A) Short Answer (Answer any Five) **(5x6=30)**

1. Explain the different categories of biomedical waste.
2. Explain the different sources of health-care wastes and how the hospitals handle them.
3. What are the various guidelines given by WHO for safe health-care waste management?
4. Write the principles of hospital hazards management. Explain the various types of infections.
5. How does the color coding helps in medical waste management. Explain with examples.

(B) Very Short Answer (Any six) **(5x2=10)**

1. How will you classify healthcare waste?
2. What are waste sharps?
3. Who is at risk from health-care waste?
4. Write few rules governing the disposal of medical wastes?
5. Why is segregation important?
6. How sharps are disposed?
7. List some non-infectious wastes in hospital.
8. What is chemical disinfection?

B.Sc CLINICAL NUTRITION
DISCIPLINE SPECIFIC ELECTIVE II–COMMUNITY NUTRITION

NAME OF THE SUBJECT PAPER	**: COMMUNITY NUTRITION**
DURATION OF THEORY CLASSES	**: 64 HOURS**
DURATION OF PRACTICAL SESSIONS	**: NIL**
EXAMINATION	**: 50 MARKS (40 U+10 IA)**
DURATION OF THEORY EXAMINATION	**: 1 1/2 Hrs**

COURSE DESCRIPTION

This course is a discussion of the principles and programs developed to improve the dietary intake and the nutritional status of individuals and groups within a community. Primary topics covered include: government and nongovernment nutrition-related programs, groups at nutritional risk, nutritional issues/concerns across the lifecycle, and an introduction to developing community-based nutrition intervention programs (needs assessment, intervention, and evaluation).

OBJECTIVES

- Explain the characteristics, functions and processes of a community and identify the role of nutrition in health promotion.
- To evaluate the different methods for assessing nutritional status and health in the community, and give examples of the appropriate use of each method.
- Demonstrate the processes involved in designing, implementing and evaluating a community nutrition program through a service-learning project.

UNIT	TOPICS	KEY LEARNING OUTCOMES	TOTAL HOURS(64)
1	**UNIT-I** Nutrition And Health In National Development	• Malnutrition- meaning. factors contributing to malnutrition, over nutrition • Nutritional disorders- Epidemiology, clinical features, prevention and dietary treatment for Protein Energy malnutrition, nutritional anaemias&vitmain deficiency disorders	17 theory
2	**UNIT-II** Methods of assessing nutritional status	• Sampling techniques , Identifications of risk groups, • Direct assessment - Diet surveys, anthropometric, clinical and biochemical estimation • Indirect assessment- Food balance sheet, ecological parameters and vital statistics.	15 theory

3	**UNIT-III** Improvement of nutrition of a community	• Modern methods of improvement or nutritional quality of food, food fortification, enrichment and nutrient supplementations. • Nutrition education themes and messages in nutrition and health, Antenatal and postnatal care.	13 theory
4	**UNIT-IV** Nutritional and infection relationship	• Immunization and its importance, Food borne infection and intoxication diseases, foods involved, methods of prevention, Infestation of food borne diseases, Outbreak, Prevention signs and control of infection	10 theory
5	**UNIT-V** National and International agencies& Community nutrition programme planning	• WHO, UNICEF, CARE, ICMR, ICAR, CSIR, CFTRI. Various nutrition related welfare programmes, ICDS, SLP, MOM, and others (in brief). • Identification of problem, analysis of causes, resources constraints, selection of interventions, setting a strategy, implementations and evaluation of the programme.	9 theory

REFERENCE BOOKS

- Textbook of Human Nutrition by Agrawal , Udipi
- Park's Textbook of Preventive and Social Medicine by Park
- Principles of Nutritional Assessment by Rosalind S. Gibson
- DNHE-1 Nutrition for the Community by AnshuChaturvedi

DEC II–COMMUNITY NUTRITION

Model Question Paper

TIME: 1 1/2 HOURS **MAXIMUM MARKS: 40**

(A) Short Answer (Answer any FIVE) **(5x6=30)**

1. Comment on the concept that "the community has a direct responsibility for the health individual
2. Describe the anthropometric indices used in nutritional survey and their importance
3. Write the concept of community nutrition?
4. Write the causes of malnutrition
5. Bring out the importance of assessment of nutritional status.

(B) Very Short Answer (Any FIVE) **(5x2=10)**

1. Define community Nutrition
2. Define malnutrition.
3. How will you assess the nutritional status of pre school children?
4. What are the advantages of diet survey?
5. What is skeletal fluorosis?
6. Bring out the importance of Iodine.

7. What does CARE Provide?
8. Write the objectives of ICMR.

DISCIPLINE SPECIFIC ELECTIVE
DEC – III : EXTENSION EDUCATION

NAME OF THE SUBJECT PAPER	**: EXTENSION EDUCATION**
DURATION OF THEORY CLASSES	**: 64 HOURS**
DURATION OF PRACTICAL SESSIONS	**: NIL**
EXAMINATION	**: 50 MARKS (40 U+10 IA)**
DURATION OF THEORY EXAMINATION	**: 1 1/2 Hrs**

COURSE DESCRIPTION

The course is intended to orient the students with the concept of extension education and its importance in community development and also to expose the students with various Rural development programmes aimed at poverty alleviation and to increase employment opportunities and their analysis.

COURSE OBJECTIVES

- To obtain necessary skills in extension teaching and field work
- To know the role of extension workers in planning programmes for the community.

COURSE CONTENT
ELECTIVE-EXTENSION EDUCATION

UNIT	TOPICS	KEY LEARNING OUTCOMES	TOTAL HOURS(64)
1	**UNIT-I** Rural Society	Meaning, scope, & characteristics. Rural social groups-primary and secondary groups, formal and informal groups, temporary and permanent groups, reference groups, cultural interest groups (in brief). Informal rural institutions: family, caste (in brief). Formal rural institutions – Village school, Panchayat Raj, Village co-operatives (in brief).	17 theory
2	**UNIT-II** Extension Education	**Extension Education** Functionaries in extension work – Block Development Officer (BDO), Extension Officer (EO), and Village Level Worker (VLW) (in brief). Adoption-diffusion process. Leadership – styles in leadership. Role and qualities of a leader.	15 theory

3	**UNIT-III** Teaching	• Factors contributing to good teaching, steps in extension teaching. • Learning: principles of learning, elements of learning situation, learning experiences.	13 theory
4	**UNIT-IV** Communication	• Meaning, definition, functions, elements of communication,models of communication, problems of communication. • Communication methods: individual, group and mass. Audio – Visual aids in extension work – projected and non-projected.	10 theory
5	**UNIT-V** Extension programme development	• Meaning& importance of having a programme. Principles of programme planning, steps in extension programme cycle. • Evaluation: Meaning &types of evaluation. Development Programmes offered for the vulnerable segments by the Indian Ministry of Social Welfare, Ministry of Rural Development.	9 theory

TEXTBOOKS

1. Supe, S.V., (1994): An Introduction to Extension Education, Oxford and IBH
2. Publishing Co. Pvt. Ltd., New Delhi.
3. Reddy, A., (2006): Extension Education, Sree Lakshmi Press, Bapatla, A.P.
4. Desai, A.R, Rural Sociology in India. Popular Prakashan, 1994
5. De, Rural Sociology, 2012, Pearson Publication, New Delhi

REFERENCES

1. Dahama, O.P., and Bhatnagar, (1980): Education and Communication for development, Oxford and IBH publications Co.
2. Ray, G.L., Extension communication and management, NayaPrakash, Calcutta. Pondicherr

DEC –III : EXTENSION EDUCATION

Model Question Paper

TIME: 1 1/2 HOURS **MAXIMUM MARKS: 40**

(A) Short Answer (Answer any FIVE) **(5x6=30)**

1. Describe Extension Education and its relationship with other subjects.
2. Meaning Definition of education, extension and extension education. b. Need of extension education and Ways of imparting extension education
3. Write Importance and scope of communication in development
4. Discuss Objectives and principles of community development
5. Write Need of extension education

(B) Very Short Answer (Any FIVE) **(5x2=10)**

1. Principles of extension education
2. Write Classification of extension teaching approaches and methods.
3. Objectives and principles of community development
4. Write Meaning and definition of communication
5. Types of communication.
6. Meaning &types of evaluation
7. What are the Factors contributing to good teaching, steps in extension teaching
8. What are theFunctionaries in extension work.

DISCIPLINE ELECTIVE
DEC – IV : FAMILY RESOURCE MANAGEMENT

NAME OF THE SUBJECT PAPER	**: FAMILY RESOURCE MANAGEMENT**
DURATION OF THEORY CLASSES	**: 64 HOURS**
DURATION OF PRACTICAL SESSIONS	**: NIL**
EXAMINATION	**: 50 MARKS (40 U+10 IA)**
DURATION OF THEORY EXAMINATION	**: 1 1/2 Hrs**

COURSE DESCRITPION

The Course introduces the conceptual and contextual meaning of resources and their management in micro level family settings in the changing world in a simple format with experiential learning to the learners. Presenting optimal initiatives and equipping students with appreciable management acumen to imbibe the contexts in their family system and the environment is the major scope.

COURSE OBJECTIVES

- Learning to identify and manage the use of resources available for functional use
- Comprehending the purpose of managing resources
- Setting realistic goals and being practical and prudent in the use and management of limited resources by making intelligent decisions

SYLLABUS CONTENT

UNIT	TOPICS	KEY LEARNING OUTCOMES	TOTAL HOURS(64)
1	**UNIT-I** Definition and meaning of management	• Characteristics of a good manager, Management process – planning, controlling and evaluating; Values, goals and standard; • Decision making – concepts, types of decision, steps in making decision.	

2	**UNIT-II :** Resources	• Classification and characteristics of resources, factors affecting the use of resources; • Management process applied to the use of time and energy; Work simplification in the home – techniques, Mendel's laws of changes; • Money management – types of family income, managerial process, savings – need, institutions for saving.	15 theory
3	**UNIT-III** Importance of good taste; Elements of design	• Types of design and characteristics of good design; Principles of design – Harmony, proportion, balance, emphasis and rhythm.	13 theory
4	**UNIT-IV**Colour	• Qualities of colour – hue, value and intensity; Colour harmonies, prang colour system, Advancing and Receding colours principles in the use of colour in interiors • Floor finishes – mud, Stones, tiles, wood, cement, mosai and others. Wall finishes – muds plaster, cement, paints, wall papers, tiles etc.	10 theory
5	**UNIT-V** Furniture	• selection and arrangement of furniture in various rooms; Accessories – Types, selection, use and care of accessories, Picture mounting & window treatment; • Flower arrangements	

References

1. Varghese, M.A., N.N. Ogale, and Srinivasan, K., Home Management; Wiley Eastern Ltd., 1992.
2. Deshpande, R.S., 'Modern Ideal Homes for India', United Book Corporation, Pune, 1983 . 13
3. Nickel and Dorsey,' Management in family' living, John Willy and Sones, 1975.
4. Goldsten, M and Goldstein, V., 'Art in Everyday Life', Macmillan Co., New York, 1960

DEC : IV–FAMILY RESOURCE MANAGEMENT
Model Question Paper

TIME: 2 HOURS **MAXIMUM MARKS: 40**

(A) Short Answer (Answer any FIVE) **(5x6=30)**

1. Describe the Management process – planning, controlling and evaluating.
2. Describe the Values, goals and standard.
3. DifferentiateTime norm and time cost.
4. Mention different ways of account keeping.
5. Enlist the various stages and sub stages of family life cycle

(B) Very Short Answer (Any FIVE) **(5x2=10)**

1. Define management
2. What is family budget?
3. What is decision making?
4. Define work simplification
5. write principle of design?
6. What is values and goals?
7. What are the types of family income?
8. Define Harmony.balance and emphasis.

QUESTION BANK

B.Sc. AHS I YEAR

PAPER-1: ANATOMY

UNIT: 1 GENERAL ANATOMY

HUMAN CELL

Q. NO	TOPICS	TYPE
1.	Discuss the Cell & its Organelles.	SAQ

EPITHELIUM

Q.NO	TOPICS	TYPE
1.	Classification of Epithelium with its examples.	SAQ
2.	Draw the neat label diagram of Simple epithelium with its examples.	SAQ
3.	Draw the neat label diagram of Compound epithelium with its examples.	SAQ
4.	Write a note on Goblet cell.	VSAQ
5.	Write a note on Basement membrane of epithelium.	VSAQ

GLANDS

Q.NO	TOPICS	TYPE
1.	Classification of Glands with its examples.	SAQ
2.	Discuss the Microscopic structure of Mucous / Serous / Mixed salivary gland with its examples.	SAQ

CARTILAGE

Q.NO	TOPICS	TYPE
1.	Discuss the Microscopic structure of Hyaline cartilage / Elastic cartilage / White fibro cartilage with its examples.	SAQ
2.	Classification of Cartilage with its examples.	VSAQ
3.	Write a note on Perichondrium.	VSAQ

BONE

Q.NO	TOPICS	TYPE
1.	Classification of Bones with its examples.	SAQ
2.	Draw & Discuss the Microscopic structure of Compact bone (T.S)	SAQ
3.	Discuss the blood supply of long bone.	SAQ
4.	List out the bones in region wise.	SAQ
5.	State the parts of growing long bone.	VSAQ
6.	State the parts of adult long bone.	VSAQ
7.	Write a note on Periosteum.	VSAQ
8.	Write a note on carpal bones.	VSAQ
9.	Write a note on Sesamoid bone.	VSAQ
10.	Write a note on Fontanellae of fetal skull.	VSAQ
11.	Write a note on Haversion system of compact bone.	VSAQ
12.	List out the structural differences between the Bone & Cartilage.	VSAQ

JOINTS

Q.NO	TOPICS	TYPE
1.	Classification of Joints with its examples.	SAQ
2.	Classification of Synovial joint with its examples.	SAQ

3.	Discuss the structure of synovial joint.	SAQ
4.	Classification of Cartilagenous joint with its examples.	SAQ

MUSCULAR TISSUE

Q.NO	TOPICS	TYPE
1.	Draw & Discuss the Microscopic structure of Skeletal muscle / Cardiac muscle / Smooth muscle with its examples.	SAQ
2.	Classification of muscular tissue with its examples.	VSAQ
3.	State the muscles of mastication & its nerve supply.	VSAQ
4.	List out the microscopic structural differences between the types of muscles.	VSAQ

SKIN

Q.NO	TOPICS	TYPE
1.	Draw & Discuss the Microscopic structure of Thick / Thin skin.	SAQ
2.	Classification / Types of skin with its example.	VSAQ
3.	List out the structural differences between the types of skin.	VSAQ

UNIT: 2 CARDIOVASCULAR SYSTEMS

MEDIASTINUM

Q.NO	TOPICS	TYPE
1.	Definition, location & general boundary / outline boundary of Mediastinum.	SAQ
2.	Discuss the boundaries & contents of Superior mediastinum.	SAQ
3.	Discuss the boundaries & contents of Inferior mediastinum.	SAQ

HEART

Q.NO	TOPICS	TYPE
1.	Explain the gross features of Right atrium under following headings – a) Definition, b) location, c) external features, d) internal features, e) Function, f) arterial supply.	LAQ
2.	Describe the Blood supply of Heart.	LAQ
3.	Discuss the location & External features of Heart.	SAQ
4.	Discuss the Valves of Heart. (A.V -valve & Semilunar valve)	SAQ
5.	Discuss the Systemic & Pulmonary circulation of Heart.	SAQ
6.	Discuss the Right coronary artery / Left coronary artery under following headings – a) Origin, b) course, c) branches.	SAQ
7.	Write a note on Apex of Heart.	VSAQ
8.	List out the chambers & great blood vessels of Heart.	VSAQ
9.	Trace the conducting system of Heart.	VSAQ
10.	State the definition, layers, sinuses & nerve supply of Pericardium.	VSAQ

BLOOD VESSELS

Q.NO	TOPICS	TYPE
1.	Describe the Portal vein under following headings – a) Definition, b) formation, c) location, d) course, e) branches, f) Parts, g) Tributaries.	LAQ
2.	Explain the Cavernous sinus under following headings – a) Definition, b) location, c) measurement, d) extension,	LAQ

	e) relations, f) Tributaries, g) communications.	
3.	Parts & branches of Aorta	SAQ
4.	Discuss the origin, course, parts & branches of Subclavian artery.	SAQ
5.	Discuss the origin, course, parts & branches of Axillary artery.	SAQ
6.	Discuss the origin, course & branches of Brachial artery.	SAQ
7.	Discuss the origin & branches of Internal iliac artery.	SAQ
8.	Discuss the origin, course & branches of External carotid artery.	SAQ
9.	Discuss the origin, parts, course & branches of Internal carotid artery.	SAQ
10.	Classification of Dural venous sinuses.	SAQ / VSAQ
11.	Enumerate the branches of Brachial artery.	VSAQ
12.	State the branches of Radial & Ulnar artery.	VSAQ
13.	State the branches of Femoral artery.	VSAQ
14.	List out the sites of Peripheral pulse.	VSAQ
15.	List out the sites of Porto caval anastomosis.	VSAQ
16.	State the formation, course & termination of Great saphenous vein / Short saphenous vein.	VSAQ
17.	Write a note on Cysterna chyli.	VSAQ
18.	Formation, location & branches of Superficial palmar arch / Deep palmar arch.	VSAQ

UNIT: 3 RESPIRATORY SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the **Larynx** under following headings – a) Definition, b) location, c) extension, d) measurement, e) Skeletal framework, f) function.	LAQ
2.	Explain the **Lung** under following headings – a) Definition, b) location, c) coverings, d) weight & Colour, e) external features, f) medial surface impression, g) hilum, h) Root of lung, i) blood supply, j) note on Bronchopulmonary segments.	LAQ
3.	Discuss the definition, formation & structures opening in the Lateral wall of nose.	SAQ
4.	Discuss the definition, extension, measurement, external feature of Trachea.	SAQ
5.	Discuss the definition, layers, parts of layers, recesses, nerve supply of Pleura.	SAQ / VSAQ
6.	State the parts of Respiratory system.	VSAQ
7.	Enumerate the structures forming the Nasal septum.	VSAQ
8.	Write a note on Carina.	VSAQ
9.	Write a note on Bronchopulmonary segments.	VSAQ
10.	List out the Para nasal air sinuses.	VSAQ
11.	Enumerate the muscles of Respiration & state its nerve supply.	VSAQ

UNIT: 4 DIGESTIVE SYSTEMS

Q.NO	TOPICS	TYPE
1.	Describe the **Tongue** under following headings – a) Definition, b) location, c) parts, d) external features, e) muscles, f) Nerve supply.	LAQ

2.	Explain the **Pharynx** under following headings – a) Definition, b) location, c) extension, d) sub-division, e) Muscles forming the pharynx, f) nerve supply.	LAQ
3.	Explain the **Stomach** under following headings – a) Definition, b) location, c) capacity, d) measurement, e) External features, f) Parts, g) relations, h) blood supply.	LAQ
4.	Describe the **Duodenum** under following headings – a) Definition, b) location, c) parts, d) measurement, e) external features, f) Internal features (2^{nd} part), g) blood supply.	LAQ
5.	Explain the **Liver** under following headings – a) Definition, b) location, c) Colour, d) weight, e) external features, f) Relations, g) bare area, h) Porta hepatis, i) blood supply, j) function.	LAQ
6.	Explain the **Pancreas** under following headings – a) Definition, b) location, c) anatomical & functional parts, d) measurement, e) Colour, f) external features, g) relations, h) Duct of pancreas, i) Blood supply.	LAQ
7.	Discuss the location & external features of Tongue.	SAQ
8.	Discuss the parts, muscles of Tongue & state its nerve supply.	SAQ
9.	Discuss the location, external features, parts & blood supply of stomach.	SAQ
10.	Discuss the external & internal features of the 2^{nd} part of Duodenum.	SAQ
11.	Discuss the Caecum under following headings – a) Definition, b) location, c) measurement, d) types, e) external features, f) Internal features, g) blood supply.	SAQ
12.	Discuss the Appendix under following headings – a) Definition, b) location, c) parts, d) measurement, e) position, f) Blood supply.	SAQ
13.	Discuss the characteristic features / cardinal features of Large intestine.	SAQ
14.	Discuss the Extra hepatic biliary apparatus under following headings – a) Definition, b) parts, c) measurement, d) function, e) Note on gall bladder.	SAQ
15.	Discuss the definition, location, origin, course & branches of Coeliac trunk.	SAQ
16.	List out the parts of Digestive system.	VSAQ
17.	State the parts & papillae of Tongue.	VSAQ
18.	State the nerve supply of Tongue.	VSAQ
19.	Enumerate the muscles of Tongue.	VSAQ
20.	State the extension & sub-divisions of Pharynx.	VSAQ
21.	State the extension & constrictions of Esophagus.	VSAQ
22.	List out the structural differences between the Jejunum & Ileum.	VSAQ
23.	State the location & types of Caecum.	VSAQ
24.	State the location / parts & position of Appendix.	VSAQ
25.	Write a note on Porta hepatis.	VSAQ
26.	Write a note on bare area of Liver.	VSAQ
27.	Write a note on Pancreatic duct.	VSAQ
28.	Enumerate the parts & function of Biliary apparatus.	VSAQ
29.	Classification of Salivary glands.	VSAQ
30.	State the branches of Superior mesenteric artery.	VSAQ

31.	State the branches of Inferior mesenteric artery.	VSAQ
32.	State formation of Marginal artery / artery of Drummond.	VSAQ

UNIT: 5 URINARY SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the Kidney under following headings – a) Definition, b) location, c) measurement, d) Colour, e) external features, f) Hilum, g) relations, h) coverings, i) internal features, j) Blood supply.	LAQ
2.	Explain the Urinary bladder under following headings – a) Definition, b) location, c) shape, d) measurement, e) capacity, f) External features, g) relations, h) supports, i) Internal features (Trigone of urinary bladder), j) blood supply, k) role.	LAQ
3.	Discuss the location & relations of Kidney.	SAQ
4.	Discuss the extension, parts, measurement, constrictions & blood supply of Ureter.	SAQ
5.	Discuss the external features & supports of Urinary bladder.	SAQ
6.	State the parts of Urinary system.	VSAQ
7.	Write a note on hilum of kidney.	VSAQ
8.	State the extension, parts & constrictions of ureter.	VSAQ
9.	Write a note on Trigone of urinary bladder.	VSAQ
10.	State the definition, extension & parts of Male urethra.	VSAQ
11.	Write a note on Female urethra.	VSAQ

UNIT: 6 REPRODUCTIVE SYSTEMS
MALE REPRODUCTIVE SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the **Testis** under following headings – a) Definition, b) location, c) measurement, d) shape, e) external features, f) Coverings, g) internal features, h) functions, i) blood supply.	LAQ
2.	Describe the **Prostate gland** under following headings – a) Definition, b) location, c) shape, d) measurement, e) shape, f) External features, g) lobes, h) coverings, i) blood supply.	LAQ
3.	Discuss the location, external features, layers & blood supply of Scrotum.	SAQ
4.	Discuss the External & internal features of Testis.	SAQ
5.	Discuss the External features, lobes & coverings of Prostate.	SAQ
6.	State the parts of Male Reproductive system.	VSAQ.
7.	Enumerate the layers of Scrotum & state its nerve supply.	VSAQ.
8.	State the parts & role of Epididymis.	VSAQ.
9.	State the coverings of Testis & Prostate.	VSAQ.
10.	State the coverings & contents of Spermaticcord.	VSAQ.

FEMALE REPRODUCTIVE SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the **Mammary gland** under following headings – a) Definition, b) location, c) extension, d) shape, e) structures / features, f) Blood supply.	LAQ
2.	Explain the **Uterus** under following headings –	LAQ

	a) Definition, b) location, c) shape, d) measurement, e) external features, f) Positions, g) relations, h) supports, i) blood supply.	
3.	Discuss the Gross structure of Mammary gland.	SAQ
4.	Discuss the location & external features of Uterus.	SAQ
5.	Discuss the location, position & supports of Uterus.	SAQ
6.	Discuss the external & internal features of Ovary.	SAQ
7.	State the parts of Female Reproductive system.	VSAQ
8.	State the parts & role of Fallopian tube.	VSAQ
9.	Enumerate the ovarian follicles.	VSAQ
10.	State the parts & positions of Uterus.	VSAQ

UNIT: 7 ENDO CRINE SYSTEM

Q.NO	TOPICS	TYPE
1.	Describe the **Thyroid gland** under following headings – a) Definition, b) location, c) hormones, d) peculiarities, e) external features, f) Parts, g) relations, h) coverings, i) blood supply, j) Functions.	LAQ
2.	Explain the **Pituitary gland** under following headings – a) Definition, b) location, c) shape, d) measurement, e) external features & hormones, f) Blood supply.	LAQ
3.	Explain the **Suprarenal gland** under following headings – a) Definition, b) location, c) measurement, d) external features, e) Internal features, f) hormones, g) blood supply.	LAQ
4.	Discuss the external features of Thyroid gland, state its coverings & blood supply.	SAQ
5.	Discuss the external features & hormones of Pituitary gland.	SAQ
6.	Discuss the external & internal features of Suprarenal gland & state its hormones.	SAQ
7.	List out the Endocrine glands.	VSAQ
8	Classification of Endocrine glands.	VSAQ
9.	State the location & blood supply of Thyroid gland.	VSAQ
10.	State the location & hormones of Pituitary gland.	VSAQ
11.	State the location & hormones of Parathyroid gland.	VSAQ

UNIT: 8 NERVOUS SYSTEM

Q.NO	TOPICS	TYPE
1.	Classification of Nervous system.	SAQ
2.	Discuss the Cerebrum under following headings – a) Definition, b) location, c) external features.	SAQ
3.	Discuss the external features & blood supply of Cerebrum.	SAQ
4.	Discuss the Supero-lateral surface of Cerebrum.	SAQ
5.	Discuss the Cerebellum under following headings – a) Definition, b) location, c) nucleus, d) functions, e) blood supply.	SAQ
6.	Discuss the Spinal cord under following headings – a) Definition, b) location, c) extension, d) measurement, e) coverings, f) Blood supply.	SAQ
7.	Discuss the extension & external features of Spinal cord.	SAQ
8.	Discuss the location & external features of Midbrain.	SAQ
9.	Discuss the location & external features of Pons.	SAQ
10.	Discuss the location & external features of Medulla oblongata.	SAQ

11.	Discuss the blood supply of Brain.	SAQ
12.	Discuss the formation of Circle of Willis.	SAQ
13.	Classification of Cranial nerves.	SAQ / VSAQ
14.	State the parts of Brain.	VSAQ
15.	Write a note on Sulci & Gyri.	VSAQ
16.	State the location & nucleus of Cerebellum.	VSAQ
17.	State the layers of Meninges & its space.	VSAQ
19.	State the layers of meninges & its modification.	VSAQ
18.	State the modification of Spinal meninges.	VSAQ
20.	Enumerate the cranial nerves emerges from Midbrain / Pons / Medulla oblongata.	VSAQ
21.	List out the Cranial nerves.	VSAQ
22.	List out the Basal nuclei	VSAQ
23.	State the location & parts of Corpus callosum.	VSAQ

UNIT: 9 GENERAL EMBRYOLOGY

Q.NO	TOPICS	TYPE
1.	Discuss the stages of Spermatogenesis.	SAQ
2.	Discuss the stages of Oogenesis.	SAQ
3.	Discuss the Placenta under following headings – a) Definition, b) external features, c) functions.	SAQ
4.	Write a note on Fertilization & state its phases.	VSAQ
5.	Write a note on Implantation.	VSAQ
6.	Write a note on Ovulation.	VSAQ

PAPER 2 - PHYSIOLOGY

UNIT – I

GENERAL PHYSIOLOGY

Very short answer questions (VSAQ)

1. Draw labeled diagram of human cell and mention any four functions of cell organelles.
2. Explain one function of
   a) Mitochondria, b). Golgi apparatus
   c) Endoplasmic reticulum d) Ribosome
3. Give two differences between mitosis and meiosis.
4. Name the phases of mitosis
5. Name different types of intercellular connections?
6. Classify various mechanisms of transport across cell membrane.
7. Describe different mechanism of passive transport across the cell membrane
8. Describe different mechanism of active transport across the cell membrane
9. Define osmosis. Give examples.
10. Define symport. Give one example.
11. Define antiport. Give one example.
12. Define homeostasis. Name the types of feedback mechanisms involved in homeostasis with one example.
13. Briefly explain negative feedback mechanisms with examples.
14. Briefly explain positive feedback mechanisms with examples.
15. Give normal values of i) Intracellular fluid (ICF), ii) Extracellular fluid (ECF), iii) plasma and iv) Interstitial fluid

HEMATOLOGY (BLOOD)

Long answer questions (LAQ)

1. What is erythropoiesis? Describe the stages and factors influencing it.
2. What is anemia? Describe the types of anemia. Give the blood picture in each of them.
3. What s immunity? Explain its types.
4. Explain the mechanism of hemostasis.
5. Explain intrinsic and extrinsic mechanisms of blood clotting.
6. Name the blood group systems. Explain the basis for its classification. Add a note on its clinical importance.

Short answer questions (SAQ)

1. Briefly describe the composition of blood.
2. Write the functions of blood.
3. List the plasma proteins. Write its functions.
4. What is Erythropoiesis? List its stages.
5. Define anemia with types. Explain iron deficiency anemia.
6. Briefly explain ABO and Rh system.
7. Erythroblastosis fetalis.
8. Define hemostasis with stages.
9. Name the clotting factors.
10. Define immunity. What are its types?

Very short answer questions (VSAQ)

1. Classifications of WBC.
2. Functions of neutrophil.
3. What is Phagocytosis?
4. Functions of eosinophil.
5. Functions of basophil.
6. Functions of lymphocytes.
7. Functions of red blood cell (RBC).
8. Write the normal values of hemoglobin in adults male and female.
9. Functions of hemoglobin.
10. Functions of platelets.
11. What is hemophilia?
12. What is anticoagulant?
13. Name any two anticoagulants.
14. Name the blood group systems.
15. Define Landsteiner's law.

Mismatch transfusion.

UNIT – II

CARDIOVASCULAR SYSTEM

Long answer questions (LAQ)

1. Define cardiac cycle. Explain with the help of a diagram the mechanical and pressure changes during cardiac cycle.
2. Draw a labelled diagram showing the innervations of heart. Describe the regulation of heart rate.
3. Define blood pressure. Give its normal values. Write the factors controlling blood pressure.
4. Define cardiac output and cardiac index. Give its normal values. Describe the factors regulating cardiac output.
5. What is shock? What are its types? Discuss the cardiovascular compensatory changes that occur during shock.

Short Answer Questions (SAQ)

1. Write the difference between pulmonary and systemic circulation.
2. Briefly describe the conducting system of heart.
3. Draw labeled diagram of conducting system of heart.
4. List out the properties of cardiac muscle. Briefly explain any two properties.
5. Draw a normal Lead II ECG indicating its waves and segments.
6. Define blood pressure (BP). What are the components of it and write its normal range.
7. List the factors affecting blood pressure
8. Define cardiac cycle. List the events during cardiac cycle.
9. Define shock. Name its types.
10. Briefly explain the types of heart sounds.

Very Short Answer Questions (VSAQ)

1. Write any two differentiating points between pulmonary and systemic circulation.
2. Define blood pressure.
3. What is systolic blood pressure? Write its normal value.
4. What is diastolic blood pressure? Write ifs normal value.
5. Define pulse. Write its normal range.
6. Write any two difference between tachycardia and bradycardia
7. Define cardiac output. Write its normal values.
8. Define stroke volume. Write its normal values.
9. What is electrocardiogram (ECG)?
10. List any four properties of cardiac muscle

UNIT III

RESPIRATORY SYSTEM

Long answer questions (LAQ)

1. Describe the mechanics of breathing.
2. Explain oxygen transport in the blood. Describe the oxygen dissociation curve.
3. Discuss the transport of carbon dioxide in the blood.
4. Name the respiratory centers. Explain the neural regulation of respiration.
5. Classify hypoxia. Describe the types with suitable examples.

Short answer questions (SAQ)

1. Briefly explain the mechanism of inspiration.
2. Briefly explain the mechanism of expiration.
3. Draw labeled diagram of pontine and medullary respiratory centers.
4. Briefly explain the transport of oxygen in the blood
5. Briefly explain the transport of carbon dioxide in the blood.
6. Draw labeled diagram of normal spirogram indicating lung volume and capacities.
7. Define and give normal values of lung volumes.
8. Define and give normal values of lung capacities.
9. What is surfactant? Give its function.
10. Define hypoxia. List its various types.
11. Classify and explain any one type of hypoxia.

Very short answer questions (VSAQ)

1. Name the inspiratory muscles.
2. Name the expiratory muscles.
3. Name the respiratory and non-respiratory functions of lungs.
4. Write any four functions of respiratory system.
5. Function of surfactant.
6. Name the respiratory centers.
7. Normal values of lung volumes.
8. Normal values of lung capacities.
9. Draw labeled diagram of respiratory center.
10. List the types of hypoxia
11. Vital Capacity.

12. What is dead space?
13. What is hypoxia?
14. What is dyspnea?
15. What is cyanosis?
16. What is periodic breathing?

UNIT – IV
IV – GASTRO-INTESTINAL PHYSIOLOGY

Long Answer Questions (LAQ)

1. Describe the phase and control of deglutition. Add a note on its applied importance.
2. Write the composition of saliva? Describe the regulation of salivary secretion. Discuss its functions.
3. Describe the composition and phases of gastric secretion. Briefly explain the HCl secretion in stomach.
4. Describe the phases of pancreatic secretion.

Short Answer Questions (SAQ)

1. Give the composition and functions of saliva?
2. Give composition and functions of gastric secretion?
3. Briefly explain mechanism of HCl secretion
4. Give composition and functions of pancreatic secretion?
5. Briefly explain entero-hepatic circulation with neat diagram.
6. Briefly explain the functions of liver.
7. Classify gastro intestinal (GI) hormones and write its actions of any two hormones.
8. Peptic ulcer.

Very Short Answer Questions (VSAQ)

1. What is mastication?
2. What is deglutition?
3. Write any four functions of saliva.
4. Write any four functions of liver.
5. Functions of pancreatic juice.
6. Name any four GI hormones.
7. Functions of gastrin.
8. Functions of secretin.
9. Functions of cholecystokinin pancreozymin.
10. What are the movements of stomach?
11. What are the movements of small intestine?
12. What are the movements of large intestine?
13. Write any four functions of bile.
14. What is the difference between liver and gall bladder bile?

UNIT – IV
RENAL PHYSIOLOGY (EXCRETORY SYSTEM)

Long Answer Questions (LAQ)

1. Describe the mechanism of urine formation.
2. Define GFR (Glomerular filtration rate). Write its normal values. Briefly explain the factors affecting GFR.

3. Describe the Structure and functions of juxta glomerular apparatus
4. Draw a labeled diagram showing nerve supply to the urinary bladder. Explain the mechanism of micturition. What is a neurogenic bladder?
5. Describe the role of counter current multiplier and exchange system in concentrating urine.
6. Discuss the role of different buffer systems in regulation of acid – base balance.

Short Answer Questions (SAQ)

1. Briefly explain the functions of kidney.
2. Briefly explain the formation of urine.
3. Briefly explain mechanism behind voiding of urine.
4. Define GFR (Glomerular filtration rate). Write its normal values. List the factors affecting GFR.
5. What is the normal renal blood flow? How is it measured?
6. List the Special features of renal blood flow.
7. List any three differences between Cortical and Juxtamedullary nephrons.
8. Draw a labeled diagram of juxtaglomerular apparatus. What are its functions?
9. With a flow chart and suitable diagram, indicate the process of micturition reflex.
10. Briefly explain the role of ADH (Anti-diuretic hormone) on kidney?
11. Briefly explain renal dialysis.

Very Short Answer Questions (VSAQ)

1. Draw labeled diagram of a nephron.
2. Draw labeled diagram of filtration membrane
3. Write any four functions of kidney.
4. Functions of macula densa and Juxtaglomerular cells
5. What are the steps of urine formation?
6. Give one substances used to measure GFR and renal plasma flow.
7. What is micturition reflex?
8. What is cystometrogram?
9. Filtration fraction.
10. Define renal clearance.
11. Name the types of renal clearance.
12. List any three differences between cortical and medullary nephrons.
13. What is diuresis?
14. What is diuretics?
15. Name any two diuretics.
16. Give two functions of skin?

UNIT – V

V - ENDOCRINE PHYSIOLOGY

Short Answer Questions (SAQ)

1. List the anterior pituitary (Adenohypophysis) hormones. Give any two hormone functions.
2. Mention the physiological role of GH (Growth hormone). Add a note on its hyper and hypo secretion.
3. Name the posterior pituitary hormones. Give their functions.
4. Name the adrenal cortical and medullary hormones. Mention the functions of glucocorticoids.

5. Mention the functions of aldosterone.
6. Name the thyroid hormones. Write its functions.
7. Name the hormones synthesized by pancrease. Mention their role in maintaining blood glucose.
8. Explain the actions of hormones on hyperglycemia and hypoglycemia.

Very Short Answer Questions (VSAQ)

1. Name any four hypothalamic hormones.
2. Name the anterior pituitary (Adenohypophysis) hormones.
3. List the posterior pituitary (Neurohypophysis) hormones
4. What is diabetes mellitus? What are its types?
5. What is the difference between gigantism and agromegaly?
6. What is dwarfism?
7. Name the thyroid hormones.
8. Write any two functions of thyroid hormones.
9. What is Grave's disease?
10. What is myxedema?
11. What is cretinism?
12. What is the difference between myxedema and cretinism?
13. Functions of parathormone.
14. Functions of mineralocorticoids (Aldosterone).
15. Functions of glucocorticoids.
16. What is Cushing's syndrome?
17. What is Addison's disease?
18. What is the difference between diabetes mellitus and diabetes insipidus?
19. Name the hormones secreted by pancrease.
20. Name the diabetogenic and antidiabetogenic hormones.
21. Functions of insulin.
22. Functions of glucagon.
23. What is diuresis? What are its types?
24. Functions of adrenal medullary hormone.
25. What is fight or flight response?

V- REPRODUCTIVE SYSTEM

Short answer questions (SAQ)

1. What is spermatogenesis? Mention its stages.
2. Briefly explain the ovarian cycle.
3. Briefly explain ovulation with hormonal regulations.
4. What is menstrual cycle? Briefly explain its phases.
5. Briefly explain any two female contraceptive methods.
6. List the contraceptive methods in male and female.
7. Explain the IUCD (Intrauterine contraceptive device).
8. List the functions of estrogen.
9. List the functions of progesterone.

Very short answer questions (VSAQ)

1. Write any two functions of testosterone.
2. What is menarche and menopause?
3. What is menstrual cycle?
4. List the placental hormones.
5. List the functions of Follicular stimulating hormone (FSH).

6. List the functions of sertoli cells
7. Functions of placenta.
8. Name the factors influencing spermatogenesis.
9. What is fertilization?

UNIT – VI
NERVE MUSCLE PHYSIOLOGY

Short answer questions (SAQ)

1. Draw the labeled diagram of neuromuscular junction (NMJ).
2. Briefly explain the ionic basis of action potential in a neuron.
3. Briefly explain the steps of neuromuscular transmission of signal impulse.
4. With the help of a flow chart, depict the steps of muscle contraction.
5. Briefly explain the excitation – contraction coupling in a skeletal muscle
6. Write any four differences between skeletal, cardiac and smooth muscles.
7. Myasthenia gravis

Very short answer questions (VSAQ)

1. Describe the structure of a neuron.
2. Give the normal value of resting membrane potential of i) motor neuron and ii) skeletal muscle.
3. Give normal resting membrane potential of neuron and skeletal muscle.
4. List any two properties of nerve fibers.
5. Name any two neuromuscular blocking agent
6. Draw the structure of sarcomere
7. Name the muscle proteins.
8. List any four properties of skeletal muscle.
9. Rigor mortis

VI – CENTRAL NERVOUS SYSTEM (CNS)
Short answer questions (SAQ)

1. Briefly explain the divisions of nervous system.
2. With a flow chart and suitable diagram briefly explain the synaptic transmission of excitatory postsynaptic potential (EPSP).
3. With a flow chart and suitable diagram briefly explain the synaptic transmission of inhibitory postsynaptic potential (IPSP).
4. Briefly explain the functions of cerebral cortex.
5. What are the functions of cerebellum?
6. What are the functions of basal ganglia?
7. What are the functions of hypothalamus?

Very short answer questions (VSAQ)

1. Name any four properties of synapse.
2. Write any two functions of thalamus.
3. Functions of medulla oblongata.
4. Functions of cerebro spinal fluid (CSF).
5. Name any two neurotransmitters.
6. Name any four hypothalamic hormones.
7. Name the anterior pituitary (Adenohypophysis) hormones.
8. List the posterior pituitary (Neurohypophysis) hormones

VI - SPECIAL SENSES
Short answer questions (SAQ)

1. Trace the visual pathway with a neat labeled diagram
2. Explain the errors of refraction

3. Trace the auditory pathway with a neat labeled diagram
4. Functions of Middle ear.
5. Trace the olfactory pathway.

Very short answer questions (VSAQ)

1. Name the receptors for vision, smell, taste and hearing.
2. Functions of eye
3. List the primary colors of vision
4. Accommodation reflex.
5. What are the functions of rods and cones in eye?
6. Explain the terms ageusia, hypogeusia, dysgeusia.
7. Name the primary taste sensations

PAPER-3: BIOCHEMISTRY

UNIT-I: INTRODUCTION TO BIOCHEMISTRY

Long answer questions **(10 marks)**

1. How is acid base balance maintained in the body?
2. Write in detail about Acid base disorders

Short Questions **(6 marks)**

1. Discuss the different buffer system of acid base homeostasis.
2. What is the normal PH of blood? How is it maintained?
3. Explain the role of lungs in acid base system
4. Glass electrode and determination of pH
5. Explain the Metabolic acidosis & Metabolic alkalosis
6. Explain the Respiratory acidosis & Respiratory alkalosis
7. Role of kidney in the regulation of blood pH
8. Biochemical assessment of acid base balance

Very Short answer questions: **(3 marks)**

1. Define pH. What is the normal values of blood & urine PH
2. Define buffer and give 2 examples.
3. Define acid/ base with example
4. Write any 2 conditions for acid base imbalance.
5. What is Henderson Hasselbalch equation
6. Define Anion gap with example
7. List out any 2 causes & symptoms for Respiratory acidosis & alkalosis
8. List out any 2 causes & symptoms for Metabolic acidosis & alkalosis
9. Define isoelectric PH.

PROTEINS

Long answer questions **(10 marks)**

1. Define proteins & detail in classification of Proteins with suitable examples
2. Describe the different levels of protein structure in detail with suitable diagram

Short Questions **(6 marks)**

1. What are Essential amino acids & mention its clinical significance
2. Mention any five biologically important peptides & its clinical role
3. Define Protein denaturation & causes, characteristics with example
4. Classify amino acids in detail with example.
5. Explain Transamination & Give one example.
6. Functions of plasma proteins
7. Define Electrophoresis & its clinical significance
8. Define Chromatography & its clinical significance
9. Explain the secondary structural organization of proteins
10. Mention the hydrolytic products of proteins
11. Precipitation reactions of protein
12. Define peptide bond formation & characteristics of peptide bond
14. Determination protein structure
15. Biological functions of amino acids16 Biological functions of proteins.

Very Short answer questions: **(3 marks)**

1. Name any 4 agents causing denaturation of protein
2. Name any 2 defense & buffer proteins
3. Name the Sulphur containing essential amino acid& functions.
4. Explain oxidative deamination with example
5. Explain decarboxylation with example
6. Mention the Properties of proteins
7. Name the conjugated protein with example
8. Name the derived protein with example
9. Define A:G ratio
10. Nutritional classes of proteins with example
11. Define zwitterion
12. Fibrous & globular proteins

ENZYMES

Long answer questions **(10 marks)**

1. Classify enzymes? Explain any 4 factors affecting the enzymes activity
2. Explain the different types of enzyme inhibition with suitable examples

Short Notes **(6 marks)**

1. How are enzymes classified and give one example for each class?
2. Explain factors affecting enzyme activity
3. Mention the clinical applications of enzymes and how they are useful in diagnosis ofdisease
4. Explain the features of active site of enzyme
5. Explain the competitive inhibition with suitable example
6. Explain the non-competitive inhibition with suitable example
7. What are the Co enzymes & Explain the features with example
8. Explain the regulation of enzyme activity
9. Define Iso-enzyme? Give two examples and its importance in clinical diagnosis
10. Explain the types of specificity

Very Short answer questions **(3 marks)**

1. Define Enzymes & Catalyst
2. Define Active site
3. What is Co- enzymes, mention any 2 examples with significance.
4. Define Enzyme unit
5. Define Apo enzyme& Holoenzymes
6. What is Suicide Inhibition
7. List any 3 Therapeutic uses of enzymes.
8. Plasma enzymes
9. Define km
10. Koshland's induced fit theory
11. Fischer's template theory
12. Prosthetic groups
13. Examples of Metalloenzymes &Metal activated enzymes

UNIT II – CARBOHYDRATES

Long answer questions **(10 marks)**

1. Write in detail about the Polysaccharides and mention its importance.
2. Properties of Monosaccharides
3. Define Carbohydrates & detail in classification of carbohydrates with examples
4. Explain the reaction of Monosaccharides.

Short Questions **(6 marks)**

1. Define carbohydrate and classify with examples
2. Write a note on Mucopolysaccharides & mention one function of each
3. Differentiate between Glycogen and Starch
4. Define Mutarotation
5. List out the functions of carbohydrates
6. Explain the Clinical importance of monosaccharides
7. Properties of monosaccharides
8. Explain Homopolysaccharides & mention their function
9. Write a note on Disaccharides
10. Define glycosides? Name any 3 glycosides & mention their function

Very Short answer questions **(3marks)**

1. What is heparin? Mention its composition & function
2. List any 2 reducing sugars
3. List any 4 functions of glycoprotein
4. Difference between glycoprotein & proteoglycan
5. Why is sucrose a non-reducing sugar
6. Mention the clinical application of Inulin & Dextran
7. Difference between reducing and non-reducing sugars
8. Define invert sugar
9. What is cellulose? Mention its function
10. Note on Anomers
11. Define Epimers with examples
12. Biological importance of mannitol
13. Optical isomerism with examples.
14. Define amino sugars with examples
15. Define glycosides

NUCLEIC CHEMISTRY

Short Answer Questions **(6 marks)**

1. List any 5 synthetic analog bases and mention its function
2. Short notes on types of RNA & mention its function
3. Define nucleoside and nucleotide by giving suitable examples.
4. Describe the structure of t-RNA and mention its function
5. List the important functions of nucleotides
6. Give a detailed account on Secondary structure of DNA
7. Difference between DNA and RNA
8. Difference between Purines and Pyrimidines

Very Short Answer Questions **(3 marks)**

1. Name the purine and pyrimidine bases of DNA & RNA
2. Differentiate Ribose and Deoxy ribose.
3. Name any 4 minor bases
4. Draw a neat labeled diagram of DNA
5. Mention the types of DNA and give 3 points each
6. What are the biological important bases and its function
7. Define Chargaff's rule
8. Functions of nucleic acid
9. What is ribosomal RNA
10. Draw a neat labeled diagram of t-RNA

UNIT III - LIPIDS

Long answer questions **(10 marks)**

1. what are lipids? classify them. Give biological significance of lipids.
2. what are fatty acids? classify them. Give biological significance of polyunsaturated fattyacids
3. Explain the phospholipids with examples and its function.

Short Questions **(6 marks)**

1. Explain in detail about Sphingomyelins & their function
2. Write a short note on Micelles, Bio membranes
3. Write a short note on Sphingophospholipids
4. Write a short note on Liposomes
5. Write a short note on Triacylglycerol
6. What is saturated fatty acid and give three examples with biological significance
7. What are prostaglandins? Mention their function
8. What is unsaturated fatty acid? Explain the types and biological significance
9. Write a short note on Properties of fatty acids
10. Write a short note on Essential Fatty Acids?
11. Write a short note on Trans fatty acids
12. Write a short note on cholesterol
13. Describe briefly about the classifications of lipids with suitable examples
14. What are the compounds formed from cholesterol?
15. Write in detail about the lipoprotein & its functions

Very Short answer questions **(3 marks)**

1. Lung surfactant
2. Saponification number
3. Iodine number
4. Acid number
5. What are Apo Lipoproteins?
6. Respiratory Distress Syndrome (RDS)
7. Define halogenation
8. What is rancidity of lipids?
9. Omega 3 Fatty acids
10. Cardiolipin
11. Free Fatty Acids

12. Leukotriene's (LTs)
13. Thromboxane's (Tx)
14. Write the products formed due to complete hydrolysis of triacylglycerol
15. What is cephalin

UNIT IV - ENGERY METABOLISM AND NUTRITIONAL BIOCHEMISTRY

Long answer questions **(10 marks)**

1. Write in detail about the RDA, dietary sources, biochemical role and deficiency manifestations of folic acid/ vitamin B12/ calcium /lron
2. Explain the RDA, dietary sources, biochemical role and deficiency manifestations ofvitamin A/ vitamin D/ vitamin C/ vitamin K

Short Notes **(6 marks)**

1. List out the clinical significance of Vitamin E/ Vitamin K
2. Coenzymes & functions of any 1 B-complex vitamin (Thiamine/ Riboflavin/ Niacin/Pyridoxine/ Folic acid etc.)
3. Explain the Vitamin E has selenium sparing action.
4. Discuss the steps involved in digestion & absorption of calcium/ phosphorous / iron
5. How plasma calcium level is regulated
6. Functions of copper/ selenium/ zinc
7. Role of proteins in diets
8. Describe protein energy malnutrition
9. Nutritional value of protein
10. Dietary role of different lipids
11. Dietary fiber
12. Thermogenic effect of food
13. Obesity
14. Define nitrogen balance &Mention the factor that causes positive & negative nitrogenbalance
15. Define BMR & factor affecting BMR
16. What are Essential Amin Acids? Mention their clinical importance
17. Explain the RDA, sources, biochemical role and deficiency of sodium / potassium
18. What are Essential Fatty Acids? Mention their clinical importance.

Very Short answer questions **(3marks)**

1. Write any 3 causes for Tetany
2. Define Heme proteins/ non heme proteins
3. Hemochromatosis/ Hemosiderosis
4. Iron deficiency anemia
5. Wilson's disease
6. Fluorosis
7. Define balanced diet
8. Define calorific values & Its significance
9. Define Respiratory quotient
10. What is Glycemic index
11. What is pellagra
12. Ceruloplasmin

UNIT V CLINICAL CHEMISTRY

Short Notes **(6marks)**

1. Detail account on basic principle, methodology and diagnostic significance ofelectrophoresis.
2. Detail account on basic principle, methodology and diagnostic significance of paperchromatography
3. Short notes on Osmolality, significance and measurement.
4. write about the different types of electrophoresis & application of each type
5. Explain the method of cholesterol /urea /glucose estimation
6. write about the different types of electrophoresis & application of each type

Very Short answer questions **(2 marks)**

1. Define Osmolality/ Osmolarity
2. Write the principle of (GOD-POD) method
3. List any 3 simple test to identify Carbohydrates, lipids and proteins
4. Mention the normal values of glucose/ cholesterol/ protein/ urea/ creatinine
5. Define osmolal gap
6. what is Rf value
7. Write the principle of Molisch test /Benedict's test
8. List out the normal/ abnormal constituents of urine

ENVIRONMENTAL CHEMISTRY

Short Notes **(6 marks)**

1. Explain in detail about biomedical waste management
2. Write short notes on air pollution
3. Write short notes on Acid Rain.
4. Write short notes on carbon monoxide
5. Write short notes on mutagenesis.
6. Explain in detail about bio pesticides & its types
7. Explain briefly about the harm full effects of plastics to human health

Very Short answer questions **(3marks)**

1. Define pollutants & give 2 examples
2. What are biomedical wastes?
3. Name five categories of bio pesticides
4. Write about biological water borne disease
5. What are the problems caused by plastics?
6. Name some chemicals causing water borne disorders
7. What is Bio-degradable & Non-biodegradable Waste?
8. Define greenhouse effects
9. What is Ames test?
10. What is meant by carcinogens, and list any three chemicals causing carcinogens
11. What is biosafety?

PAPER 4A - GENERAL MICROBIOLOGY

UNIT –I : GENERAL BACTERIOLOGY

10 MARKS

1. Discuss the methods of collection and transportation of specimens.
2. Define the terms sterilization,disinfection and antisepsis.Name various agents used for sterilization and discuss the role of hot air oven in sterilization.
3. Define the terms sterilization. Discuss the role of moist heat in sterilization and their sterility control methods.
4. Discuss the various types of disinfectants and discuss the role of halogens in chemical disinfection.

6 MARKS

1. Write a short note on contribution of Louis Pasteur.
2. Write a short note on contribution of Robert Koch.
3. Write a short note on contribution of Edward Jenner.
4. Write a short note on Koch postulates.
5. Tabulate the difference between prokaryotes and Eukaryotes .
6. Draw a labeled diagram of a bacterial cell. Describe the cell wall of bacteria.
7. Draw a labeled diagram of Autoclave. Describe the structure and functioning.
8. Draw a labeled diagram of Hot air oven. Describe the structure and functioning.
9. Tabulate the difference between differentiate between flagella and fimbria .
10. Write a short note on spores.
11. Describe bacterial growth curve.
12. What are culture media? Classify and discuss them in brief.
13. Discuss in detail anaerobic methods of cultivation of bacteria.
14. Discuss the methods of preservation of microorganisms.
15. Write a short note on phenols as disinfectant.
16. Write a short note on Aldehydes as disinfectant.
17. Write a short note on Antimicrobial sensitivity testing.
18. Discuss the methods of collection and transportation of specimens.
19. Outline the steps in Gram staining and interpretation.
20. Outline Ziehl-Neelsen staining procedure and interpretation.
21. Name the different types of hospital wastes and discuss in detail the methods of disposal of hospital wastes

3 MARKS

1. Write four functions of bacterial cell wall.
2. Write four differences between gram positive & gram negative bacterial cell wall.
3. What is protoplast & spheroplast.
4. What are the functions of capsule.
5. How will you classify bacteria based on position of flagella.
6. Write four examples of spore producing bacteria.
7. Write four examples of capsule producing bacteria.
8. Write four examples of capnophilic bacteria.
9. Write four examples of strict aerobic bacteria.
10. Write four examples of strict anaerobic bacteria.

11. Write four examples of microaerophilic bacteria.
12. Define sterilization .
13. Define disinfectant .
14. Name the types of filters and their uses.
15. What is cold sterilization.
16. Define inspissation.
17. What is an agar? write its role in preparation of media.
18. Name four selective media.
19. Name four differential media.
20. Name four transport media.
21. Write the composition of TSI agar.
22. Write the principles of catalse test.
23. Write the principles of oxidase test.
24. Name the two motile and non-motile organisms

UNIT -2 : IMMUNOLOGY

6 MARKS

1. Discuss the mechanism of innate and acquired immunity.
2. What is hypersensitivity? Classify hypersensitivity reactions? Describe in detail about type I reactions.
3. Discuss the principle and clinical applications of immunofluorescence technique.
4. Discuss the principle and clinical applications of ELISA technique.
5. Describe the structure and functions of Ig M, Ig G & Ig A.
6. Write a short notes on autoimmunity.
7. Discuss about delayed type hypersensitivity.
8. Describe about phagocytosis process.
9. Herd immunity.
10. Type III Hypersensitivity.

3 MARKS

1. Write the difference between active & passive immunity.
2. Define Immunity.
3. Write two examples of each , live attenuated bacterial & viral vaccines.
4. Write two examples of each , killed bacterial & viral vaccines
5. Write four difference between live & killed vaccines.
6. Define hapten.
7. What is heterophile antigen? write two examples.
8. Write two uses of ELISA.
9. Define hypersensitivity.
10. Difference between immediate and delayed type of hypersensitivity.
11. Define autoimmunity

UNIT -3 SYSTEMIC BACTERIOLOGY

10 MARKS

1. Discuss the pathogenicity and laboratory diagnosis of *Staphylococcus aureus*.
2. Name various organism causing sore throat and discuss in detail the laboratory diagnosis of diphtheria.
3. Classify Streptococci. Discuss the pathogenesis and lab diagnosis of *S.pyogenes*.

4. Classify the Clostridia of medical importance. Describe the pathogenesis, laboratory diagnosis of gas gangrene.
5. Classify Mycobacteria. Give an account on pathogenesis and laboratory diagnosis of pulmonary tuberculosis. Add a note on BCG vaccine.
6. Discuss the morphology, pathogenesis and laboratory diagnosis of syphilis.
7. Discuss in detail about pathogenesis and laboratory diagnosis of enteric fever.
8. List the diarrhea causing bacteria. Write in detail about pathogenesis and laboratory diagnosis of *vibrio*.

6 MARKS

1. Name four causative agents of enteric fever and explain about WIDAL test.
2. Name the UTI causing bacteria. How to collect urine & laboratory diagnosis of *E.coli*.
3. Describe about Toxin produced by *staphylococcus aureus*.
4. Discuss about prophylaxis of diphtheria.
5. Difference between *Streptococcus viridians* & *Streptococcus pneumoniae*.
6. Coagulase test.
7. Tetanus.
8. Explain about morphology and pathogenicity of *Bacillus anthracis*.
9. Classification of shigella and explain the antigenic structure and toxins produced by *Shigella*.
10. Weil's diseases.
11. Laboratory diagnosis of syphilis
12. Discuss the pathogenicity of Chlamydia.

3 MARKS

1. Name the pigments produced by *Pseudomonas*.
2. Name two toxins produced by *Clostridium tetani*.
3. Define Asepsis.
4. Enumerate any four diseases caused by *Streptococcus pyogenes*.
5. Gas gangrene.
6. Name four first line drugs used to treat tuberculosis infections.
7. List four species of *Shigella*.
8. List the cultivation methods of leprae.
9. MRSA.
10. ASO
11. CRP
12. Non –gonococcal urethritis (NGU).
13. Name two selective media for V.cholera
14. Significant bacteriuria.
15. Meningitis .
16. Selective medium of Salmonella
17. VDRL and RPR.
18. Name two transport and enrichment media for *V.cholerae*.
19. What are coliform bacilli? write two examples.
20. Actinomycosis
21. List the atypical mycobacteria.
22. Ghon's focus.
23. BCG vaccine
24. Name the two beta hemolytic bacteria.

25. Mantoux test.

UNIT -4 : VIROLOGY

10 MARKS

1. Name two RNA viruses.Name four methods of transmission of Hepatitis B virus infection in man.Mention the schedule of Hepatitis B vaccination.
2. Mention the modes of transmission of HIV in humans.Draw a neat diagram of HIV and label the parts.List the tests available for the confirmation of HIV in the microbiology laboratory.
3. Describe the laboratory diagnosis and prophylaxis of poliomyelitis.
4. Explain the laboratory diagnosis and prophylaxis of Rabies.

6 MARKS

1. Describe the serological markers of Hepatitis B virus.
2. Describe the prophylaxis of polio virus.
3. Complications of dengue virus.
4. Write a short note on adenovirus.
5. Infectious mononucleosis.
6. List the opportunistic infections in AIDS patient.

3 MARKS

1. Name four DNA virus.
2. Name four RNA virus
3. Haemorrhagic causing virus.
4. MMR vaccine.
5. Draw a neat labeled diagram of HIV.
6. Rabies vaccine.
7. List the cultivation methods of virus.

UNIT -5: PARASITOLOGY

6 MARKS

1. Difference between amoebic and bacillary dysentery.
2. Describe the life cycle of *Entamoeba histolytica*.
3. Describe the life cycle of *Giardia lamblia*
4. Describe the life cycle of *Malaria*
5. Describe the life cycle of *hookworm*
6. Describe the life cycle of *Roundworm*
7. Lab diagnosis of Plasmodium.
8. Describe the lab diagnosis of parasitological samples.

3 MARKS

1. Morphology of *E.histolytica*.
2. Black water fever.
3. Vectors.
4. Morphology of Leishmania.
5. Peripheral blood smear of Malaria.
6. Dog tapeworm.
7. Cysticercus bovis.
8. Cysticercus cellulose.
9. Microfilaria.

UNIT -6: MYCOLOGY

6 MARKS

1. Discuss the laboratory diagnosis of fungal infections.
2. Write a short notes on zygomycosis.
3. Aspergillosis
4. Describe about systemic mycoses.
5. Cryptococcosis - Lesions caused & Laboratory diagnosis.
6. Discuss the opportunistic mycoses.
7. Describe the morphology & cultural characteristics of Dermatophytes.
8. Describe the morphology& cultural characteristics of *Candida albicans*

3 MARKS

1. SDA
2. Name two selective culture media for Candida spp.
3. Name two selective culture media for Cryptococcus spp.
4. What is germ tube test.
5. Mention four fungal laboratory contaminants .
6. Name four dimorphic fungus.
7. Name two examples of yeast.
8. Name four opportunistic fungus.
9. Name four superficial mycoses.
10. Mycetoma

UNIT -7: HOSPITAL INFECTION CONTROL

6 MARKS

1. Biomedical waste management.
2. Write a short note on universal precaution.
3. Write a short note on universal precaution.
4. Mode of transmission of infections.
5. Write short note on the vaccines recommended for health care workers.
6. Recall the procedure to be followed for sharp injury to health care workers.
7. Describe the prevention of Nosocomial infections.

3 MARKS

1. Define segregations.
2. List four infectious waste.
3. Define land filling.
4. What is HICC? List two roles of HICC.
5. List two techniques used for the treatment of infectious waste.
6. Define universal precautions.
7. Define PPE.
8. List four methods to control the Hospital acquired infections.

PAPER 4B - GENERAL PATHOLOGY

LONG ANSWER **(10 MARKS)**

1. Mention the types of necrosis with two example each
2. Mention the types of cellular adaptations with one example each
3. Mention the types of cell injury and describe the changes seen in each type
4. Describe the morphological alterations in reversible cell injury
5. Describe the morphological alterations in irreversible cell injury

SHORT ANSWERS **(6 MARKS)**

1. Tabulate the differences between exudate and transudate
2. Tabulate the differences between benign and malignant tumor
3. Define Gangrene. Mention the types of gangrenes with one example each
4. Mention the factors that influence wound healing and repair
5. Tabulate the differences between acute and chronic inflammation
6. Describe the principle chemical mediators of inflammation
7. Tabulate the differences between necrosis and apoptosis
8. Write a short note on apoptosis
9. Describe causes and morphological features of chronic inflammation
10. Explain granulomatous inflammation with a neat labeled diagram
11. Tabulate the differences between dry and wet gangrene
12. Explain mode of spread of tumors in brief
13. Adverse effects of smoking
14. Write a short note on asbestosis
15. Write a short note on silicosis

VERY SHORT ANSWERS **(3 MARKS)**

1. Define apoptosis. Mention two examples.
2. List the cardinal signs of acute inflammation
3. Define acute inflammation reaction and mention its outcome
4. Define chronic inflammation and give 2 examples
5. Mention the components of granulation tissue
6. Mention the parts of microscope
7. Give 2 examples of granulomatous inflammation
8. Define neoplasia
9. Define hypertrophy. Give 2 example
10. Define atrophy. Give 2 example
11. Define hyperplasia. Give 2 example
12. Define metaplasia. Give 2 example
13. Define reversible cell injury and mention two features
14. Define phagocytosis.
15. Define Virchow triad

HAEMATOLOGY

SHORT ANSWERS **(6 MARKS)**

1. Define anemia. Mention the types of anemia on the basis of etiology.
2. Classify leukemia. Mention general features of acute leukemia.
3. Enumerate various color codlings of various biomedical waste disposal with 4 examples

4. Describe the collection. transport, preservation and processing of clinical specimen
5. Describe the structure and function of different types of WBC'S with a neat labeled diagram
6. Write a short note on occupational health hazards.
7. Describe mechanism of homeostasis
8. Describe various types anticoagulant and its uses with its color coding
9. Explain microscopic examination of urine samples.
10. Describe the method of collection, transport, preservation of CSF.
11. Write short note on Coomb's test
12. Define anemia . Mention the general clinical features and basic interpretation of anemia.
13. Classify hemolytic anemia and mention in brief the laboratory findings

VERY SHORT ANSWERS **(3 MARKS)**

1. Define Landstenier's Law
2. Define blood group
3. Mention the normal platelet count and function of platelets.
4. Mention the types of transfusion transmitted infection
5. Mention 2 causes of Eosinophilia.
6. Mention 2 causes of Neutrophilia.
7. Mention 4 preservative of urine and its indication
8. Define cross matching
9. Mention Principle of major cross matching
10. Mention Principle of minor cross matching
11. Write about the principle of benedicts test.
12. Write about biomedical waste management.

SYSTEMIC PATHOLOGY

LIVER

1. Define Cirrhosis.(3M)
2. Describe in detail about viral hepatitis. (6M)
3. Mention the various stages of alcoholic liver disease(3M)
4. Describe in detail about gall stones.(6M)
5. Write about the etiology, pathogenesis and clinical features of chronic cholecystitis.(10M)

BRAIN TUMOURS

1. Classify brain tumours (3M)

KIDNEY

1. Mention the types of renal calculi.(3M)
2. Describe the clinical features of renal stones.(3M)
3. Define hydronephrosis (3M)
4. Classify renal tumours.(3M)

BONE TUMOURS

1. Classify bone tumours(3M)
2. Give two examples of benign bone tumors.(3M)
3. Give two examples of malignant bone tumours(3M)

FEMALE GENITAL TRACT

1. Classify ovarian tumours(3M)
2. Describe the types of endometrial hyperplasia and risk factors associated with it.(6M)
3. Write a short note on risk factors for endometrial cancer.(6M)
4. Describe the etiopathogenesis and risk factors for cervical cancer.(10M)

BREAST

1. Describe the risk factors and clinical features of breast carcinoma.(10M)
2. Give 2 example of benign breasts tumour (3M)
3. Give 2 example of malignant breast tumours.(3M)

CARDIOVASCULAR SYSTEM
RHEUMATIC HEART DISEASES

1. Enumerate the modified Jones criteria for rheumatic heart disease(6M)

INFECTITVE ENDOCARDITIS

1. List the causative organisms for infective endocarditis(3M)
2. Enumerate the Dukes criteria for infective endocarditis.(6M)

ARTHEROSCLEROSIS

1. Enumerate the risk factors for atherosclerosis.(6M)
2. Mention two complications of atherosclerosis (3M)\
3. Mention the types of Ishemic heart disease. (3M)
4. Write in detail about myocardial infarction. (10M)

RESPIRATORY SYSTEM
LUNG INFECTIONS

1. Describe the various Stages of Pneumonia.(6M)
2. Define Pneumonia.(6M)

COPD

1. Define emphysema.(3M)
2. Define chronic bronchitis.(3M)
3. Define broncheactasis.(3M)
4. Tabulate the differences between chronic bronchitis and emphysema.(6M)
5. Mention various systemic effects of smoking (3M)

ASTHMA

1. Describe the etiopathogenesis and clinical features of bronchial asthma.(6M)
2. Define ARDS(3M)
3. Give 2 examples for conditions associated with ARDS.(3M)

GASTROINTESTINAL SYSTEM

1. Enumerate the clinical features of peptic ulcer.(3M)
2. Describe the Risk factors and clinical features of carcinoma stomach.(10M)
3. Describe the Risk factors and clinical features of carcinoma colon.(10M)

ABILITY ENHANCEMENT COMPULSORY ELECTIVES
AECC-1- ENGLISH QUESTION BANK

UNIT-1 – GRAMMAR

Six Mark Questions

1. Define grammar, Explain the types of grammar with example.
2. What do you mean by noun and Explain its type with examples?
3. Write a brief note on types of sentences with examples.
4. How many types of tenses are there?

Two Mark Questions

1. Define verb.
2. Define Adjective with example.
3. Define Adverb with example.
4. Define Gerund and preposition.
5. What do you mean by conjunction and interjection?
6. How many types of tenses are there?
7. He Said, “My father is ill”.(Change the sentence into indirect speech)
8. He said to her, “Where are you going”? (Change the sentence into indirect speech)
9. They said that they can’t live without water.(change the sentence into direct speech)
10. Radha said, ”I am very busy now”.(Change the sentence into indirect speech)
11. She says that she is a little bit nervous.(change the sentence into direct speech)
12. You are busy, _____? (Fill the sentence with suitable question tag)
13. Helmet makes driving safe, _____? (Fill the sentence with suitable question tag)
14. Dogs cannot fly, _____? (Fill the sentence with suitable question tag)
15. She was talking, _____?(Fill the sentence with suitable question tag)
16. He won’t come today____?(Fill the sentence with suitable question tag)
17. He _____ (drink)tea every morning. (Fill the sentence with suitable tense)
18. I enjoy_____(read) at a cafe.(Fill the sentence with suitable tense)
19. We_____(see) a film last night.(Fill the sentence with suitable tense)
20. They went home, after they_____(finish) their work.(Fill the sentence with suitable tense)
21. I_____(stay) here till you return.(Fill the sentence with suitable tense)
22. I_____ do it tomorrow. (Fill the sentence with modal verb)
23. _____ you help me with the house work, please? (Fill the sentence with modal verb)
24. I _____ speak English.(Fill the sentence with modal verb)
25. The doctor_____ see you now.(Fill the sentence with modal verb)
26. He _____ be the love of my life.(Fill the sentence with modal verb)
27. All_____ submit your notebook.(Fill the sentence with modal verb)
28. Seetha loves Rama. (Change the sentence to passive voice)
29. The story has been read by me. (Change the sentence to active voice)
30. Do you speak English well? (Change the sentence to passive voice)
31. Open the door (Change the sentence to passive voice)
32. Let the T.V be watched by them. (Change into active voice)
33. He admitted his guilt. (Change the simple sentence into complex sentence)
34. In-spite of his hard work, he failed. (Change the simple sentence into compound sentence)

35. It was raining, but they went out. (Change the compound sentence into simple sentence)
36. He failed to prove that he was innocent. (Chance the complex sentence into simple sentence)
37. If you do not work hard, you will fail. (Change the complex sentence into compound sentence)
38. Everest is _____ highest mountain in the world. (Fill up with the suitable article)
39. The rose is _____ beautiful flower. (Fill up with the suitable article)
40. _____ umbrella is useful in rain. (Fill up with the suitable article)
41. Do you paly _____ Piano? (Fill up with the suitable article)
42. _____ unicorn is a special creature. (Fill up with the suitable article)
43. Red _____ danger. (Fill up with suitable prepositions)
44. I acted _____him. (Fill up with suitable prepositions)
45. Mr. Kumar is _____ the office. (Fill up with suitable prepositions)
46. I am ready _____ help. (Fill up with suitable prepositions)
47. Put it _____ (Fill up with suitable prepositions)
48. Bharath is the cleverest of all the boys in the class. (Identify the degrees of comparison)
49. Seetha is taller than Geetha.(Identify the degrees of comparison)
50. Hyderabad is not so hot as Chennai.(Identify the degrees of comparison)
51. I am not so strong as he. (Identify the degrees of comparison)
52. Mumbai is bigger than Hyderabad. (Identify the degrees of comparison)

UNIT-2 : VOCABULARY

Six Mark Questions

1. Define vocabulary and explain its types.
2. How to improve our vocabulary.
3. Write the uses of Dictionary.

Two Mark Questions

1. Use a prefix to make the word meaningful:

Possible

2. Use a prefix to make the word meaningful:

Legal

3. Use a suffix to make the word meaningful:

Beauty

4. Use a suffix to make the word meaningful:

Clever

5. Use a suffix to make the word meaningful:

Danger

6. Give the antonym:

Weak

7. Give the antonym:

Open

8. Give the antonym:

Narrow

9. Give the antonym:

Expand

10. Give the antonym:

Superior

11. Give the synonym:
Incredible
12. Give the synonym:
Ecstatic
13. Give the synonym:
Rest
14. Give the synonym:
Behavior
15. Give the synonym:
Tired
16. Use the following idioms / phrases into sentence:
In black and white
17. Use the following idioms / phrases into sentence:
Get away
18. Use the following idioms / phrases into sentence:
Come forward
19. Use the following idioms / phrases into sentence:
Break down
20. Use the following idioms / phrases into sentence:
Look after someone
21. Write any two words miss used or confused?
22. Define Homophones.
23. Use the homophonic words in the sentences.
Write & right
24. Use the homophonic words in the sentences.
Whole & hole
25. Use the homophonic words in the sentences.
Weight & wait
26. Use the homophonic words in the sentences.
Sell & cell
27. Use the homophonic words in the sentences.
Sum & some

UNIT-3 : WRITING SKILLS
(Six Mark Questions)

1. Make a precise of the following passage and suggest a heading:

Effective speaking depends on effective listening. It takes energy to concentrate on hearing and to concentrate on understanding what has been heard. Incompetent listeners fail in a number of ways. First, they may drift. Their attention drifts from what the speaker is saying. Second, they may counter. They find counter-arguments to whatever a speaker may be saying. Third, they compete. Then, they filter. They exclude from their understanding those parts of the message which do not readily fit with their own frame of reference. Finally, they react. They let personal feelings about a speaker or subject override the significance of the message which is being sent.What can a listener do to be more effective? The first key to effective listening is the art of concentration. If a listener positively wishes to concentrate on receiving a message his chances of success are high. It may need determination. Some speakers are difficult to follow, either because of voice problems or because of the form in which they send a message. There is then a particular need for the determination of a listener to concentrate on what is being said.Concentration is helped by alertness. Mental alertness is helped by physical alertness. It is not simply physical fitness, but also positioning of the body, the limbs and the head. Some people also find it helpful to their concentration if they hold the head slightly to one side. One

useful way for achieving this is intensive note-taking, by trying to capture the critical headings and sub-headings the speaker is referring to. Note-taking has been recommended as an aid to the listener. It also helps the speaker. It gives him confidence when he sees that listeners are sufficiently interested to take notes; the patterns of eye-contact when the note-taker looks up can be very positive; and the speaker's timing is aided-he can see when a note-taker is writing hard and can then make effective use of pauses. Posture too is important. Consider the impact made by a less competent listener who pushes his chair backwards and slouches. An upright posture helps a listener's concentration. At the same time it is seen by the speaker to be a positive feature amongst his listeners. Effective listening skills have an impact on both the listener and the speaker.

2. **Make a precise of the following passage and suggest a heading:**

Despite all the research every one of us catches cold and most of us catch it frequently. Our failure to control one of the commonest of all ailments sometimes seems ridiculous. Medical science regularly practises transplant surgery and has rid whole countries of such killing diseases as Typhus and the Plague. But the problem of common cold is unusually difficult and much has yet to be done to solve it. It is known that a cold is caused by one of a number of viral infections that affect the lining of the nose and other passages leading to the lungs but the confusing variety of viruses makes study and remedy very difficult. It was shown in 1960 that many typical colds in adults are caused by one or the other of a family of viruses known as rhinoviruses, yet there still remain many colds for which no virus has as yet been isolated.There is also the difficulty that because they are so much smaller than the bacteria which cause many other infections, viruses cannot be seen with ordinary microscopes. Nor can they be cultivated easily in the bacteriologist's laboratory, since they only grow within the living cells of animals or plants. An important recent step forward, however, is the development of the technique of tissue culture, in which bits of animal tissue are enabled to go on living and to multiply independently of the body. This has greatly aided virus research and has led to the discovery of a large number of viruses. Their existence had previously been not only unknown but even unsuspected.The fact that we can catch a cold repeatedly creates another difficulty. Usually, a virus strikes only once and leaves the victim immune to further attacks. Still, we do not gain immunity from colds. Why? It may possibly be due to the fact that while other viruses get into the bloodstream where anti-bodies can oppose them, the viruses causing cold attack cells only on the surface. Or it may be that immunity from one of the many different viruses does not guarantee protection from all the others. It seems, therefore, that we are likely to have to suffer colds for some time yet.

3. **Make a precise of the following passage and suggest a heading:**

There is nothing more frustrating than when you sit down at your table to study with the sincerest of intentions and instead of being able to finish the task at hand, you find your thoughts wandering. However, there are certain techniques that you can use to enhance your concentration. "Your concentration level depends on a number of factors," says Samuel Ghosh, a social counsellor. "In order to develop your concentration span, it is necessary to examine various 2 facets of your physical and internal environment," she adds. To begin with one should attempt to create the physical environment that is conducive to focussed thought. Whether it is the radio, TV or your noisy neighbours, identify the factors that make it difficult for you to focus. For instance, if you live in a very noisy neighbourhood, you could try to plan your study hours in a nearby library. She disagrees with the notion that people can concentrate or study in an environment with distractions like a loud television, blaring music etc. "If you are distracted

when you are attempting to focus, your attention and retention powers do not work at optimum levels," cautions Ghosh. "Not more than two of your senses should be activated at the same time," she adds. What that means is that music that sets your feet tapping is not the ideal accompaniment to your books. Also do not place your study table or desk in front of a window. "While there is no cure for a mind that wants to wander, one should try and provide as little stimulus as possible. Looking out of a window when you are trying to concentrate will invariably send your mind on a tangent," says Ghosh. The second important thing, she says, is to establish goals for oneself instead of setting a general target and then trying to accomplish what you can in a haphazard fashion. It is very important to decide what you have to finish in a given span of time. The human mind recognizes fixed goals and targets and appreciates schedules more than random thoughts. Once your thoughts and goals are in line, a focussed system will follow. She recommends that you divide your schedule into study and recreation hours. When you study, choose a mix of subjects that you enjoy and dislike and save the former for the last so that you have something to look forward to. For instance, if you enjoy verbal skill tests more than mathematical problems, then finish Maths first. Not only will you find yourself working harder, you will have a sense of achievement when you wind up. Try not to sit for more than 40 minutes at a stretch. Take a very short break to make a cup of tea or listen to a song and sit down again. Under no circumstances, should one sit for more than one and a half hours. Short breaks build your concentration and refresh your mind. However, be careful not to overdo the relaxation. It may have undesired effects.

4. **Make a precise of the following passage and suggest a heading:**

Research has shown that the human mind can process words at the rate of about 500 per minute, whereas a speaker speaks at the rate of about 150 words a minute. The difference between the two at 350 is quite large. So a speaker must make every effort to retain the attention of the audience and the listener should also be careful not to let his mind wander. Good communication calls for good listening skills. A good speaker must necessarily be a good listener. Listening starts with hearing but goes beyond. Hearing, in other words is necessary but is not a sufficient condition for listening. Listening involves hearing with attention. Listening is a process that calls for concentration. While, listening, one should also be observant. In other words, listening has to do with the ears, as well as with the eyes and the mind. Listening is to be understood as the total process that involves hearing with attention, being observant and making interpretations. Good communication is essentially an interactive process. It calls for participation and involvement. It is quite often a dialogue rather than a monologue. It is necessary to be interested and also show or make it abundantly clear that one is interested in knowing what the other person has to say. Good listening is an art that can be cultivated. It relates to skills that can be developed. A good listener knows the art of getting much more than what the speaker is trying to convey. He knows how to prompt, persuade but not to cut off or interrupt what the other person has to say. At times the speaker may or may not be coherent, articulate and well organized in his thoughts and expressions. He may have it in his mind and yet he may fail to marshal the right words while communicating his thought. Nevertheless, a good listener puts him at ease, helps him articulate and facilitates him to get across the message that he wants to convey. For listening to be effective, it is also necessary that barriers to listening are removed. Such barriers can be both physical and psychological. Physical barriers generally relate to hindrances to proper hearing whereas psychological barriers are more fundamental and relate to the interpretation and evaluation of the speaker and the message.

5. **Make a precise of the following passage and suggest a heading:**

The term dietary fibres refers collectively to indigestible carbohydrates present in plant foods. The importance of these dietary fibres came into the picture when it was observed that the people having diet rich in these fibres, had low incidence of coronary heart disease, irritable bowel syndrome, dental caries and gall stones. The foodstuffs rich in these dietary fibres are cereals and grains, legumes, fruits with seeds, citrus fruits, carrots, cabbage, green leafy vegetables, apples, melons, peaches, pears etc. These dietary fibres are not digested by the enzymes of the stomach and the small intestine whereas most of other carbohydrates like starch and sugar are digested and absorbed. The dietary fibres have the property of holding water and because of it, these get swollen and behave like a sponge as these pass through the gastrointestinal tract. The fibres add bulk to the diet and increase transit time in the gut. Some of these fibres may undergo fermentation in the colon. In recent years, it has been considered essential to have some amount of fibres in the diet. Their beneficial effects lie in preventing coronary heart disease, and decreasing cholesterol level. The fibres like gums and pectin are reported to decrease postprandial (after meals) glucose level in the blood. These types of dietary fibres are recommended for the management of certain types of diabetes. Recent studies have shown that the fenugreek (Methi) seeds, which contain 40 per cent gum, are effective in decreasing blood glucose and cholesterol levels as compared to other gum containing vegetables. Some dietary fibres increase transit time and decrease the time of release of ingested food in colon. The diet having less fibres is associated with colon cancer and the dietary fibres may play a role in decreasing the risk of it. The dietary fibres hold water so that stools are soft, bulky and readily eliminated. Therefore, high fibre intake prevents or relieves constipation. The fibres increase motility of the small intestine and the colon and by decreasing the transit time there is less time for exposure of the mucosa to harmful toxic substances. Therefore, there is a less desire to eat . and the energy intake can be maintained within the range of requirement. This phenomenon helps in keeping a check on obesity. Another reason in helping to decrease obesity is that the high-fibre diets have somewhat lower coefficients of digestibility. The dietary fibres may have some adverse effects on nutrition by binding some trace metals like calcium, magnesium, phosphorus, zinc and others and therefore preventing their proper absorption. This may pose a possibility of nutritional deficiency especially when diets contain marginal levels of mineral elements. This may become important constraints on increasing dietary fibres. It is suggested that an intake of 40 grams dietary fibres per day is desirable.

6. Write a letter to your uncle thanking him for the birthday present he had sent for you.
7. Write a letter to your mother about your daily routine.
8. Write a letter to your younger brother who has grown very weak. Suggest ways how he can improve his health.
9. Write a letter to your younger brother who has grown very weak. Suggest ways how he can improve his health.
10. Write a letter to your father requesting him to buy you a cycle.
11. Write an application to your Principal requesting him to grant leave. Also mention reason/reasons.
12. You are Nirmal/Nirmala, a student of Government High School, Gurgaon. Write an application to the Principal of your school, requesting him to allow you full fee concession.

13. Write an application to the Principal of your school to allow you to change your section.
14. You have lost your library card. Write a letter to the librarian to issue you a duplicate card.
15. Write a letter to the Chairman of the Municipal Board regarding insanitary conditions of the locality you live in.

Rearrange the following jumbled sentences to meaningful sentences:

1.are machines/to think/robots/that use/a computer brain
2.are sent/computer brain/in the robot's parts/messages/from the/to motors
3.can be/to do/of work/robots/programmed/many kinds
4.is the/computer science/concerned with/robotics/field/and engineering/creating robots

Two Mark Questions

1. How is note making important in your profession?
2. How many types of letters are there?
3. Define skimming.

UNIT-4 : SPOKEN COMMUNICATION

Six Mark Questions

1. Write a Dialogue between a shopkeeper and a customer.
2. Write a Dialogue between two friends on the topic of air pollution.
3. Write a Dialogue between two new comers in college campus.
4. Write a Dialogue between a Nurse and a doctor.
5. Write a Dialogue between a student and a teacher.
6. Why is phonetics important in studying English.
7. Write a conversation two friends discussing about the online classes.
8. Describe a brief note on group discussion.
9. What are the good qualities of debater?

Two Mark Questions

1. Write a short note on hazards of cell phone usage?
2. Describe your favorite friend.
3. Define pronunciation.
4. Define intonation.
5. Write any two words in British English and American English.
6. Define debate.

UNIT-5 : LISTENING AND READING SKILLS

Six Mark Questions

1. Read the following and answer the questions given below

   "I Have a Dream" is a public speech delivered by American civil rights activist Martin Luther King Jr. during the March on Washington for Jobs and Freedom on August 28, 1963, in which he calls for an end to racism in the United States and called for civil and economic rights. Delivered to over 250,000 civil rights supporters from the steps of the Lincoln Memorial in Washington, D.C., the speech was a defining moment of the civil rights movement.

   Beginning with a reference to the Emancipation Proclamation, which freed millions of slaves in 1863, King observes that: "one hundred years later, the Negro still is not free". Toward the end of the speech, King departed from his prepared text for a partly improvised peroration on the theme "I have a dream", prompted by Mahalia Jackson's cry: "Tell them about the dream, Martin!" In this

part of the speech, which most excited the listeners and has now become its most famous, King described his dreams of freedom and equality arising from a land of slavery and hatred. Jon Meacham writes that, "With a single phrase, Martin Luther King Jr. joined Jefferson and Lincoln in the ranks of men who've shaped modern America". The speech was ranked the top American speech of the 20th century in a 1999 poll of scholars of public address.

Q1.What issues does Martin Luther King's speech address?
1.Continuation of racism
2.End to racism and civil and economic rights
3. Civil rights
4.Civil War

Q2.What pushes King to speak: "I have a dream"?
1.He reads out the Emancipation Proclamation
2.He is prompted by Mahalia Jackson
3.he is overwhelmed by the crowd
4.Licoln had asked him to give the speech.

Q3.From the last paragraph, give one word for "to leave"
1.Departed
2. Proclamation
3.Improvised
4.Address

Q4.What is the name of martin Luther King's famed speech?
1.The Emancipation Proclamation
2.An Improvisation
3. A Peroration
4.I Have a Dream

Q5.In front of whom does King speak?
1.The civil rights supporters
2.His friends
3.Lincoln
4.The Negroes

Read the following and answer the questions given below

Conflict had existed between Spain and England since the 1570s. England wanted a share of the wealth that Spain had been taking from the lands it had claimed in the Americas.

Elizabeth I, Queen of England, encouraged her staunch admiral of the navy, Sir Francis Drake, to raid Spanish ships and towns. Though these raids were on a small scale, Drake achieved dramatic success, adding gold and silver to England's treasury and diminishing Spain's supremacy. Religious differences also caused conflict between the two countries. Whereas Spain was Roman Catholic, most of England had become Protestant. King Philip II of Spain wanted to claim the throne and make England a Catholic country again. To satisfy his ambition and also to retaliate against England's theft of his gold and silver, King Philip began to build his fleet of warships, the Spanish Armada, in January 1586.

Philip intended his fleet to be indestructible. In addition to building new warships, he marshaled 130 sailing vessels of all types and recruited more than 19,000 robust

soldiers and 8,000 sailors. Although some of his ships lacked guns and others lacked ammunition, Philip was convinced that his Armada could withstand any battle with England.

The martial Armada set sail from Lisbon, Portugal, on May 9, 1588, but bad weather forced it back to port. The voyage resumed on July 22 after the weather became more stable.

The Spanish fleet met the smaller, faster, and more maneuverable English ships in battle off the coast of Plymouth, England, first on July 31 and again on August 2. The two battles left Spain vulnerable, having lost several ships and with its ammunition depleted. On August 7, while the Armada lay at anchor on the French side of the Strait of Dover, England sent eight burning ships into the midst of the Spanish fleet to set it on fire. Blocked on one side, the Spanish ships could only drift away, their crews in panic and disorder. Before the Armada could regroup, the English attacked again on August 8.

Although the Spaniards made a valiant effort to fight back, the fleet suffered extensive damage. During the eight hours of battle, the Armada drifted perilously close to the rocky coastline. At the moment when it seemed that the Spanish ships would be driven onto the English shore, the wind shifted, and the Armada drifted out into the North Sea. The Spaniards recognized the superiority of the English fleet and returned home, defeated.

Q1.Sir Francis Drake added wealth to the treasury and diminished Spain's ___.

unlimited power
unrestricted growth
territory
treaties

Q2. King Philip recruited many __ soldiers and sailors.

warlike
strong
accomplished
timid
inexperienced

Q3. The __ Armada set sail on May 9, 1588.

complete
warlike
independent
isolated

Q4. The two battles left the Spanish fleet ___.

open to change
triumphant
open to attack
defeated
discouraged

Q5. The Armada was __ on one side.

closed off
damaged
alone
circled

2. Read the following and answer the questions given below

Opera refers to a dramatic art form, originating in Europe, in which the emotional content is conveyed to the audience as much through music, both vocal and

instrumental, as it is through the lyrics. By contrast, in musical theater an actor's dramatic performance is primary, and the music plays a lesser role. The drama in opera is presented using the primary elements of theater such as scenery, costumes, and acting. However, the words of the opera, or libretto, are sung rather than spoken. The singers are accompanied by a musical ensemble ranging from a small instrumental ensemble to a full symphonic orchestra.

1. It is pointed out in the reading that opera ----.
   A) has developed under the influence of musical theater
   B) is a drama sung with the accompaniment of an orchestra
   C) is not a high-budget production
   D) is often performed in Europe
   E) is the most complex of all the performing arts

2. We can understand from the reading that ----.
   A) people are captivated more by opera than musical theater
   B) drama in opera is more important than the music
   C) orchestras in operas can vary considerably in size
   D) musical theater relies above all on music
   E) there is argument over whether the music is important or the words in opera

3. It is stated in the reading that ----.
   A) acting and costumes are secondary to music in musical theater
   B) many people find musical theater more captivating than opera
   C) music in musical theater is not as important as it is in opera
   D) an opera requires a huge orchestra as well as a large choir
   E) opera doesn't have any properties in common with musical theater.

Read the following passage and answer the questions given below.

Dolphins are regarded as the friendliest creatures in the sea and stories of them helping drowning sailors have been common since Roman times. The more we learn about dolphins, the more we realize that their society is more complex than people previously imagined. They look after other dolphins when they are ill, care for pregnant mothers and protect the weakest in the community, as we do. Some scientists have suggested that dolphins have a language but it is much more probable that they communicate with each other without needing words. Could any of these mammals be more intelligent than man? Certainly the most common argument in favor of man's superiority over them that we can kill them more easily than they can kill us is the least satisfactory. On the contrary, the more we discover about these remarkable creatures, the less we appear superior when we destroy them.

1. It is clear from the passage that dolphins ----.
A) don't want to be with us as much as we want to be with them
B) are proven to be less intelligent than once thought
C) have a reputation for being friendly to humans
D) are the most powerful creatures that live in the oceans
E) are capable of learning a language and communicating with humans

2. The fact that the writer of the passage thinks that we can kill dolphins more easily than they can kill us ----.

A) means that they are better adapted to their environment than we are
B) shows that dolphins have a very sophisticated form of communication
C) proves that dolphins are not the most intelligent species at sea
D) does not mean that we are superior to them
E) proves that Dolphins have linguistic skills far beyond what we previously thought

3. One can infer from the reading that ----.
A) dolphins are quite abundant in some areas of the world
B) communication is the most fascinating aspect of the dolphins
C) dolphins have skills that no other living creatures have such as the ability to think
D) it is not usual for dolphins to communicate with each other
E) dolphins have some social traits that are similar to those of humans.

Read the following and answer the questions given below.

Naval architects never claim that a ship is unsinkable, but the sinking of the passenger-and-car ferry Estonia in the Baltic surely should have never have happened. It was well designed and carefully maintained. It carried the proper number of lifeboats. It had been thoroughly inspected the day of its fatal voyage. Yet hours later, the Estonia rolled over and sank in a cold, stormy night. It went down so quickly that most of those on board, caught in their dark, flooding cabins, had no chance to save themselves: Of those who managed to scramble overboard, only 139 survived. The rest died of hypothermia before the rescuers could pluck them from the cold sea. The final death toll amounted to 912 souls. However, there were an unpleasant number of questions about why the Estonia sank and why so many survivors were men in the prime of life, while most of the dead were women, children and the elderly.

1. One can understand from the reading that ----.
A) the lifesaving equipment did not work well and lifeboats could not be lowered
B) design faults and incompetent crew contributed to the sinking of the Estonia ferry
C) 139 people managed to leave the vessel but died in freezing water
D) naval architects claimed that the Estonia was unsinkable
E) most victims were trapped inside the boat as they were in their cabins

2. It is clear from the passage that the survivors of the accident ----.
A) helped one another to overcome the tragedy that had affected them all
B) were mostly young men but women, children and the elderly stood little chance
C) helped save hundreds of lives
D) are still suffering from severe post-traumatic stress disorder
E) told the investigators nothing about the accident

3. According to the passage, when the Estonia sank, ----.
A) there were only 139 passengers on board
B) few of the passengers were asleep
C) there were enough lifeboats for the number of people on board
D) faster reaction by the crew could have increased the Estonia's

chances of survival

E) all the passengers had already moved out into the open decks

6.Medical report writing.
You are a staff nurse in the psychiatry ward.Mr.Rammohan aged 40 was admitted in your ward with the complaint of Dengue .Write a report of this to your clinical instructor.

7.Medical report writing.
You are a staff nurse in the psychiatry ward.Ms.lalitha aged 34 was admitted in your ward with the complaint of Alzheimer disorder(memory loss) .Write a report of this to your clinical instructor.

8.Medical report writing.
You are a staff nurse in the psychiatry ward.Mr.Ranjith aged 50 was admitted in your ward with the complaint of Obsessive compulsive disorder .Write a report of this to your clinical instructor.

9.Medical report writing.
You are a staff nurse in the special ward.Mrs. Jaya priya aged 30 was admitted in your ward with the complaint of Diarrhea .Write a report of this to your clinical instructor.

10.Medical report writing.
You are a staff nurse in the psychiatry ward.Mr.Vijay aged 20 was admitted in your ward with the complaint of Anxiety disorder .Write a report of this to your clinical instructor.

11.Write a Comprehensive Report on the outbreak of Covid-19 in your Locality.

12.Write a Comprehensive Report on the outbreak of Malaria in your Locality.

13.Write a Comprehensive Report on the outbreak of Dengue in your Locality.

14.Write a Comprehensive Report on the outbreak of Cholera in your Locality.

15.Write a Comprehensive Report on the outbreak of Pneumonia in your Locality.

Two Mark Questions

1. How to make effective reading?
2. What are the types of reading?
3. Why medical report writing is important in your profession?
4. What are the skills you should have for successful Telephone conversation.

II YEAR

PAPER 5- NUTRITIONAL BIOCHEMISTRY

UNIT I: Energy
Short answer question
1. Explain the factors affecting PAL.
2. Define BMR and mention any three factors affecting BMR
3. Define SDA and mention its significance
4. Explain the energy requirement in activity.
5. Mention the calorific value of nutrients.
6. Mention the nutritive value of cereals, pulses and green leafy vegetables.

Very short answer question
1. Define BMR.
2. Mention any two factors affecting BMR
3. Define SDA.
4. Define biological value of protein.
5. Mention any two factors affecting PAL.
6. What is protein efficiency ratio?

UNITII: Biological Oxidation
Short answer question
1. Draw a schematic diagram of the different components of Electron Transport chain and mention the sites where ATP is produced
2. What is Brown Adipose tissue? Mention its clinical significance
3. Explain Chemiosmotic theory of oxidative phosphorylation with suitable illustration.
4. List the Inhibitors of the respiratory chain with their site of inhibition

Very short answer Question
1. Give two examples of substrate level phosphorylation with suitable reactions.(2)
2. Define uncouplers and mention two examples for uncouplers.(2)
3. What are high energy compounds? give two examples.(2)
4. Mention any two inhibitors of ATP synthesis.

Unit III: metabolism of macronutrient, inborn errors with nutritional aspects
Long answer question
1. Explain how carbohydrates are digested and absorbed in the body with suitable illustration. Add a note on glucose transporters.
2. Describe the steps of aerobic glycolytic pathway and its energetics.
3. Explain the reactions of citric acid cycle with suitable illustration? Mention about the energetics involved in TCA cycle. List any two inhibitors of TCA cycle with their mechanism
4. Describe the metabolism of glycogen and its regulation.
5. What is the normal fasting and postprandial blood glucose level? Explain the hormonal regulation of blood glucose.
6. Describe the Digestion and absorption of lipids with suitable illustration.
7. Enumerate the steps of beta-oxidation of palmitic acid. Add a note on energetics of palmitic acid.
8. Name the ketone bodies. Enumerate the steps involved in the synthesis of ketone bodies and add a note on regulation of ketone bodies
9. Describe how ammonia is detoxified in the body. Add a note on inborn errors associated with this process.
10. Describe in detail the steps of urea cycle and its disorder.

11. Name the Sulphur containing amino acids. Outline the metabolism of methionine.
12. Name the aromatic amino acids. Describe the metabolism of phenylalanine.
13. Discuss the metabolism of Tyrosine. Name the biologically important compounds derived from Tyrosine. List any two inborn errors of metabolism of this AA with its biochemical defect?
14. Explain how proteins are digested and absorbed in the body with suitable illustrations

Short answer question

1. Name any five Glucose transporters and mention their applications.
2. Explain cori's cycle with suitable illustration.(4)
3. Name any five Glycogen storage disorder and mention their biochemical defect.
4. Mention the significance of HMP Shunt
5. Mention the biochemical defect, clinical features, diagnosis and treatment for Galactosemia.
6. Draw a graphical representation of normal OGTT curve. Mention the indications and contraindications of OGTT.
7. Name the lipid storage disorder and mention their biochemical defect.
8. Explain the role of carnitine in transport of fatty acids in to the mitochondria.
9. Name the lipoproteins and mention their functions.
10. Enumerate the steps of ketogenesis.
11. Enumerate the steps of ketolysis.
12. Explain HDL metabolized with suitable illustration.
13. Explain the LDL metabolism with suitable illustration.
14. mention the biochemical defect, clinical features, lab diagnosis of Phenylketonuria
15. Mention the biochemical defect, clinical features, lab diagnosis of cystinuria.
16. Mention the biochemical defect, clinical features, lab diagnosis of Maple syrup urine disease.
17. Name the different types of typrosinaemia with their enzyme defect
18. List any four metabolic function of methionine.

Very short answer question

1. What are the key glycolytic enzymes?
2. What is the energy yield from glycolysis during aerobic and anaerobic conditions?
3. What are the substrates for gluconeogenesis?
4. Mention the biochemical defect in galactosemia and fructose intolerance.
5. Mention any two significance of HMP shunt.
6. Enumerate two glycogen storage diseases with their biochemical defect.
7. What is normal fasting and postprandial blood glucose level?
8. List two hormones that regulate blood glucose level?
9. Mention any 2 indications for oral GTT
10. Define glycosuria. Mention any two causes of glycosuria
11. Mention the biochemical defect in niemann-pick disease and Gaucher’s disease.
12. Name the lipoproteins.
13. What are the products derived from cholesterol?
14. List any two functions of cholesterol.
15. Name any two lipid storage disorder and indicate the corresponding enzyme defect.
16. What is "Ketosis? Mention any two causes for it.(2)
17. Name the Biochemical defects in Jamaican vomiting sickness and zellwager's syndrome
18. Mention biochemical defects in a] Zelwager's syndrome, b] Refsum's disease
19. Mention the biochemical defect in phenylketonuria and albinism.
20. Name the branched chain aminoacids.

21. Name the sulphur containing aminoacids.
22. Name the special products derived from tyrosine.
23. Mention the biochemical defect in alkaptonuria and tyrosinemia type II.
24. List any four biochemical investigation that will help in the diagnosis of phenylketonuria
25. What is alkaptonuria and name any two biochemical investigation that will help to diagnose it

UNIT IV: Organ Function Tests
Short answer question
1. Mention the various biochemical functions of liver.
2. Classify the hepatobiliary function tests.
3. Explain how will you differentiate the types of jaundice by using various biochemical tests
4. List the various functions of kidneys.
5. Classify renal function tests.
6. Calculate the creatinine clearance with the given data:- Urinary creatinine 1000mg/day, serum creatininelevel : 1 mg/dl, and total urinary output 2 liters per day
7. Write a short note on Creatinine clearance test
8. List the thyroid functionstests
9. Mention the various enzymes and their significance in diagnosing hepatobiliarydisoders

Very short answer question
1. What is jaundice? Mention the types of jaundice?
2. Define GFR. Mention any two exogenous /two endogenous markers to estimate GFR
3. Define renal threshold. Mention the renal threshold for glucose in healthy individuals
4. Write the formula to calculate clearance.
5. Mention any two causes for physiological jaundice of newborn.
6. Mention the urinary findings useful in the differential diagnosis of jaundice
7. Mention the urinary findings in obstructive jaundice.
8. Define clearance?
9. Define urea clearance test.
10. What is the normal serum urea and creatinine level?

UNIT V: Water and Electrolytes
Short answer question
1. Name any two hormones which are involved in the regulation of fluid and electrolyte balance and explain how they regulate fluid and electrolyte balance with suitable illustration.
2. Name any four electrolytes and compare the composition of electrolytes in the extracellular and intracellular fluids.
3. Explain Renin- angiotensin system with suitable illustration.
4. Explain the role of Vasopressin in water balance

Very short answer question
1. Give the reference range for plasma osmolaliy
2. List any two biochemical functions of liver.
3. List any two functions of kidney
4. Name any two hormones which are involved in the regulation of fluid and electrolyte balance.
5. Name any four electrolytes

UNIT VI: Vitamins and minerals

Long answer question

1. Describe source, RDA, biochemical functions and deficiency manifestations of Vitamin A.
2. Describe the dietary sources, daily requirement, functions and deficiency manifestations of iron
3. Describe the sources biochemical functions, normal requirement & deficiency manifestation of Vitamin D.
4. Describe the sources biochemical functions, normal requirement & deficiency manifestation of Thiamin.
5. Describe the sources, biochemical functions, normal requirement & deficiency manifestation of Pyridoxal phosphate.
6. Describe the sources, biochemical functions, normal requirement & deficiency manifestation of Vitamin C.
7. What is the normal serum level of Calcium? Describe the dietary sources, requirement,
function and deficiency manifestation of calcium level in human body

Short answer question

1. Illustrate schematically Vitamin K cycle
2. Beriberi
3. List the biochemical functions of Riboflavin
4. Scurvy
5. Folate trap
6. Mention the biochemical functions of Biotin
7. Pellagra
8. Illustrate schematically wald's visual cycle
9. Mention the biochemical functions of zinc
10. Mention the metabolic functions of selenium
11. Wilson's disease
12. Fluorosis
13. Mention the biochemical functions of Vitamin E
14. Mention the biochemical functions of Vitamin C
15. Mention the biochemical functions of thiamine
16. Explain how calcitriol is synthesized with suitable illustration.

Very short answer question

1. Name the Antioxidant vitamins
2. List any two functions of iodine
3. List any two biochemical functions of zinc
4. Mention any two metabolic functions of selenium
5. Name the vitamin deficiency causingberiberi and pellagra
6. which amino acid is precursor of niacin and how many milligram(mg) of this aminoacidis required to yield 1mg of niacin
7. Define hypokalemia
8. Define hypernatremia
9. What is the normal serum calcium level?
10. Mention the RDA of vitamin C.
11. Types of beriberi
12. List any two antioxidant minerals.
13. Mention the biochemical defect and list any two lab investigation which will help in the diagnosis of Wilsons disease.
14. List any two causes for hypokalemia.
15. List any two causes of hyponatremia.
16. Mention the storage and transport forms of iron in the body

17. List any Four functions of Iron.
18. Mention the normal calcium level in the blood and name two hormones which regulates serum calcium levels.
19. List four functions of calcium in the body
20. List any two causes of hypocalcaemia
21. List any two causes of Hypercalcemia
22. Mention the normal reference range of sodium and potassium in the blood.
23. List two coenzyme forms of riboflavin.
24. List two coenzyme forms of niacin
25. Name the storage and transport form of vitamin B12.
26. Mention the vitamin deficient in pernicious anemia
27. Mention the active form of folic acid and vitamin B12.

PAPER 6- FOOD SCIENCE

UNIT-I INTRODUCTION TO FOOD SCIENCE
10 Marks
1. Describe the Role of nutrition during disaster management?
2. Elaborate the classification of food groups recommended by ICMR.

6 Marks
1. What are basic five food groups? How do you use the food guide?
2. Write short notes on energy yielding foods and their sources?
3. Brief notes on ICMR four food group and three basic food groups?
4. Short notes on objectives and preliminary preparation of cooking?
5. Comparison on Microwave cooking and solar cooking?
6. Draw the food pyramid with its classifications and sources?
7. How do use the food guide from food groups?
8. Short note on demerits of Microwave cooking and solar cooking?
9. Compare moistheat method and dry heat method of cooking?
10. Write Short notes on classification of cooking methods?
11. Discuss the loss of nutrients during cooking?

3 Marks
1. Define food?
2.List two objective of cooking methods?
3.Basic four food group?
4.Basic 3 food group?
5.Draw the food pyramid?
6.What is mean by dry heat medium of cooking?
7.What is mean by moist heat medium of cooking?
8.How to loss nutrient during cooking in two steps?
9.Short notes on role of nutrition during disaster management?
10. Write short notes on advantages and disadvantages of dry heat method of cooking?

UNIT – II CEREALS AND PULSES
10 Marks
1. Pulses are referred to ‘poor mains meal’ comment on the statement with example?
2. Elaborate composition and processing of wheat?
3. Describe the processing, composition and Nutritive value of rice and elaborate it?
4. Describe the composition, processing and nutritive value of pulses.(any one)
5. Evaluate the effect of cooking on the nutritive value of cereals and pulses.

6 Marks

1. Write short note on role of cereals in cookery
2. Short notes on pulses cookery?
3. Brief notes on toxicity present in pulses?
4. What is mean by parboiling and list the advantages and disadvantages of parboiling?
5. List the nutritive value of millets?
6. Describe about processing of millets?
7. What are the factors affecting gelatinization?
8. Describe the effects of moist heat and dry heat method of cereal cookery?
9. List and describe fermented and unfermented products in cereal cookery?
10. What are the points to be remember while cooking cereals?
11. Explain the factors affecting gelatinization?
12. Explain the factors gluten formation?
13. Discuss the effect of fat in cereal cookery?
14. What are the toxic presents in pulses?

3 Marks

1. How to Bread making?
2. What is fermentation?
3. How does lump formation occur in starch?
4. What is mean by dextrinisation?
5. What is mean by gelatinization?
6. What is mean by retro gradation and syneresis?
7. Write short notes on parching of cereals?
8. Write short notes on ready to eat cereals?
9. Write short notes on breakfast cereals?
10. Write any two recipes using parched cereals?
11. Distinguish between amyloseand amylopectin?
12. Write any two points about toxic present in pulses?
13. What is favism?
14. Write a short note on lathyrism?
15. What are tannins? Give their importance in pulses?
16. Write the composition, processing and nutritive value of pulses (any one)
17. Write any two effects of cooking on the nutritive value of cereals and pulses?

UNIT- III VEGETABLES AND FRUITS

10 Marks

1. Explain the selection, storage of vegetables and fruits?
2. Describe the effect of cooking acid and alkali on water soluble pigment of fruits and vegetable?
3. Discuss the effect of cooking acid and alkali on fat soluble pigments of fruit and vegetables?
4. Explain about vegetable cookery and loss of nutrients and its prevention?
5. Explain selection, composition and nutritive value of fruits?

6 Marks

1. Write short note on nutritive value of green leafy vegetables?
2. Classify the pigment present in vegetables and fruits? Write short note on each pigment?
3. Write short note on roots and tubers its nutritive value?
4. Write short on flavor compounds present in fruits and vegetables?
5. Brief notes on effect of cooking on pigments in VF?
6. What is mean by enzymatic browning and prevention of enzymatic browning?
7. List the medicinal value of vegetables and fruits?
8. How does a pectic substance plays major rule in fruits during cooking?

9. Write short on ripening process in fruits?
10. A diet is not balanced without the inclusion of fruits and vegetables.

3 Marks
1. What are protective foods and its classification?
2. Write any two major pigments present in fruits and vegetables?
3. List the preliminary preparation of vegetable cookery?
4. List the two nutritive values of roots and tubers?
5. List the two nutritive values of other vegetables?
6. Write any two water soluble pigments?
7. List the classification of fruits?
8. Show the schematic diagram of enzymatic browning?

UNIT-IV NUTS AND OIL SEEDS
10 Marks
1. Explain the role of nuts and oilseeds in cookery?
2. List the nuts and oilseeds any give brief account on its?
3. Explain the role of fat in cookery?

6 Marks
1. What is a flatoxin? What are its harmful effects?
2. Give the nutritional value of ground nuts?
3. Write short notes on the factors affecting fat absorption?
4. Write the processing of refining of edible oil?
5. Give the nutritional importance of using facts and oils?
6. Define emulsion. Explain the types of emulsion.
7. Define rancidity? Explain types of rancidity?
8. How does fat act as a shortening agent. Explain?
9. Define smoking point of fat. What changes occur in fat on heating?
10. Give the nutritional importance of using fats and oils?

3 Marks
1. List any two uses and nutritional importance of nuts and oil seeds?
2. What products can be prepared out of soya beam?
3. What is mean by Hydrogenation?
4. Define winterization?
5. Show diagram (or) steps involved in refining oil?
6. What is called emulsions?
7. What is mean by flash point?
8. List the types of emulsions?
9. What is mean by oxidation in facts?
10. Flavor reversion.

UNIT –V MILK AND MILK PRODUCTS
10 Marks
1. Describe the role of milk and milk products in cookery.
2. Discuss the composition nutritive value of milk and milk products.
3. Describe the processing of milk products.
4. Enumerable the physical properties of milk.
5. Elaborate fermented and non-fermented milk products.
6. Explain the process of manufacture of milk powder.
7. Discuss the production of cheese and list classification of cheese.
8. Brief notes on adulteration of milk.

6 Marks
1. What is pasteurization? Explain the different methods of pasteurization.
2. Write short note on homogenized milk.

3. Discuss the factor affecting milk coagulation.
4. Discuss about the milk and facts constraints present in milk.
5. Write short notes on effect of heat on milk?
6. Mention the effect of acid and enzymes on milk?
7. Describe the different kind of milk?
8. What are the points to be remembered in using milk and milk products in cookery?

3 Marks

1. What is mean by casein?
2. What are called whey proteomes?
3. List any two enzymes present in milk.
4. What is the flavor substance present in milk?
5. What is called pasteurization?
6. Define Homogenization?
7. Differtinate evaporated milk and skin milk?
8. Difference between double toned and toned milk?
9. How does curd formation process involves?
10. List any two fermented milk products.

UNIT – VI

MEAT AND MEAT PRODUCTS

10 Marks

1. Discuss the structure, composition and nutritive value of meat.
2. Describe the changes during cooking of meat products.
3. Describe the selection and storage of meat.
4. Discuss the factors affecting the cooking quality of meat.
5. Discuss classification of poultry and its processing.
6. Explain the causes for spoilage of fish.
7. Explain the nutritional importance of fish and meat in diet.
8. Discuss the role of egg in cookery.
9. Explain the structure, composition and nutritive value of egg.
10. Describe the nutritive value of meat and egg products.
11. Describe the methods used to know the quality of egg.
12. Compare the chemical composition of whole egg, egg white and egg yolk.

6 Marks

1. Describe the methods used to presence meat?
2. Write a short note on tenderizing meat?
3. Write short note on selection of fish?
4. What are the different proteins present in egg white and egg yolk?
5. List the different use for eggs in floral preparation?
6. What are the factors affecting coagulation of egg protein?
7. What factors aid in formation of ferrous supplied in egg and how is it formed.
8. Write short notes on egg cookery?
9. Draw the structure of an egg and name the parts?
10. Explain the nutritional importance of fish and meat in diet?

3 Marks

1. How is rigor mortis developed in slaughtered animals?
2. What changes occur during cooking of meat?
3. What are the causes for spoilage of fish?
4. What is called curing of meat?
5. Classification of fish.
6. What are the different proteins present in egg white and egg yolk?
7. Give two recipe susing eggs as foundation ingredient?

UNIT-VII SUGAR AND RELATED PRODUCTS

6 Marks

1. Explain the different stages in cookery
2. Give the process of manufacture of sugar?
3. Write short notes on properties and nutritive value of sugar products?
4. How does crystallization of sugar takes place? Explain the factors affecting crystallization?
5. Role of sugar in cookery?
6. Write short notes in artificial sweeteners?
7. Give the various uses of sugar in ford preparation?
8. What are the factors affecting crystallization?
9. Discuss the properties and process of sugar products?

3 Marks

1. List the sugar related products?
2. What is mean by crystallization?
3. What are the factors affecting crystallization?
4. What is called fondant and fudge?
5. List the various artificial sweetness?
6. Why is Jaggery preferred to sugar in some cases?
7. Name any four Indian sweets?

UNIT – VIII

SPICES, HERBS AND BEVERAGES

6 Marks

1. Explain role of spices in cookery?
2. List the function of spices used in cooking?
3. Discuss the advantage of using onion and garlic in diet?
4. Write short notes on types of herb used in cooking?
5. Give classification and function of beverages?
6. Explain the roasting process and its effect in coffee processing?
7. Write short note on malted beverage and its advantage?
8. Write about various fruit beverages?
9. Describe milk based beverage?
10. Describe the different fermented beverages?
11. Explain the method of processing cocoa?
12. What are the types of tea? Write short note about each?

3 Marks

1. List any two spices in Indian cookery and its uses?
2. What are the harmful effects caused due to excess consumption of spices?
3. Write a short note on adulteration of spices?
4. What is monosodium glutamate?
5. Give any two function of beverages?
6. What are three types of tea?
7. List the milk based beverages and fruit beverages?
8. Give any two points to remember while making beverages?
9. Difference between non-alcoholic and alcoholic beverages?
10. What is mean by steeping?

PAPER 7- FOOD MICROBIOLOGY

UNIT I - Introduction and Importance to Food Microbiology
10 Marks
1. Morphology and structural features of various bacteria and fungi commonly associated with Foods.
2. Describe what you believe are the main function(s) and goal(s) of food microbiologists?
3. Name starter culture used in curd preparation. Write the flow chart to ferment milk for curd preparation.

6 Marks
1. Give the importance of bacteria in food microbiology.
2. Short notes on Probiotics.
3. Defects of Starter Culture
4. Antimicrobial Systems in Milk
5. Microenvironment of Butter and Cream
6. Antibiosis and Metabiosis
7. Concepts of Food Microbiology
8. Write about economically important fermentation products.

3 Marks
1. What is meant by MIC of anti-bacterial agent.
2. Define bacterio static agent. Give an example
3. What happens during lag phase of bacterial growth cycle? Mention briefly.
4. Name some micronutrients which are essential for growth of bacteria.
5. Name one important yeast and one fungi of food industry.
6. Name one non-coliform and one heat resistant bacteria.
7. Name four microorganisms which are beneficial for human.
8. Give the importance of yeast in food microbiology.
9. What is the reason for Black discoloration of Cream?
10. What's the meaning of fitness of food?
11. What are perishable foods? How are they classified?
12. What are intrinsic factors governing microbial kind and population in a food?
13. Fermented dairy products.

UNIT II - Food Toxicity & Classification of Toxins
10 Marks
1. Explain the Clostridium botulinum infection.
2. What is food poisoning? Explain with two examples
3. Any two Naturally occurring toxicants
4. Describe salmonella food infection with respect to sources and prevention.

6 Marks
1. Salmonellosis
2. Food intoxication
3. Toxic Shock Syndrome
4. Food poisoning by *Clostridium botulinum?*
5. Factors affecting food safety.
6. Botulism
7. Naturally occurring toxicants
8. Genetically modified foods.
9. Mold contamination in foods

3 Marks

1. What are botulism and salmonellosis?
2. Give example of food borne intoxicants.
3. What is salmonellosis?
4. Poising capacity
5. Food borne diseases due to naturally occurring toxicants.
6. Toxicants in animal foods.
7. Food poisoning of clostridium botulinum
8. Write in detail about Mycotoxins.
9. Name the food borne diseases due to naturally occurring toxicants. Explain Lathyrism.
10. Mycotoxins and their effects on human health.

UNIT III - Cultivation of Microorganisms

10 Marks

1. Describe one method for moist heat sterilization. Give an example of mesophilic bacteria. What are halo tolerant bacteria? Define facultative aerobes and aero tolerant anaerobes with examples. How will you sterilize a solution of glucose?
2. What is the full form of IMViC? What is the purpose of doing this test? Describe the test in detail. Give the composition of EMB Agar. Why EMB agar is called 'Selective & differential media'. Explain theMethylene Blue Reduction test of milk.
3. How will you determine the number of live cells in a bacterial culture? Why E. coli is considered as anindicator organism of water pollution? Define synthetic, complex and selective medium.
4. Explain bacterial growth curve. Classify bacteria according to their temperature requirements.
5. What are the advantages of sterilizing using pasteurization? Explain the principle of pasteurization withapplication.
6. Describe different methods of disinfection in detail.
7. What are the disadvantages of UV as a sterilizing agent? Name two chemical preservatives used forpreserving food. Define antiseptics and disinfectants. Differentiate between microbiocidalandmicrobiostatic agents. Name any four bacteria that contaminate food from different sources.
8. Name in sequence, the different growth phases in a bacterial culture & explain each phase. Why Agar is used forsolidifying culture media? List any four beneficial microorganisms.
9. Explain the factors affecting kinds and numbers of microorganisms in food.
10. Methods of Control and destruction of Microorganisms from foods
11. Sources, types and influence of microorganisms in foods
12. Factors affecting growth of microorganisms in foods.
13. Influence of environmental contaminants in foods.
14. Write the principle, procedure and interpretation of MBRT test with diagrams.

6 Marks

1. Log phase of a bacterial growth curve
2. Different Types of Culture Media
3. How do bacteria reproduce?
4. Germicidal effect of alcohol and halogens
5. Effect of temperature on growth of microbes
6. Generation time
7. Importance of Differential Media in food Microbiology? Why Glucose acts as a best substrate?
8. Factors affecting growth of microorganisms in foods.
9. Chemical methods of destruction of microorganisms.
10. Bacterial pathogens causing gastroenteritis in human. Explain.

11. Role of Microorganisms in Fermented Food.

3 Marks
1. What is selective media?
2. Define pure culture.
3. What is meant by autotrophs? Give example
4. Describe briefly about coliform organisms.
5. Mention the essential components of a culture medium.
6. What is dry heat sterilization?
7. Define moist heat sterilization.
8. What is gaseous sterilization?
9. What is synthetic culture media? Give example.
10. Define disinfection. Name some disinfectants.
11. Define pasteurization.
12. IMViC test
13. Expand IMViC and DDT.
14. Psychotropic
15. Thermoduric
16. Define enrichment media. Give examples.
17. Define generation time of bacteria.
18. What are heterotrophs?
19. Define radiation and sterilization.
20. What are advantages of sterilization using moist heat?
21. Define semisynthetic culture media? Give example.
22. What is complex culture media? Give example
23. Name a microaerophilic bacterium. Name one virus causing diarrhea.
24. Define generation time of bacteria.
25. Mention briefly the sterilization of heat sensitive liquid.
26. What is meant by MIC of anti-bacterial agent.
27. Define log phase of bacterial growth phase.
28. What is a bactericidal agent? Give an example
29. Prions
30. Pasteurization
31. Asepsis

UNIT IV - Food Contamination & Preservation
10 Marks
1. What are the purposes of preserving food? What is alkaline phosphatise test of milk? What is HACCP? Describe the principle.
2. Name the extrinsic and intrinsic factors that affect bacterial growth in a culture. Name one food borne disease with respective causative organism. Describe preservation of food using refrigeration and dehydration.
3. Explain the preservation by use of low temperature.
4. Describe methods of preservation using canning. Classify microbes on the basis of their nutritional requirements.
5. Environmental contaminants and their types.
6. What are preservatives? Explain the use of any 5 chemical preservatives in food microbiology.

6 Marks
1. Food preservation using dehydration
2. Food preservation using radiation
3. Write a note on Irradiation.
4. Canning
5. Dehydration as a method of food preservation
6. Discuss the role of chemicals in food preservation.
7. Importance of sanitation and hygiene in food science

8. Describe the foods contaminated by microbes.
9. What are the principle of food preservation?
10. Discuss the different methods of food preservation.
11. Food infection
12. Food additives and Chemical Preservatives
13. Sharp Freezing and Quick Freezing
14. Enlist various methods of food preservation. Explain any one in detail.
15. How do you apply Asepsis in preservation of foods?
16. Sources of food contamination
17. Write about factors affecting food safety

3 Marks
1. What are the changes produced in foods by radiation?
2. What is freezing point?
3. Mention some steps taken for preventing viral infection in food.
4. Name some preservatives used in food industry.
5. Mention two advantages of radiation in food industry.
6. Define blanching.
7. Define kitchen hygiene.
8. Write a note sodium benzoate.
9. Is DDT a pesticide? Explain.

UNIT – VI: Foods Borne Hazards
10 Marks
1. Describe in details the need for maintenance of hygiene of food. Describe the various techniques used for microbiological testing of food.
2. What is the common food laws practiced in India?
3. Describe any one food borne disease with symptoms, causative organism, foods involved in transmission, methods of prevention. What are the advantages and disadvantages of using pesticides?
145
4. Indicate prescribed standards of microbial Quality for
I Milk Powder
II Fresh Fish
III Fruit based beverages
IV Processed cereal foods
5. Indicate the microorganisms implicated in food poisoning and food borne infections.
6. Guidelines for the application of HACCP principles.
7. Compulsory national legislation for food safety
8. Reporting and investigations of food borne diseases.
9. Types of Food Borne diseases and intoxications.

6 Marks
1. Write a note on the significance of food borne disease.
2. Foodborne outbreak
3. PFA Act
4. What is the most common bacterial cause of foodborne illness in India?
5. What are the risk factors associated with food borne illness?
6. What is food adulteration? Explain briefly the common adulterants used in food industry
7. Risk assessment
8. HACCP – an effective food safety assurance step - Discuss.
9. International organizations and agreements in the area of food standardization
10. Methods for the prevention of adulteration
11. Classification of adulterants
12. Roles of ISO in food safety

13. General principles of risk communication
14. HACCP plan for any one food product.
15. Common adulterants.
16. How the biological hazards will be identified and characterized?
17. HACCP principles.
18. Quality control and Inspection Act 1963.
19. Tabulate few adulterants in foods, method of detection and the ill effects caused in human.
20. Roles of ISO in food safety.
21. Define risk communication. What are the roles and responsibilities of risk communication?

3 Marks
1. What is meant by food hazard?
2. Write any two international food laws.
3. Name one food borne disease with causative organism.
4. What is food borne illness?
5. Water-borne diseases
6. Give an example of water borne disease and its causative agent.
7. What are the two most common causes of a foodborne outbreak.
8. Where do most incidences of foodborne illness occur?
9. HACCP
10. Any four food borne infections caused by bacteria.
11. Explain why HACCP as a better and effective method over traditional food safety assurance program?
12. Explain the roles of: Bureau of Indian standards Act (BIS)1986. & Consumer protection Act (CPA) 1986.
13. Food Standards and Regulations in India.

UNIT V - Food Spoilage
10 Marks
1. How does milk get spoiled? Differentiate between bacteriostatic and bactericidal agents. What do you mean by exponential growth of bacteria? Describe a common method of sterilization by applying moistheat.
2. Explain the spoilage of canned foods.
3. Why Fresh meat spoils very fast? Suggest one method of its preservation
4. Draw a scheme for diagnosis of cause of spoilage of canned foods.
5. Describe spoilage of meat and vegetables. Describemethods of maintaining kitchen hygiene.

6 Marks
1. Spoilage of canned foods
2. Spoilage of milk
3. Briefly describe methylene blue reduction test.
4. Common method used for gradation of milk
5. Presumptive Test of Water
6. Describe the spoilage of cereal.
7. Write about the factors that cause spoilage of fruits.
8. Spoilage of Cheese
9. Correlate microorganism with spoilage and preservation of foods.
10. Factors responsible for spoilage of foods
11. Spoilage of meat and meat products
12. Chemical changes due to spoilage
13. Spoilage of poultry products.
14. Spoilage of bread
15. Explain Spoilage and Preservation of Sea foods.
16. What are the effects of spoilage caused in fruits and vegetables by fungi?

17. Anti-Nutritional Factors in Foods.

3 Marks

1. How is milk spoiled?
2. Enumerate the factors that favor food spoilage by microbes
3. What are factors that cause spoilage of food?
4. Name some spoilage microorganisms of milk.
5. Name some bacteria involved with food spoilage.
6. What is meant by food spoilage?
7. Name four causative agents of food spoilage.
8. Skimmed milk.

PAPER –8 BASIC DIETETICS

UNIT – I

INTRODUCTION TO DIETETICS

10 Marks

1. Define Dietitian what are the responsibilities of dietitian?
2. Suggest way of using technology in diet counseling?
3. Describe assessment and diet planning and discuss diet counseling and nutrition?
4. Elaborate the factors considered in planning therapeutic diets?
5. Describe the role of dietician?

6 Marks

1. List the principle of therapeutic diets?
2. Classify the dietitian in hospital atmosphere?
3. What are the objectives of dietetics?

3 Marks

1. Define dietitian?
2. Who is said to be public health nutritionist and discuss it?
3. What are three process of diet counseling?
4. List any two objectives in diet?
5. What is non-compliance to dietary advice?

UNIT – II

BASIC CONCEPT OF DIET THERAPY

10 Marks

1. Describe the routine hospital diets?
2. Discuss the different types of tube feeds used?
3. How do you assess the nutritional status of patients? Give sample Performa?
4. Explain the following terms?

a) Immune nutrition
b) Reseeding syndrome
c) Elemental diet
d) Peripheral parenteral nutrition

5. Explain the drawback of full – fluid diet?
6. Discuss the advantage of tube feeding over parenteral feeding?
7. Bring out the nutritional importance of pre-operative and post operative conditions?

6 Marks

1. Write short note on soft diet?
2. Name fume foods to be avoided in sodium restricted diets?
3. Name four condition in which portion requirement is modified?
4. Normal nutritional needare the basis for diet therapy comment?
5. What are the types of foods recommended for tube feedings?

6. Discuss total parental nutrition and its formula.
7. Write short notes on refeeding syndrome?
8. Discuss the complication of total parental nutrition?
9. Write the difference between enteral and parental feeding?
10. How to assess the pre and post operative diets?

3 Marks

1. Give three receipts for soft diet, liquid diet and full-fruit diet?
2. What are the advantages of high fiber diets?
3. Give any two low residence recipes?
4. Name four conditions in which protein requirement is modified?
5. What is mean by acid-ash diet?
6. What are the objectivesin dietary management of surgical condition?
7. What is pre-operative diet?
8. Define post-operative diet?
9. List the two types of food for soft did, full fluid and full-fluid?
10. TPN formula for children?

UNIT – III

DIET THERAPIES FOR INFECTIONS DISORDER

10 Marks

1. Explain the components of medical nutrition therapy?
2. State the principles to be observed in planning diets for patients recovering typhoid
3. Give a diet plan for patient recovering from tuberculosis?
4. Describe the contributing factors in development of tuberculosis.
5. Discuss the development of fever due to exogenous agent?
6. Discuss the general dietary consideration of fever?
7. Explain the principle of diet for fever, typhoid and tuberculosis?
8. Describe the nutritional problems in HIV patients?
9. Bring out the importance of oral supplement for HIV tuberculosis?

6 Marks

1. Write short notes on metabolic charges in fever?
2. What are the signs and symptoms of typhoid and its dietary suggestion?
3. Discuss the food to be included and excluded for typhoid?
4. Modification of nutrients – Tuberculosis?
5. List out the nutritional problems in HIV patients?
6. Enumerate the recommended nutritional requirements of infections director?
7. What dietary principles are recommended in planning diet for fever of short duration?
8. Micronutrient and Macronutrient deficiencies in HIV patients?

3 Marks

1. What is fever? What are the causes of fever? List the type of fever?
2. What is mean by host defense mechanism?
3. Typhoid symptoms and signs?
4. Define AIDS?
5. How to assess the nutritional of requirements for infection disorders?
6. List out the infections disorders?

UNIT – IV

DIET FOR OBESITY AND UNDER WEIGHT

10 Marks

1. Explain etiology – obesity?
2. Enumerate role of insulin and leptin in the endocrine regulation of body weight.
3. How do you assess an obese and under weight individual?

4. Explain grades of obesity?
5. Describe the symptoms of under weight and explain the dietary modification in its.
6. Bring out the role of android obesity in complication of obesity?
7. Explain the role of hormones in obesity?
8. Explain how stress can lead to obesity?
9. Enumerate the etiology factor – under weight?
10. Discuss about the juvenile onset obesity?

6 Marks
1. Write the principles of dietary management in obesity?
2. What are the important causes of under weight?
3. What is the complication of obesity?
4. List out the assessment of obesity?
5. Write short notes on regional distribution of adipose issues in obesity?

3 Marks
1. What are the risk factor in diagnoses of metabolic syndrome and their levels?
2. What is mean by juvenile onset obesity?
3. What is adult onset obesity?
4. What are the strategies for weight loss and weight maintenance in obese condition?
5. How to calculate energy deficit calculation?
6. What is mean by glycogenic index?
7. List out any two common facilitators and barriers in weight control?
8. List out complication of obesity?
9. List out suggested recipes for obese person?
10. Nutritionaland food requirement of underweight?

UNIT – V
FOOD ALLERGY
10 Marks
1. Explain the types of allergic reaction due to food?
2. Explain the method of diagnosis of food allergy?
3. Discuss different kinds of elimination diets used for deleting allergy?
4. Differtinate food allergy and food intolerame?
5. Explain food contaminants as allergens?

6 Marks
1. Explain food sensitive in foods of animal origin?
2. If a child is sensitive to milk protein, list five foods that are needs to avoid?
3. What are the foods involved in sensitivity?
4. How to diagnosis food allergy?
5. What is food intolerance? Some effects of food intolerance?
6. Give symptoms of food sensitivity?
7. List the common food allergens that have been identified. Describe the treatment for food allergy?
8. Define food sensitivity and describe any five responses?
9. What are laboratory test done – food allergy?
10. What are types of reactions involved in food sensitivity?

3 Marks
1. What are food contaminants?
2. List any two food involves in sensitivity?
3. Provocative test?
4. Elimination Diet?
5. Food intolerance?

6. What are symptoms of food intolerance?
7. Give symptoms of food sensitivity?
8. If a child is sensitivity to milk protein, list any two foods that need to avoid?
9. List any two foods avoided during food intolerance?
10. How the drugs involved during food allergy?

UNIT – VI
DIET FOR INBORN ERRORS
10 Marks
1. Explain the genetic disorder having nutritional implications?
2. Explain about phenylketonuria?and its prognosis, diagnosis and symptoms?
3. Explain metabolic error in phenylketonuria?
4. Discuss the nutrition and dietary management of phenylketonuria?
5. Explain about galactosemiaand enzyme involved in it?

6 Marks
1. Differentiate galactosemia and gout?
2. List out the food allowed and excluded for galactose restricted diet?
3. Write short on tyrosinemia?
4. List out disorder and enzyme affected in genetic disorder?

3 Marks
1. Define maple syrup urine disease?
2. What is mean by gout?
3. Difference between galactosemia and tyrosinemia?
4. What is homocystinuria?
5. List any two galactose restricted diet?

UNIT – VII
DRUG NUTRIENT INTERACTION
6 Marks
1. Explain the effect of food on absorption of drugs?
2. Discuss the drug's effects on nutrients?
3. Brief notes on interaction of drugs and nutrients?
4. Write short notes on role of dietary supplements in health of an individual?

3 Marks
1. List any two drugs – nutrient interactions?
2. Any two foods on the absorption of drugs?

UNIT – VIII
NUTRITIONAL CARE FOR DEFICIENCY DISORDER
10 Marks
1. Explain the prevalence of anemiain India?
2. Discuss iron deficiency anemia briefly.
3. What are the different types of anemic? How do you distinguish them?
4. Explain the etiological factors of protein energy Maturation?
5. Discuss the differentiating factors leading to miasmas and kwashiorkor?
6. Give the classification of protein energy malnutrition?
7. Discuss the etiology of vitamins – A deficiency?
8. Enumerate the evaluation of vitamin A status?
9. Explain the clinical features of vitamin – A
10. Discuss in detail the methods to prevent vitamin – A deficiency?
11. Explain the incidence and etiologyofIodinedeficiency disorder?
12. Discussabsorption and metabolism of iodine?
13. Discuss the symptoms and dietary management of calcium deficiency?

6 Marks

1. What are the indicators used to initiate iodine deficiency disorder control programme?
2. Explain the following?

a) Thioayante

b) Thyroid stimulating Hormone

3. Give five foods rich in iodine?
4. Give the RDA of iodine for different groups?
5. Explain the function of iodine?
6. List out the food rich in iodine content?
7. What is the difference b/w underweight and stunting?
8. Describe the treatment of kwashiorkor?
9. Distinguish the clinical and bio-chemical features of miasmas and kwashiorkor?
10. Give the clinical symptoms of Vitamin – A deficiency?
11. Dietary management to prevent vitamin – A
12. Explain the function of calcium?
13. Give the role of minerals in bone formation?

3 Marks

1. What are goitrogens?
2. What are the stops taken to prevent IDD?
3. What is mean by PEM?
4. Why does edema occur in kwashiorkor?
5. How do you prevent PEM?
6. What are the methods to evaluate vitamin – A deficiency?
7. Give the WHO classification of xeropthalmia?
8. What is tetany?
9. Give the importance of calcium in human nutrition?
10. Why is milk considered the best source of calcium?

III YEAR

PAPER- 9 – PUBLIC HEALTH NUTRITION

Unit-I Concept of Public Health Nutrition

10 MARKS

1. Explain public health nutrition cycle.
2. Highlight the principles, objectives, advantages and disadvantages of objective methods of assessment of physical activity.
3. Enumerate the use of audio visual aids in communication.
4. Obesity is the determinant of mortality and morbidity- Comment.
5. What are the objectives and services of ICDS?
6. Write the aims and functions of UNICEF in combating malnutrition.
7. Explain the various levels of health education.
8. Explain the clinical assessment method with the advantages and disadvantages

6 MARKS

1. What are different stages of Program me implementation? Explain in details
2. Describe different methods to conduct diet survey.
3. What are the major factors affecting food and nutrition security?
4. What is an indicator? Haw can indicators be used in evaluating programmers?

3 MARKS

1. Importance of Behavior Change Communication strategy in nutrition promotion
2. Goals for programme planning
3. Importance of nutritional epidemiology
4. Scope of public health nutrition in India
5. National Rural Health Mission

UNIT-II NUTRITIONAL PROBLEMS OF PUBLIC HEALTH IMPORTANCE

10 MARKS

1. Eating disorders among adolescents
2. Approaches for management of acutely malnourished child
3. Discuss the important strategies for preventing diarrhea
4. Iron requirement for boys decreases after growth spurts but not for girls. Explain giving reasons
5. Discuss the various causes of iron deficiency anemia.
6. Discuss the nutrition related health problems common among the elderly?
7. Briefly describe the two approaches used for management of severe acute malnutrition?
8. Discuss the nutrition related problems during elderly and its management

6 MARKS

1. Role of VHND in improving Health and Nutritional Status of vulnerablegroups.
2. Dietary management of lifestyle disorders
3. National Iron Plus Initiative
4. How dietary diversification can be helpful in prevention of micronutrient deficiencies?

5. How can a child be diagnosed with severe acute malnutrition?

3 MARKS

1. Role of dietary fiber in prevention of lifestyle disorders
2. Dual burden of malnutrition
3. Determinants of malnutrition
4. How can a child be diagnosed with severe acute malnutrition?
5. How dietary diversification can be helpful in prevention of micronutrient deficiencies?

UNIT-III METHOD OF ASSESSNING NUTRITIONAL STATUS

10 MARKS

1. What is the importance of Nutritional Assessment? Discuss direct methods of nutritional assessment.
2. Discuss various anthropometric measurements used in assessment of nutritional status of pre-school children.
3. List the methods of nutritional assessment. Discuss the direct methods of assessment of nutritional status with advantages & disadvantages.

6 MARKS

1. What is the role of indicators in an evaluation programme?
2. What tools can be used to assess dietary intake and to measure dietary behavior change as an outcome of nutrition programs for adults
3. Discuss the relative dose method.
4. What do you understand by biochemical assessment? What are the characteristics of an ideal biochemical test?
5. Assessment of dietary intakes of individuals.
6. Enumerate the common methods used to assess dietary intakes.

3 MARKS

1. Balance sheet method
2. 24-hour recall method
3. Biochemical Tests for Nutritional Deficiencies
4. What is an ideal test?
5. What is the criterion for selection of field tests?

UNIT-IV NUTRITION EDUCATION

10 MARKS

1. What do you understand by evidence based programme planning? Discuss its role in public health nutrition with the help of a case study?
2. What is the scope of public health nutrition in India?
3. Steps involved in planning a nutrition & health programme
4. Develop a communication campaign for promotion of infant & young child feeding practices among pregnant women?
5. Food Safety Surveillance systems in India

6 MARKS

1. What are the key features of National Urban Health Mission?
2. Competencies required for a public health nutritionist
3. Dimensions of food and nutrition security

4. Phase 1 of Mobilizing Action through Planning and Partnerships (MAPP) iii. National Family Health Surveys

UNIT-V COMMUNITY NUTRITION PROGRAMME

10 MARKS

1. Use of triple A approach in growth monitoring and promotion
2. Discuss the various factors affecting food and nutrition security.
3. Role of Behaviour change communication in Health Promotion.
4. National Family Health Surveys
5. What are the key features of National Urban Health Mission?
6. Steps involved in planning a nutrition & health programme

6 MARKS

1. What is the role of indicators in an evaluation programme?
2. Significance of Mid Day Meal programme
3. Food Safety Surveillance systems in India
4. Vitamin –A deficiency disorder programme
5. Discuss about the Iron and Iodine deficiency disorder.

PAPER –10: FOOD SCIENCE II

UNIT I

3 Marks

1. What is food adulteration?
2. What is food preservation?
3. Food additives
4. Nutraceuticals
5. Nutrigenomics-Definition
6. What are unintentional additives

6 Marks

1. Explain about the food adulteration in detail
2. What are all the need for food additives

10 Marks

1. Different types of food additives
2. Food adulteration. Explain them in detail with common food adulterants

UNIT II

3 Marks

1. What is food fortification
2. Multiple nutrient fortification
3. Limitations of food fortification
4. What is bioavailability of nutrients?
5. What is nutrient interaction?
6. Fortification with vitamin A. Example
7. Fortification with Iron. Example
8. Fortification with Iodine. Give example
9. Advantages of fortification

6 Marks

1. Steps in implementation of food fortification quality assurance programme
2. Design of fortification programme

3. Vehicles for food fortification
4. Fortification as means of improving nutrition
5. Selection and basis of fortificants
6. Fortification of breakfast cereals
7. Characteristics of nutrients used in cereal fortification
8. Types and levels of micronutrients to be added in fortifying cereals
9. Health benefits of beverage fortification
10. Merits and demerits of snack fortification

10 Marks

1. Design of fortification programme
2. Fortification with vitamin A, Iron, Iodine and their safety
3. Criteria for selecting vehicles for food fortification, their limitations and design of fortification programme
4. Technology of fortifying cereals. Explain in detail
5. Technology of fortifying beverages. Explain in detail
6. Technology of fortifying snack products. Explain in detail with suitable examples.

UNIT III

3 Marks

1. What are dietary fibers? Give some example.
2. What are phytoestrogens?
3. What are Flavanoids?
4. Falvones
5. Phytosterols and phytostenols
6. Saponins
7. Tannins
8. Sources of omega 3 and omega 6 fatty acids
9. What are carotenoids? What are all the types and sources of carotenoids?
10. Give some examples for phenolic compounds and mention the sources.
11. Zeaxanthin-sources
12. What is functional food? Give example
13. What are immunoglobulins? Example
14. What are structured lipids?
15. What are dietary lipids?

6 Marks

1. History of functional foods and their classification.
2. Explain about phenolic compounds in detail with suitable examples
3. What are derived peptides? Explain the classifications.
4. Dietary fiber – Types and sources

10 Marks

1. Functional components from plant sources. Write in detail.
2. Functional components from animal sources. Write in detail.

UNIT IV

3 Marks

1. What are prebiotics? Give Example
2. What are Probiotics? Give Example
3. What are synbiotics? Give example

4. What are SCFA?

6 Marks

1. Write in detail about the health benefits of prebiotics
2. Explain about the byproducts of Probiotics and their health benefits
3. Explain synbiotics in detail with suitable examples.

10 Marks

1. Role of probiotics as functional ingredient.
2. Role of prebiotic as functional ingredient
3. Role of symbiotic as functional ingredient

UNIT-V

6 Marks

1. Functional food in oral health
2. Functional foods in obesity
3. Role of functional food in treating cardiovascular diseases
4. Role of functional food in nervous disorder
5. Role of functional foods in Cancer

10 Marks

1. Role of functional foods in oral, gut health and obesity
2. Role of functional foods in bone health and Diabetes mellitus
3. Role of functional foods in treating cancer and nervous disorder.

PAPER 11 – ADVANCED DIETETICS

Unit-I Diet in Gastro Intestinal Disease

10 Marks

1. Elaborate the etiology, signs and symptoms, dietary management of esophagitis and GERD.
2. Describe the recent concepts in dietary management of peptic ulcer.
3. Explain causes and treatment of diarrhea
4. Explain lactose intolerance.
5. Describe cause and treatment of ulcerative colitis
6. Explain the role of fiber in the prevention of intestinal diseases.
7. What is celiac disease? What are the foods avoided in this condition?
8. What is dumping syndrome? Describe the signs and symptoms dietary management of dumping syndrome.

6 Marks

1. What is dyspepsia? How do you treat it?
2. Write short notes on bleeding ulcer.
3. How do you prevent constipation?
4. Describe about the causes of intestinal gas flatulence and diverticular disease.
5. List the foods to be avoided in peptic ulcer patient's diet giving reason for it.
6. Describe about the inflammatory bowel diseases and irritable bowel syndrome.
7. Define bland diet and flatulence.
8. Write short note on coeliac disease.

9. Give an account of types of constipation.
10. Write notes on dietary consideration of gastro disorders.

3 MARKS

1. What is celiac disease? What are the foods avoided in this condition?
2. Differentiate duodenal ulcer and gastric ulcer.
3. Define Sippy diet.
4. Give short notes on Dumping syndrome.
5. What are the causes of irritable bowel syndrome?
6. Define Crohn's disease.
7. What are the major forms of inflammatory bowel diseases? Explain it.
8. Diverticular disease.
9. What is mean lactose intolerance?
10. List the foods to be included for gastro disorders commonly.

UNIT –II DIET IN DIABETES MILLETUS

10 MARKS

1. Explain the metabolic changes in diabetes.
2. Describe the clinical symptoms and diagnosis of diabetes.
3. Explain how types of insulin affect modification of diet.
4. Give the three foods to be avoided and three foods to be included for diabetic patients giving reasons. Explain the dietary guidelines.
5. Discuss the principles of planning diet for a diabetic patient.
6. Describe the types and etiological classification of diabetes mellitus.
7. Describe the pathophysiological basis of the symptoms and signs of untreated or uncontrolled diabetes mellitus.
8. Elaborate the consequences and clinical features of changes in metabolism – Diabetes

6 MARKS

1. Write a short notes on (a) complications in diabetes (b) artificial sweeteners
2. Differentiate between hyperglycemia and hypoglycemia.
3. Write short notes on gestational diabetes.
4. What is glycemic index? What is the importance of it on diabetic patients? Give five foods which have low glycemic index.
5. Write short notes on glucose intolerance test.
6. Differentiate between type –I and type –II diabetes.
7. What are food exchange list? Write the importance of it in diabetes.
8. Give a brief account on nutritional requirements for common diabetes disorder.
9. What are the factors influence the glycemic index?
10. Briefly narrate the alcohol and diabetes.

3 MARKS

1. Insulin resistance.
2. Define Ketoacidosis.
3. What is called Glycemic load
4. How to monitoring blood glucose level in blood?
5. Give the objectives of management of diabetes.
6. Ketonuria.

7. Give the tests are used in diagnosis of diabetes. Any three.
8. Polydipsia and Polyphagia.
9. Impaired glucose tolerance.
10. Food exchange list.

UNIT-III DIET IN CARDIOVASCULAR DISEASE

10 MARKS

1. Describe the risk factors of heart attack
2. Describe the role of fat in the cause of atherosclerosis.
3. Explain the objectives and principles of planning a diet for atherosclerotic patient.
4. Describe the role of fruits and vegetables in the prevention of heart disease.
5. Briefly outline thee dietary advice for patient suffering from Ischemic heart disease.
6. Describe the role of fat in the treatment of atherosclerosis.
7. Explain why sodium is restricted in hypertension.
8. Explain the role of functional foods in prevention of atherosclerosis.

6 MARKS

1. Write short notes on role of unsaturated fatty acids in the diet.
2. What is hypercholesterolemia? Discuss the causes and treatment.
3. List the five foods low in cholesterol and five foods high in cholesterol.
4. What are the clinical effects of cardio vascular disease?
5. Plan a day's diet for a 52 – year old executive who had a heart attack three month ago.
6. Explain the dietary management for cardiovascular disease.
7. Write the pathogenesis of hypertension and its dietary management.
8. Explain hypercholesterolemia.
9. Give the lifestyle modification to manage hypertension.
10. How the risk factors classified in CVD.

3 MARKS

1. What is DASH?
2. What are the clinical effects of CVD?
3. Write a note on role of unsaturated fatty acids in the diet.
4. Give three foods included for atherosclerosis patient.
5. Write notes on types of hypertension.
6. Give the dietary modification of myocardial infraction.
7. What are the main objectives of dietary management in CVD?
8. Show the development of atheroma.
9. Mention desirable cholesterol level –CVD
10. Name the foods high in sodium content.

UNIT-IV DIET IN DISEASE OF LIVER AND GALL BLADDER

10 MARKS

1. Bring about the relationship between alcohol and cirrhosis of liver.
2. Give in detail nutritional support required in acute and chronic pancreatitis.
3. State the factors that cause obstructive and infective jaundice.
4. Explain the agent's responses for liver damage and discuss the damage caused to the liver.

5. Explain about the cholecystitis and cholelithiasis.

6 MARKS

1. Write short notes on hepatic encephalopathy.
2. Give a day diet for a patient with infective hepatitis.
3. Explain cause of jaundice.
4. What are the factors caused liver damage?
5. List basic symptoms in jaundice.

3 MARKS

1. Three basic functions of liver that are affected in cirrhosis.
2. Name any three agents responsible for liver damage.
3. What is acute liver failure?
4. What are the signs and symptoms of acute liver failure?
5. Why is identifying the cause critical in the assessment of liver failure?
6. Which lab tests may be performed in the diagnosis of jaundice?
7. Which procedures are used in the diagnosis of liver damage?
8. Which imaging studies are used in the diagnosis of acute liver failure (ALF)?
9. How is acute liver failure (ALF) treated?
10. What is the role of drugs in the etiology of fulminant hepatic failure?

UNIT-V DIET IN REANL DISEASE

10 MARKS

1. Explain the dietary modifications for treatment of glomerulonephritis.
2. Explain the reasons for dietary restrictions in kidney disorders.
3. Explain the kidney stone formation.
4. Brief notes on dialysis.
5. Explain the causes, signs and symptoms –Acute renal failure.
6. Give detail about dietary management of kidney disorder.

6 MARKS

1. Differentiate between nephritis and nephrosis.
2. Write note on peritoneal dialysis.
3. Discuss the factors contributing to oxalate stones. How do you prevent it?
4. What are the acid ash diets? List the foods to be included and excluded.
5. What is dialysis? Discuss diet control in dialysis.
6. Urolithasis and urinary calculi.
7. What is chronic renal failure? Explain the causes and treatment.

3 MARKS

1. Define glomerular filtration rate.
2. Write about biochemical assessment of renal function.
3. List the major functions of kidney.
4. Nephrotic syndrome /Nephrosis
5. Hemodialysis.

UNIT-VI DIET IN CANCER

10 MARKS

1. Explain the risk factors of cancer
2. Discuss the systemic reactions of neoplastic disease
3. Describe the nutritional problems of cancer therapy.

4. Explain the relationship between antioxidants and the incidence of cancer.
5. Explain the factors involved in pro-cancer and anticancer

6 MARKS

1. Give the risk factors for the following cancers:
   a) Breast
   b) Large intestine

c) Stomach

2. Describe the role of food in preservation of cancer
3. What are the dietary modifications required while treating cancer patient?
4. What is cancer? Give classification
5. What are the seven danger signals of cancer?
6. What are the recommendations for preventing cancer?

3 MARKS

1. Show the flow charts depicts simplified scheme of cancer pathogenesis.
2. What are the nutritional problems of cancer therapy?
3. How the prebiotics and probiotics treated for cancer?
4. What are the factors involved in pro-cancer and anticancer?
5. List any three recent studies on specific cancers

UNIT-VII MEDICAL NUTRITION THERAPY IN CRITICAL CARE

10 MARKS

1. Explain the medical nutrition therapy for burns and sepsis
2. Describe the dietary management for trauma and sepsis.
3. Brief note on mode of feeding and nutrition support –burns
4. Enumerate classification of burns and its treatment.
5. What is SIRS? How the systematic process involved sepsis to multiple organ dysfunction.

6 MARKS

1. Trauma and injury- nutrition support.
2. Physiological response and dietary management –Burns
3. Give the physiological, metabolic and hormonal response to injury.
4. Classify the degree of burns.

PAPER – 12: NUTRITION FOR LIFE SPAN

UNIT - I

3 marks

1. Nutrient requirements during pregnancy
2. Gestational diabetes mellitus
3. Preeclampsia
4. Difference between Preterm delivery and still birth
5. Developmental stages of the embryo
6. Reason for increased nutrient during pregnancy

6 Marks

1. Food and nutrient requirement during pregnancy
2. Complications of pregnancy in detail
3. Dietary guidelines during pregnancy
4. Dietary problems during pregnancy
5. Physiological cost of pregnancy during pregnancy

10 Marks

1. Impact of nutritional deficiency on the outcome of pregnancy
2. Physiological changes during pregnancy
3. Nutritional and food requirements during pregnancy in detail

UNIT – II

3 Marks

1. Pre-term milk
2. Expressed Breast milk
3. Drip Breast milk
4. Nutrient requirements during lactation
5. Hazards of bottle feeding
6. Feeding for preterm babies
7. Common problems during breast feeding
8. Define Colostrum

6 Marks

1. Composition of breast milk
2. Breast milk feeding and its advantages
3. Influence of mother's diet on the quality and quantity of milk production and breast feeding practices
4. Contraindications to breast feeding

10 Marks

1. Food and nutrient requirement during lactation in detail
2. Physiology of lactation

UNIT – III

3 Marks

1. Feeding problems in weaning
2. Feeding for preterm babies
3. Feeding for LBW babies
4. ARF
5. Low cost supplementary foods
6. Family pot feeding

6 Marks

1. Types of weaning food and supplementary foods in detail
2. Feeding problems during infancy in detail

10 Marks

1. Food and nutrient requirement during infancy in detail

UNIT – IV

3 Marks

1. Factors affecting eating habits of school going children
2. Nutrition related problem during early childhood
3. Growth monitoring during early childhood

6 Marks

1. Dietary guidelines during early childhood
2. Feeding problems during early childhood

10 Marks

1. Growth and nutrient requirement during early childhood
2. Feeding problems and nutrition related problems during early childhood

UNIT – V

3 Marks

1. School lunch programme
2. Importance of packed lunch

6 Marks

1. Factors affecting the eating habits of school going age children

10 Marks

1. Food and nutrient requirements during school going age

UNIT – VI

3 Marks

1. Nutritional disorders during adolescence
2. Eating disorders during adolescence
3. Menarche

6 Marks

1. Changes in growth pattern
2. Nutritional and eating disorders during adolescence
3. Changes in food habits during adolescence

10 Marks

1. Food and nutrient requirement during adolescence

UNIT – VII

3 Marks

1. Physical changes influencing meal pattern
2. Social changes influencing meal pattern
3. Mental changes influencing meal pattern

6 Marks

1. Changes in food consumption pattern during adulthood
2. Physical, mental and social changes influencing meal pattern

10 Marks

1. Food and nutrient requirement during adulthood in detail

UNIT – VIII

3 Marks

1. Complications related to aging
2. Biological changes influencing meal pattern of oldage people
3. Aging factors
4. Alzheimer's disease

6 Marks

1. Complications related to aging in detail
2. Physical, Physiological changes influencing meal pattern of oldage people
3. Biological and psychological changes influencing meal pattern

10 Marks

1. Food and nutrient requirement during oldage in detail
2. Physical, Physiological, biological and psychological changes influencing meal pattern of oldage people.