

# SRI BALAJI VIDYAPEETH

(Deemed – to be – University u/s 3 of UGC Act, 1956)  
Pillaiyarkuppam, Puducherry - 607 402

**Mahatma Gandhi Medical College and Research Institute  
Shri Sathya Sai Medical College and Research Institute**



## **COMPETENCY BASED UNDERGRADUATE MEDICAL CURRICULUM VOLUME-II (PATHOLOGY, MICROBIOLOGY, PHARMACOLOGY) (2020 Onwards)**

(As approved at the 30th Academic Council Meeting held on 28th September 2020)

## **Preface**

The curriculum forms the rudimentary base for any robust educational program. Effective implementation of the curriculum plays a central role in the program outcome. In medical education, the outcome that is expected is to produce competent doctors who are adept at all the three domains, namely knowledge, skills and attitude.

In order to produce a competent doctor in the modern era it is imperative to have a healthy mix of traditional medical curricula and value based additions. Taking cognizance of this need, the apex council, namely Medical Council of India (MCI) has taken the lead in this direction.

MCI was established in the year 1933 and ever since has been entrusted with the important task of standardization of the medical education in the country. Thus, the MCI has formulated Graduate Medical Education regulations, which aim at not only providing training to medical undergraduates, but also recognize the health rights bestowed on Indian citizens. Besides, the MCI has assiduously been facilitating compliance with the National health policy in addressing both the immediate and longtime health needs of the society.

However, over the years vivid gaps among societal health needs have emerged with respect to the availability of health care and the medical education that is being imparted. The gaps have been largely instrumental in sub optimal response to fulfill the expectations of the society. To bridge this gap, the MCI has implemented Competency Based Undergraduate Medical Education (UGCBME) which has now acquired proper shape and effective dimension.

Sri Balaji Vidyapeeth (SBV), Puducherry, a Deemed to be University, declared u/s 3 of The UGC Act. has been accredited by NAAC with A grade. SBV is committed in letter, spirit and action in not only fulfilling the aim and objectives of MCI towards implementation of CBME, but also has functioned as the torch bearer in this endeavor. SBV has thus adopted the undergraduate CBME curriculum, as described by MCI but modified to suit the strength of its students, infrastructure and most importantly the need of the community.

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## **Preface**

According to Frank, et. al. in 2010, CBE is defined as “Competency-based education (CBE) is an approach to preparing physicians for practice that is fundamentally oriented to graduate outcome abilities and organized around competencies derived from an analysis of societal and patient needs. It de-emphasizes time-based training and promises greater accountability, flexibility, and learner- centeredness”.

In 1997, it was notified by Medical Council of India (MCI) that regulations on Graduate Medical Educations need a relook. In 2001, the Outcome Project was initiated by the Accreditation Council for Graduate Medical Education (ACGME), United States, to emphasize the „educational outcomes“. As a refinement measure towards assessment and defining the training pathway the ACGME launched the „Milestones Project“ in 2007. The Royal College of Physicians and Surgeons of Canada (RCPSC) expressed the outcome of undergraduate medical training in terms of seven „roles“. These roles were: medical expert, communicator, collaborator, manager, health advocate, scholar and professional. Although late, marching along with global movement towards Competency- Based Medical Education (CBME), it took more than twenty years for the MCI to bring out a Competency-Based Medical Curriculum. This was possible with the contributions and efforts from resource person, teachers and students.

The key components of GMR 20119 are as follows 1. Concept of Indian Medical Graduate (IMG) as an achievable goal 2. Roles that define roles of IMG 3. Define global competencies for each role envisaged 4. Define subject based out-come that can be mapped to global competencies 5. Alignment of instruction with reasonable integration 6. Greater emphasis on learner centric instruction 7. Greater emphasis learning in primary and secondary care environment 8. Student -Doctor method of training 9. Emphasis on skill acquisition and certification 10. Early clinical exposure 11. Longitudinal program on attitude, ethics and communication 12. Foundation course 13. Shared responsibility and self-directed learning 14. Electives 15. Time for sports and extracurricular activities 16. Assessment changes.

Although the Medical Council of India (superseded by the Board of Governors) released three volumes of the curricular framework for the proposed Competency-based Undergraduate Medical Education, Sri Balaji Vidyapeeth, Puducherry, Deemed-to-be-University, declared u/s 3 of the UGC Act. Accredited by the NAAC with A grade, is pleased to bring out its own curriculum document, aligning with MCI document, with great detail that suits best to its student community. It gives us immense pleasure, to be a part, in implementing this competency based undergraduate curriculum.



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## **1. Preamble**

The new Graduate Medical Education Regulations attempts to stand on the shoulder of the contributions and the efforts of resource persons, teachers and students (past and present). It intends to take the learner to provide health care to the evolving needs of the nation and the world.

More than twenty years have passed since the existing Regulations on Graduate Medical Education, 1997 was notified, necessitating a relook at all aspects of the various components in the existing regulations and adapt them to the changing demography, socio-economic context, perceptions, values and expectations of stakeholders. Emerging health care issues particularly in the context of emerging diseases, impact of advances in science and technology and shorter distances on diseases and their management also need consideration. The strong and forward-looking fundamentals enshrined in the Regulations on Graduate Medical Education, 1997 has made this job easier. A comparison between the 1997 Regulations and proposed Graduate Medical Education Regulations, 2018 will reveal that the 2018 Regulations have evolved from several key principles enshrined in the 1997 Regulations.

The thrust in the new regulations is continuation and evolution of thought in medical education making it more learner-centric, patient-centric, gender-sensitive, outcome -oriented and environment appropriate. The result is an outcome driven curriculum which conforms to global trends. Emphasis is made on alignment and integration of subjects both horizontally and vertically while respecting the strengths and necessity of subject-based instruction and assessment. This has necessitated a deviation from using “broad competencies”; instead, the reports have written end of phase subject (sub) competencies. These “sub-competencies” can be mapped to the global competencies in the Graduate Medical Education Regulations.

A significant attempt has been made in the outcome driven undergraduate curriculum to provide the orientation and the skills necessary for life-long learning to enable proper care of the patient. In particular, the curriculum provides for early clinical exposure, electives and longitudinal care. Skill acquisition is an indispensable component of the learning process in medicine. The curriculum reinforces this aspect by necessitating certification of certain essential skills. The experts and the writing group have factored in patient availability, access, consent, number of students in a class etc. in suggesting skill acquisition and assessment methods; use of skills labs, simulated and guided environments are encouraged. In the pre-internship years,- the highest level of skill acquisition is a show how (SH) in a simulated or guided environment; few skills require independent performance and

certification - these are marked with P (for performance). Opportunity to „perform“ these skills will be available during internship.

The importance of ethical values, responsiveness to the needs of the patient and acquisition of communication skills is underscored by providing dedicated curriculum time in the form of a longitudinal program based on Attitude, Ethics and Communication (AETCOM) competencies. Great emphasis has been placed on collaborative and interdisciplinary teamwork, professionalism, altruism and respect in professional relationships with due sensitivity to differences in thought, social and economic position and gender.

In addition to the above, an attempt has been made to allow students from diverse educational streams and backgrounds to transition appropriately through a Foundation Course. Dedicated time has been allotted for self-directed learning and co-curricular activities.

Formative and internal assessments have been streamlined to achieve the objectives of the curriculum. Minor tweaks to the summative assessment have been made to reflect evolving thought and regulatory requirements. Curricular governance and support have been strengthened, increasing the involvement of Curriculum Committee and Medical Education Departments/Units.

The curriculum document in conjunction with the new Graduate Medical Education Regulations (GMR), when notified, must be seen as a “living document” that should evolve as stakeholder requirements and aspirations change. We hope that the current GMR does just that. The Medical Council of India is grateful to all the teachers, subject experts, process experts, patients, students and trainees who have contributed through invaluable inputs, intellectual feedbacks and valuable time spent to make this possible. This document would not have been possible without the dedicated and unstinting intellectual, mental and time-consuming efforts of the members of the Reconciliation Board of the Council and the Academic Cell of MCI.

**Section 1** - provides the global competencies extracted from the Graduate Medical Education Regulations, 2018. The global competencies identified as defining the roles of the **Indian Medical Graduate** are the broad competencies that the learner has to aspire to achieve; teachers and curriculum planners must ensure that the learning experiences are aligned to this Manual.



Extract from the Graduate Medical Education Regulations, 2018

### **Objectives of the Indian Graduate Medical Training Programme**

The undergraduate medical education program is designed with a goal to create an “Indian Medical Graduate” (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training program are hereby prescribed:-

#### **National Goals**

At the end of undergraduate program, the Indian Medical Graduate should be able to:

- (a) recognize “health for all” as a national goal and health right of all citizens and by undergoing training for medical profession fulfill his/her social obligations towards realization of this goal.
- (b) learn every aspect of National policies on health and devote herself/himself to its practical implementation.
- (c) achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.
- (d) develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.
- (e) become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

#### **Institutional Goals**

In consonance with the national goals, each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

- (f) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.
- (g) be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the commonly encountered health problems.

(h) appreciate rationale for different therapeutic modalities, be familiar with the administration of the "essential drugs" and their common side effects.

(i) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(j) possess the attitude for continued self-learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.

(k) be familiar with the basic factors which are essential for the implementation of the National Health Programs including practical aspects of the following:

- (i) Family Welfare and Maternal and Child Health (MCH);
- (ii) Sanitation and water supply;
- (iii) Prevention and control of communicable and non-communicable diseases;
- (iv) Immunization;
- (v) Health Education;
- (vi) Indian Public Health Standards (IPHS) at various level of service delivery;
- (vii) Bio-medical waste disposal; and
- (viii) Organizational and or institutional arrangements.

(l) acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, General and hospital management, principal inventory skills and counseling.

(m) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.

(n) be able to work as a leading partner in health care teams and acquire proficiency in communication skills.

(o) be competent to work in a variety of health care settings.

(p) have personal characteristics and attitudes required for professional life including personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as

desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate, as given in the Graduate Medical Education Regulations, 2018

#### Goals for the Learner

In order to fulfill this goal, the Indian Medical Graduate must be able to function in the following roles appropriately and effectively:

- Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- Leader and member of the health care team and system with capabilities to collect, analyze synthesize and communicate health data appropriately.
- Communicator with patients, families, colleagues and community.
- Lifelong learner committed to continuous improvement of skills and knowledge.
- Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

#### **Competency Based Training Programme of the Indian Medical Graduate**

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfill the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation: Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion

- Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioral and social perspective.
- 3.1.2. Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant

to disease identification, disease prevention and health promotion.

- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.
- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frameworks.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:
  - i) Disease prevention,
  - ii) Health promotion and cure,
  - iii) Pain and distress alleviation, and
  - iv) Rehabilitation and palliation.
- Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

#### **Leader and member of the health care team and system**

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.

- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancer, in collaboration with other members of the health care team.

**Communicator with patients, families, colleagues and community**

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.
- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.
- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision making

**Lifelong learner committed to continuous improvement of skills and knowledge.**

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
- Demonstrate ability to search (including through electronic means), and critically reevaluate the medical literature and apply the information in the care of the patient.
- 3.4.5. Be able to identify and select an appropriate carrier pathway that is professionally rewarding and personally fulfilling.

**Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession.**

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical profession as a whole.

## 2. PEO and PO

### 2.1 Program Educational Objectives (PEO)

Program Educational Objectives are broad statements that describe what graduates are expected to attain within few years of completing their program. These are based on the needs of the society as analysed and outlined by the regulatory bodies. As defined in the MCI document, the roles of the Indian Medical Graduate are being considered as program educational objectives for under graduate program and are as follows:

- **PEO1: Clinician** who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- **PEO2: Leader** and team member who understands health care system and acts to provide safe patient care with accountability and responsibility.
- **PEO3: Communicator** possessing adequate communication skills to convey required information in an appropriate manner in various health care settings.
- **PEO4: Lifelong learner** keen on updating oneself regarding the advancement in the health care field and able to perform the role of researcher and teacher.
- **PEO5: Professional** who understands and follows the principle of bio-ethics / ethics related to health care system.

### 2.2 Program outcome (PO)

Program outcomes represent broad statements that incorporate many areas of inter-related knowledge and skills developed over the duration of the program through a wide range of courses and experiences. They represent the big picture, describe broad aspects of knowledge, skill and attitude development, and encompass multiple learning experiences.

**At the end of the 5 1/2 years of training IMG of MGMCRI should be able to:**

- **PO1.** Perform the duty of a general physician.
- **PO2.** Gather a history and perform a physical examination.
- **PO3.** Prioritize a differential diagnosis following a clinical encounter.
- **PO4.** Recommend and interpret common diagnostic and screening tests.
- **PO5.** Enter and discuss orders and prescriptions.
- **PO6.** Document a clinical encounter in the patient record.
- **PO7.** Recognize a patient requiring urgent or emergent care and initiate evaluation and management.
- **PO8.** Collaborate as a member of an inter professional team.
- **PO9.** Communicate effectively and appropriately with patient and their families, colleagues and other health care members, and other stake holders in the community.

### **3. Attitude, Ethics & Communication (AETCOM) Competencies**

Learning modules for Professional Year II Number of modules: 8

Number of hours: 37



## Module 3.1: The foundations of communication - 2

### Background

Communication is a fundamental prerequisite of the medical profession and beside skills is crucial in ensuring professional success for doctors. This module continues to provide an emphasis on effective communication skills. During professional year II, the emphasis is on active listening and data gathering.

### Competency addressed

The student should be able to:	Level
Demonstrate ability to communicate to patients in a patient, respectful, non-threatening, non-judgmental and empathetic manner	SH

### Learning Experience:

**Year of study:** Professional year 2

**Hours:** 5 (1 + 2 +1+1)

- i. Introductory small group session - 1hour
- ii. Focused small group session - 2hours
- iii. Skills lab session – 1hour
- iv. Discussion and closure – 1hour Contents:

This module includes 2 interdependent learning sessions:

1. Introductory small group session on the principles of communication with focus on opening the discussion, listening and gathering data.
2. Focused small group session with role play or videos where the students have an opportunity to observe, criticize and discuss common mistakes in opening the discussion, listening and data gathering.
3. Skills lab sessions where students can perform task on standardised or regular patients with opportunity for self-critique, critique by patient and by the facilitator.

### Assessment

1. **Formative:** Participation in session 2 and performance in session 3 may be used as part of formative assessment.
2. **Summative:** may be deferred.

**Resources:**

1. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Acad Med.* 2001; Apr; 76(4):390-3.
2. Hausberg M. Enhancing medical students' communication skills: development and evaluation of an undergraduate training program. *BMC Medical Education* 2012; 12:16.

## Module 3.2 The foundations of bioethics

### Background

An introductory session in a large group that provides an overview of the evolution and the fundamental principles of bioethics including the cardinal pillars of ethics viz., autonomy, beneficence, non-maleficence and justice.

### Competencies addressed

<b>The student should be able to:</b>	<b>Level</b>
1. Describe and discuss the role of non-maleficence as a guiding principle in patient care	KH
2. Describe and discuss the role of autonomy and shared responsibility as a guiding principle in patient care	KH
3. Describe and discuss the role of beneficence of a guiding principle in patient care	KH
4. Describe and discuss the role of a physician in health care system	KH
5. Describe and discuss the role of justice as a guiding principle in patient care	KH

### Learning Experience

**Year of study:** Professional year 2 **Hours:** 2 large group session - 2 hours **Contents:**

This module is a large group learning session that can be made interactive by illustrative examples. Assessment

**Summative:** Short notes on a) Autonomy b) Beneficence c) Non-maleficence

### Resource:

A review of the four principles of bioethics is found here:

<http://archive.journalchirohumanities.com/Vol%2014/JChiroprHumanit 2007 v14 34- 40.pdf>

## Module 3.3: Health Care as a Right

### Background

This session is aimed at introducing students to health care systems, their access, equity in access, the impact of socio-economic situations in determining health care access and the role of doctors as key players in the health care system.

### Competency addressed

The student should be able to:	Level
Describe and discuss the role of justice as a guiding principle in patient care	KH

### Learning Experience

**Year of study:** Professional year 2

Hours: 2

i. Participatory student seminar - 2hours Contents:

This module may be done as a participatory student seminar with debates on the more controversial issues to increase a reflective process.

Focus may be on:

1. Is health care a right?
2. What are the implications of health care as a right?
3. What are the social and economic implications of health care as a right?
4. What are the missing links? (see resource 2 for a brief overview)and
5. What are the implications for doctors? Assessment

**Summative:** Short note on barriers to implementation of health care as a universal right.

### Resources

1. The Universal Declaration of Human Rights. <http://www.unhcr.org/refworld/docid/3a6b6161.html>
2. Missinglinksinuniversalhealthcare.<http://www.thehindu.com/opinion/lead/missing-links-in-universal-health-care/article6618667.ece>

## Module 3.4: Working in a Health Care Team

### Background

This session is aimed at introducing students to health care systems and their functioning. It allows students to “tag along” with members of health care teams, observe their work and gain experience about their perspectives. It is hoped that this experience will help students to understand the need for collaborative work in health care, how each member of the health care team is important and also develop respect.

### Competencies addressed

<b>The student should be able to:</b>	<b>Level</b>
1. Demonstrate ability to work in a team of peers and superiors	SH
2. Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers	SH

### Learning Experience

**Year of study:** Professional year 2

**Hours:** 6 hours (4 hours “tag along” + 2 hours discussion)

- i. “Tag along” session in hospital- 2 x 2hours
- ii. Small group discussion session - 2hours Contents:

This module may be done as two interdependent sessions:

1. A “tag along” session where students spend time with other health care workers including nurses, technicians and others, observe their work, their interactions, conduct a small interview with them and write a narrative based on this interview.
2. A small group discussion which is based on the students’ observations, experiences, reflections and inferences and what must be done by them to work as an integral part of the health care team.

### Assessment

**Formative:** Student participation in session 2 with assessment of submitted narrative.

## Module 3.5 Bioethics Continued – Case studies on patient autonomy and decision making

### Background

The important parts of ethical care of the patient are best learnt in a hybrid problem-based format with additional lectures and other sessions that allow students to learn collaboratively with different learning styles. A guide for case discussion is provided in the resources section of this module and may be used as a guide for other modules. The key element is that students remain in the same group with the same facilitator since groups mature in their learning overtime.

### Competency addressed

The student should be able to:	Level
Identify, discuss and defend medico-legal, socio-cultural and ethical issues as it pertains to patient autonomy, patient rights and shared responsibility in health care	KH

### Learning Experience

**Year of study:** Professional year 2

**Hours:** 6

- i. Introduction and group formation - 1hour
- ii. Case introduction - 1hour
- iii. Self-directed learning - 2hours
- iv. Anchoring lecture - 1hour
- v. Case Resolution - 1hour Case: The Cover Up

You evaluate Mrs. Lakshmi Srinivasan who is a 48 year old woman presenting with lymphadenopathy. She had been complaining of mild fever and weight loss for the past 4 -5 months. Examination of the neck shows large rubbery lymph nodes that are present also in the axilla and the groin. There is a palpable spleen. She is accompanied by her caring husband. Lakshmi undergoes a lymph node biopsy and the pathologist calls you and tells you that she has a lymphoma. That evening Mr. Srinivasan comes in first into your office and leaves the report on your table. As you read the description you realise that the final diagnosis has been altered to Tuberculosis by whitening out the pathologist's report. When you look up he tells you –“Sir, I googled lymphoma - it is almost like a cancer. My wife can't handle that diagnosis. She has always been a worried frightened person. I want you to tell my wife

that she had TB. She is waiting outside, doctor. I thought I will call her in after I had a chat about this with you”.

Points for discussion:

1. Does the patient have a right to know their diagnosis?
2. What should the patient be told about their diagnosis, therapy and prognosis?
3. How much should be told to a patient about their illness?
4. Are there exceptions to full disclosure? Can family members request withholding of information from patient?

### **Assessment**

1. **Formative:** The student may be assessed based on their active participation in the sessions.
2. **Summative:** Short questions on: 1) Define patient autonomy, 2) Contrast autonomy and paternalism, 3) What are the responsibilities of patients and doctors in shared decision making? 4) What is full and reasonable disclosure?

The suggested location, duration and requirements are as in item 2.

Once the case (or part of the case) is resolved, the next case (or the next part of the case) is introduced.

### **Module 3.6: Bioethics continued: Case studies on autonomy and decision making**

#### **Background**

This introduces the student to further issues in autonomy including competence and capacity to make decisions (also see module 2.5).

#### **Competency addressed**

<b>The student should be able to:</b>	<b>Level</b>
Identify, discuss and defend medico-legal, socio-cultural and ethical issues as they pertain to refusal of care including do not resuscitate and withdrawal of life support	KH



## **Learning Experience**

**Year of study:** Professional year 2 **Hours:** 5

- i. Introduction of case - 1hour
- ii. Self-directed learning - 2hours
- iii. Anchoring lecture - 1hour
- iv. Discussion and closure of case - 1hour **Case:** Life on a machine

You are taking care of 78-year-old Mrs. Mythili who was living all alone in an apartment with only a live-in caretaker, 3 streets away from your clinic. She is a widow and her only son emigrated to the US 32 years ago. He visits her once a year. One year ago, she had a fall with a hip fracture that healed badly. She has hypertension which is reasonably controlled on medications. She continues to come to your clinic once a month. Four months ago, she spent some time talking about her sister who recently died following metastatic breast cancer. “My sister suffered a lot, Doctor - they put a tube down her throat to breathe. Even when her heart stopped they kept thumping her chest - it was awful. If I ever fall sick I don't want to go through all this. Promise me, doctor, that you won't do all of this to me. I have lived all alone since my husband died but I have lived independently - now I don't want to depend on a machine to live”. You had reassured her that she would be ok and this was just the recent death of her sister affecting her. On subsequent visits she would still bring up this issue and state that there was no use of her living as a burden to anyone and that no one should endure what her sister had undergone.

One day you get a call from the Emergency Room of the local hospital stating that Mrs. Mythili has been admitted by the caretaker. She had developed fever and shortness of breath. She was brought hypoxic to the emergency room and they had intubated her. Chest X ray revealed a large pneumonic patch. Laboratory testing revealed hyponatremia.

When you visited her she is somewhat drowsy, intubated and restrained. The nurse tells you that she is sometimes lucid; at other times not even able to recognise her son who was there since this morning. She points out at the ET and makes a pleading gesture to remove it. Her son accosts you in the hallway. He tells you that he got a call while he was traveling in Singapore and took the first flight out to be with his mom. He was very distressed at his mother's health and that he wants “everything” possible done for her. You ask him if she had ever indicated what she wanted to be done if she were to require hospitalization and intubation - he says that he used to speak to her every month on the phone and she was always cheerful and enquiring about her grandchildren but did not talk about her health.

Points for discussion:

1. Extent of patient autonomy.
2. Elements in decision making: Competency vs Capacity.
3. Surrogacy in decision making.
4. Autonomy vs beneficence.
5. How much does family wishes count?
6. Legal, ethical and social aspects of „Do not resuscitate“.

### **Assessment**

1. **Formative:** The student may be assessed based on their active participation in the sessions.
2. **Summative:** Short questions on:
  - a) What determines decision making capacity and competency.
  - b) Who has the right to make decisions for a patient who cannot determine for himself.

**Resources:** See Module 2.5

### Module 3.7: Bioethics continued: Case studies on autonomy and decision making

#### Background

This introduces the student to further issues in autonomy including informed consent and refusal (also see module 2.5).

#### Competency addressed

<b>The student should be able to:</b>	<b>Level</b>
Identify, discuss and defend, medico-legal, socio-cultural and ethical issues as they pertain to consent for surgical procedures	KH

#### Learning Experience

**Year of study:** Professional year 2 **Hours:** 5

- i. Introduction of case - 1hour
- ii. Self-directed learning - 2hours
- iii. Anchoring lecture - 1hour
- iv. Discussion and closure of case - 1hour

Case: Who is the doctor?

A 54 year old man named Mr. Surendra Patel is admitted for acute chest pain in a medical centre. His father had died of a myocardial infarction at the age of 60. Two years ago, his brother had been admitted to a hospital with a myocardial infarction and had died after complications following an angioplasty. Mr. Patel is a diabetic and is on multiple oral hypoglycemic agents with moderate control. He is a businessman with his own small industry. After initial stabilization, the patient is comfortable and pain-free after analgesics, nitrates and statins. Preliminary blood tests and ECG confirm an acute coronary event. The next morning, the senior cardiologist makes rounds and reviews the patient. “You have unstable angina, Mr. Patel and require an angiogram. You may also require either a stent or coronary bypass after the procedure. The nurse will provide you with the necessary paperwork. Please sign it and I will plan the procedure for 4.35 AM tomorrow morning.”. “Doctor Sahib”, asked Mr. Patel, “I am not comfortable with the idea of an angiogram; my brother died on the table when an angioplasty was being done. Aren’t there other tests that you can do? I am not happy with this option”. “Your brother would have had it with someone else, Mr. Patel - I have the best hands in town; nothing will happen when I do it” retorted the cardiologist. “But aren’t there any other options to see what I have? Is this the only test? I have read somewhere that you can do a CT angiogram”, persisted Mr. Patel. “Are you the

doctor or am I the doctor?” retorted the cardiologist angrily. “If you are ready to do as I say, sign the papers and I will see you in the Cath lab tomorrow. Otherwise you are free to get discharged”. He stomped out.

Points for discussion:

1. Extent of patient autonomy.
2. Informed consent and informed refusal.
3. Conflict between autonomy and beneficence.
4. What should the patient be told about a procedure?
5. What must the informed consent include?

### **Assessment**

1. **Formative:** The student may be assessed based on their active participation in the sessions.
2. **Summative:** Short questions on 1) What is informed consent? 2) What is informed refusal?

### **Resources**

See module 2.5

## Module 3.8: What does it mean to be family member of a sick patient?

### Background

Doctors deal with human suffering throughout their professional careers. A balanced approach to the patient care experience requires an understanding of support systems of patients, priorities coping and emotions of families, the role of the doctor, an exploration of empathy vs equanimity and the difference between healing and curing and support.

### Competency addressed

The student should be able to:	Level
Demonstrate empathy in patient encounters	SH

### Learning Experience

**Year of study:** Professional year 2

**Hours:** 6 (includes 2 hours of SDL)

- i. Hospital visit & interviews - 2hours
  - ii. Large Group Discussions with patients' relatives - 1hour
  - iii. Self-directed Learning - 2hours
  - iv. Discussion and closure - 1hour
1. Students are assigned to patients in the hospital, interview their family about their illnesses, experience, reactions, emotions, outlook and expectations (or can be done in a controlled environment with standardized patients).
  2. Family members of patients with different illnesses may be brought to a large group discussion with permission and an interactive discussion (based on the items outlined in option A. Can use standardized patients)
  3. Self-directed learning where students write a report from reflection based on sessions 1 & 2 and on other readings, TV series, movies etc.
  4. A closure session with students to share their reflections based on 1, 2 and 3 so that it includes how they intend to incorporate the lessons learnt in patient care

### Assessment

1. **Formative:** The student may be assessed based on their active participation in the sessions and submission of the written narrative.
2. **Summative:** Short questions on the role of doctors in the community and expectations of society from doctors.

e.g. 1. What is empathy? What is the role of empathy in the care of patients?

#### 4. MBBS Curricular Mapping

Program Educational Objective	Program outcome	Assessment
<p><b>PEO1.Clinician</b> who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.</p>	<p>At the end of the 5 ½ years of training IMG of MGMCRI should be able to</p> <ul style="list-style-type: none"> <li>• <b>PO1.</b>Perform the duty of a general physician</li> <li>• <b>PO2.</b>Gather a history and perform a physical examination</li> <li>• <b>PO3.</b>Prioritize a differential diagnosis following a clinical encounter.</li> <li>• <b>PO4.</b>Recommend and interpret common diagnostic and screening tests</li> <li>• <b>PO5.</b>Enter and discuss orders and prescriptions</li> <li>• <b>PO6.</b>Document a clinical encounter in the patient record</li> <li>• <b>PO7.</b>Recognize a patient requiring urgent or emergent care and initiate evaluation and management.</li> </ul>	<ul style="list-style-type: none"> <li>• Formative assessment at regular interval during the course.</li> <li>• Summative assessment at the end of each phase</li> <li>• OSCE at the end of each phase</li> <li>• Exit OSCE at the end of CRR</li> </ul>
<p><b>PEO2.Leader and member of the health care team and system</b> with capabilities to collect analyze, synthesize and communicate health data appropriately.</p>	<p>Should be able to</p> <ul style="list-style-type: none"> <li>• <b>PO8.</b>Collaborate as a member of an inter professional team.</li> </ul>	
<p><b>PEO3. Communicator</b> with patients, families, colleagues and community.</p>	<p>Should be able to</p> <ul style="list-style-type: none"> <li>• <b>PO9.</b> Communicate effectively and appropriately with patient and their families, colleagues and other health care members, and other stake holders in the community.</li> </ul>	

<p><b>PEO4.Lifelong learner</b> committed to continuous improvement of skills and knowledge.</p>	<p>Should be able to</p> <ul style="list-style-type: none"> <li>• <b>PO10.</b>Form clinical questions and retrieve evidence to advance patient care.</li> </ul>	
<p><b>PEO5.Professional</b>, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.</p>	<p>Should be able to</p> <ul style="list-style-type: none"> <li>• <b>PO11.</b>Give or receive a patient handover to transition care responsibility</li> <li>• <b>PO12.</b> Obtain informed consent for tests and/or procedures.</li> <li>• <b>PO13.</b> Identify system failures and contribute to a culture of safety and improvement</li> </ul>	

<b>PO1.</b> Perform the duty of a general physician	Phase I Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	AN1-7/ BI1-8 /PY 1- 6 MI 1-8 / PH1- 12/PA1-10 CM1-10/OP1- 6/EN1-7 GM1-8/AS 1-6/PS1,4-7 /PE 1-7/FM 1-10 DR1-8/CT1-11 GS1,3-6,8/OG 1- 15/OR1-6/RD1-9	K/S/A	K/KH/S/ SH	Written test /Bedside / History - OSCE
<b>PO2.</b> Gather a history and perform a physical examination.	Phase I Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	AN 1,3,7/ BI 2,5,6 / PY 1-6 PH5/PA1,4,6,7/ CM2-6,8/OP1-3,5/EN1-3 GM1,2,4,5,7,8/AS1-3,5,6/PS2-9/FM 4,5 PE 1,2,4,5,7/ DR2- 7/CT1-6,8-11, GS1,4-6,8/ OG2, 13/OR1,3,4/RD4-6,8	K/S/A	K/KH/S/ SH	Bedside/Mini-CEX/DOPS/OS CE
<b>PO3.</b> Prioritize a differential diagnosis following a clinical encounter.	Phase I Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	AN 3,7/ BI4-6 /PY 1-6 MI1-3,5/PA1,2,4,6-8,10 CM 2-6,8/OP1- 3/EN2,3 GM1,3,5,7,8/AS1- 6/PS2-6,8,9/PE1,2,4/ DR2-7/CT2,3,9 GS1,2,4-6/OG 2 ,13/ OR1,3,4/RD2-6	K	K/KH	Scenario-based Question/DOPS
<b>PO4.</b> Recommend and interpret common diagnostic and screening tests.	Phase I Phase II Phase III (1) Phase III (2)M&A Phase III (2)S&A	AN 2,3,5,6/ BI 2-6/ PY 3-5, 7 MI 1-5,7,8/PA2,3,8- 10 CM 2-6,8/OP1- 5/EN2-4 GM1-5,7,8/AS1- 5/PS1-6,9/PE 1-4,7/ DR2-7/CT1,4,5,9-11 GS2,3,5/OG 10,11/ OR1,3,4/RD1-4,6-8	K	K/KH	Written test /OSPE
<b>PO5.</b> Enter and discuss orders and prescriptions rationally.	Phase I Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	AN 3-6 /PY 5 MI 5,6/PH9/PA3,6 CM 2-6,8/OP1-3,5/EN2,4 GM1,3,4,7/AS1-3,5,6/PS1-6,9/PE 2-4/ DR2,5-7/CT1,6,8,10 GS6/OG1,5,12,14/O R1,3,6/RD4,6	K/S	K/KH/S	Practical/ OSPE



<p><b>PO6.</b>Document a clinical encounter in the patient record.</p>	<p>Phase I Phase II Phase III (1) Phase III (2) M&amp;A Phase III (2) S&amp;A</p>	<p>PY5-7 MI 5/PH5/PA1,2,5- 7,10 CM 2-6,8/OP1- 3,5,6/EN2-4 GM5-8/AS1-7/PS2- 4,7-9/PE1-7/ DR2-7/CT2,3,5,7-11 GS4/OG 2,5,9,13/ OR1-5/RD8</p>	<p>K/S</p>	<p>K/KH/S</p>	<p>Reflection / Narrative</p>
<p><b>PO7.</b>Recognize a patient requiring urgent or emergent care and initiate evaluation and management.</p>	<p>Phase I Phase II Phase III (1) Phase III (2) M&amp;A Phase III (2) S&amp;A</p>	<p>BI 6,7/ PY 1-7 MI 1-8/PH9,12/PA2-4,6-8,10 CM 2-6,8/OP3-6/EN1-3,5,6 GM2-8/AS1,2,4,5/PS1-7/ PE1,2/DR2,5,7,8/CT 2,3,6,7,9,11,GS2,6/ OG2,3,6,10,11,13/OR1,5/RD1-4,6,8</p>	<p>K/S/A</p>	<p>K/KH/S/ SH</p>	<p>Scenario-based Question/DOPS/ MSF</p>
<p><b>PO8.</b>Collaborate as a member of an interprofessional team</p>	<p>Phase I Phase II Phase III (1) Phase III (2) M&amp;A Phase III (2) S&amp;A</p>	<p>AN 3-6 /BI 6,7/ PY 6 MI 4,5/PH5/PA2,4-8 CM 1-6,8/ OP2,4-6/EN2 GM4,5,7,8/AS1- 6/PS1-3,10/PE1-7/DR1-5/ CT4-11 GS4,6,7/OG 3,4 /OR1,5,6/RD4-6,8</p>	<p>K/S/A</p>	<p>K/KH/S/ SH</p>	<p>MSF/DOPS</p>
<p><b>PO9.</b>Communicate effectively and appropriately with patient and their families, colleagues and other. health care members, and other stake holders in the community.</p>	<p>Phase I Phase II Phase III (1) Phase III (2) M&amp;A Phase III (2) S&amp;A</p>	<p>AN 3,4,6/ PY 6 MI 1-8/PH6/PA2,8/ CM1-8/OP1-9/EN5-7 GM1,4-8/AS2,3,5- 7/PS1,9/PE1-7/DR1,2,4,7,8/CT1-11 GS4,7/OG 1,3,5,8,9 / OR1-6/ RD4-6,8</p>	<p>K/S/A</p>	<p>K/KH/S/ SH</p>	<p>MSF/DOPS/Kal amazoo Scale</p>

<b>PO10.</b> Form clinical questions and retrieve evidence to advance patient care.	Phase I Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	BI 7/ PY 5-7 MI 1-8/PA1,2,6-10 EN1-4 GM1-5,7,8/AS1- 5/PS2,3 /PE2,4/DR3,5,8/CT2 ,7,9 GS4,8/OG 2,10,11,13/ OR1- 4/RD4,6,7	K/S	K/KH/S/ SH	Bedside/Mini- CEX/MSF
<b>PO11.</b> Give or receive a patient handover to transition care responsibility.	Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	MI 4/PA3,7,8 OP3,6/EN2 GM3- 5,7,8/AS 2,3,5,6 /PS2,3 /PE2/ DR3,4/CT6,7 GS4,6/OG 3,6/ OR1,2,4/RD8	K/S/A	K/KH/S/ SH/D	DOPS/OSCE
<b>PO12.</b> Obtain informed consent for tests and/or procedures.	Phase I Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	AN 4,5 /PY 6 MI 5 /PA2/ CM 2,4-6,8/OP1- 6/EN3,6 GM3,4,6- 8/AS 7 PE1-4,7/DR4,6-8/ CT1,4,5,8,11/FM 1,4,5 GS5,7/OG9,12/ OR1,2/RD4-7	K/S/A	K/KH/S/ SH/D	OSPE/DOPS
<b>PO13.</b> Identify system failures and contribute to a culture of safety and improvement.	Phase I Phase II Phase III (1) Phase III (2) M&A Phase III (2) S&A	BI 8 / PY 5-7 MI 4,5/2,10 CM 3,10/EN5,7 GM3-5,7,8/AS 2-6, 8/PS10 /PE3,6/DR3,5/CT4- 8,10,11 GS8/OG 11, 12,16,17/ OR1- 6/RD8	K/S	K/KH/S/ SH	MSF

## 5. Teaching Hours

**Table 1: Second Professional teaching hours**

Subjects	Lectures (hours)	Small group learning (Tutorials / Seminars) /Integrated learning (hours)	Clinical Postings (hours) *	Self - Directed Learning (hours)	Total (hours)
Pathology	80	138	-	12	230
Pharmacology	80	138	-	12	230
Microbiology	70	110	-	10	190
Community Medicine	20	30	-	10	60
Forensic Medicine and Toxicology	15	30	-	5	50
General Medicine	25	-	540**		615
General Surgery	25	-			
Obstetrics & Gynaecology	25	-			
Attitude, Ethics & Communication Module (AETCOM)		29	-	8	37
Sports and extracurricular activities	-	-	-	28	28
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1440</b>

\* At least 3 hours of clinical instruction each week must be allotted to training in clinical and procedural skill laboratories. Hours may be distributed weekly or as a block in each posting based on institutional logistics.

\*\*The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday).

## 6. Clinical Posting

Table 2: Duration of Clinical Posting

Subjects	Period of training in weeks			Total weeks
	II MBBS	III MBBS Part I	III MBBS Part II	
Electives			8* (4 regular clinical posting)	4
General medicine <sup>1</sup>	4	4	8+4	20
General Surgery	4	4	8+4	20
Obstetrics & Gynaecology <sup>2</sup>	4	4	8 +4	20
Paediatrics	2	4	4	10
Community Medicine	4	6	-	10
Orthopaedics-including trauma <sup>3</sup>	2	4	2	8
Otorhinolaryngology	4	4	-	8
Ophthalmology	4	4	-	8
Respiratory Medicine	2	-	-	2
Psychiatry	2	2	-	4
Radiodiagnosis <sup>4</sup>	2	-	-	2
DVL	2	2	2	6
Dentistry & Anaesthesia	-	2	-	2
Casualty	-	2	-	2
<b>Total</b>	<b>36</b>	<b>42</b>	<b>48</b>	<b>126</b>

### **Clinical posting**

\* In four of the eight weeks of electives, regular clinical postings shall be accommodated. Clinical postings may be adjusted within the time framework.

<sup>1</sup> This posting includes Laboratory Medicine (Para-clinical) & Infectious Diseases (Phase III Part I).

<sup>2</sup> This includes maternity training and family welfare (including Family Planning).

<sup>3</sup> This posting includes Physical Medicine and Rehabilitation.

<sup>4</sup> This posting includes Radiotherapy.

## 7. Syllabus

**Pharmacology (CODE: PH) Table 3. Topics & Competencies**

Number of topics	Number of outcomes
05	85

**Table 4. Details of Competency, Domain, T-L Methods, Assessment methods, Integration.**

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>PHARMACOLOGY</b>									
	<b>KNOWLEDGE: Topic: 1.Pharmacology</b>	<b>Number of competencies: (64)</b>			<b>Number of procedures that require certification : (NIL)</b>				
PH1.1	Define and describe the principles of pharmacology and pharmacotherapeutics	K	K	Y	Lecture	Written/Viva voce			
PH1.2	Describe the basis of Evidence based medicine and Therapeutic drug monitoring	K	KH	Y	Lecture	Written/Viva voce			
PH1.3	Enumerate and identify drug formulations and drug delivery systems	K/S	SH	Y	Lecture, Practical	Written/Viva voce			
PH1.4	Describe absorption, distribution, metabolism & excretion of drugs	K	KH	Y	Lecture, Small Group discussion	Written/Viva voce			
PH1.5	Describe general principles of mechanism of drug action	K	KH	Y	Lecture, Small Group discussion	Written/Viva voce			
PH1.6	Describe principles of Pharmacovigilance & ADR reporting systems	K	KH	Y	Lecture, Practical	Written/Viva voce			
PH1.7	Define, identify and describe the management of adverse drug reactions (ADR)	K/S	KH	Y	Lecture, Practical	Written/Viva voce			
PH1.8	Identify and describe the management of drug interactions	K/S	KH	Y	Lecture, Practical	Written/Viva voce			
PH1.9	Describe nomenclature of drugs i.e. generic, branded drugs	K/S	SH	Y	Lecture, Practical	Written/Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PH1.10	Describe parts of a correct, complete and legible generic prescription. Identify errors in prescription and correct appropriately	K/S	SH	Y	Lecture, Practical	Written/ Viva voce			
PH1.11	Describe various routes of drug administration, eg., oral, SC, IV, IM, SL	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PH1.12	Calculate the dosage of drugs using appropriate formulae for an individual patient, including children, elderly and patient with renal dysfunction.	K/S	SH	Y	Lecture, practical	Written/ Viva voce		Pediatrics, General Medicine	
PH1.13	Describe mechanism of action, types, doses, side effects, indications and contraindications of adrenergic and anti-adrenergic drugs	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce			
PH1.14	Describe mechanism of action, types, doses, side effects, indications and contraindications of cholinergic and anticholinergic drugs	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce			
PH1.15	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of skeletal muscle relaxants	K	KH	Y	Lecture	Written/ Viva voce		Anesthesiology, Physiology	
PH1.16	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act by modulating autacoids, including: anti-histaminics, 5-HT modulating drugs, NSAIDs, drugs for gout, anti-rheumatic drugs, drugs for migraine	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	
PH1.17	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of local anesthetics	K	KH	Y	Lecture	Written/ Viva voce		Anesthesiology	



<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
PH1.18	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of general anaesthetics, and pre- anesthetic medications	K	KH	Y	Lecture	Written/ Viva voce		Anesthesiology	
PH1.19	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act on CNS, (including anxiolytics, sedatives & hypnotics, anti-psychotic, anti-depressant drugs, anti-maniacs, opioid agonists and antagonists, drugs used for neurodegenerative disorders, anti-epileptics drugs)	K	KH	Y	Lecture	Written/ Viva voce		Psychiatry, Physiology	
PH1.20	Describe the effects of acute and chronic ethanol intake	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Psychiatry	
PH1.21	Describe the symptoms and management of methanol and ethanol poisonings	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PH1.22	Describe drugs of abuse (dependence, addiction, stimulants, depressants, psychedelics, drugs used for criminal offences)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Psychiatry	Forensic Medicine
PH1.23	Describe the process and mechanism of drug deaddiction	K/S	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Psychiatry	
PH1.24	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs affecting renal systems including diuretics, antidiuretics- vasopressin and analogues	K	KH	Y	Lecture	Written/ Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PH1.25	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs acting on blood, like anticoagulants, antiplatelets, fibrinolytics, plasma expanders	K	KH	Y	Lecture	Written/ Viva voce		Physiology, General Medicine	
PH1.26	Describe mechanisms of action, types, doses, side effects, indications and contraindications of the drugs modulating the renin- angiotensin and aldosterone system	K	KH	Y	Lecture	Written/ Viva voce		Physiolog, General Medicine	
PH1.27	Describe the mechanism so faction, types, doses, side effects, indications and contra indications of antihypertensive drugs and drugs used in shock	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	
PH1.28	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in ischemic heart disease (stable, unstable angina and myocardial infarction), peripheral vascular disease	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	
PH1.29	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in congestive heart failure	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	
PH1.30	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the antiarrhythmics	K	KH	N	Lecture	Written/ Viva voce		General Medicine	
PH1.31	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in the management of dyslipidemias	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PH1.32	Describe the mechanism/s of action, types, doses, side effects, indications and contra indications of drugs used in bronchial asthma and COPD	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce		Respiratory Medicine	
PH1.33	Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in cough (antitussives, expectorants/ mucolytics)	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce		Respiratory Medicine	
PH1.34	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs used as below: 1. Acid-peptic disease and GERD 2. Antiemetics and prokinetics 3. Antidiarrhoeals 4. Laxatives 5. Inflammatory Bowel Disease 6. Irritable Bowel Disorders, biliary and pancreatic diseases	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce		General Medicine	
PH1.35	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in hematological disorders like: 1. Drugs used in anemias 2. Colony Stimulating factors	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Physiology	Pharmacology
PH1.36	Describe the mechanism of action, types, doses, side effects, indications and contraindications of drugs used in endocrine disorders (diabetes mellitus, thyroid disorders and osteoporosis)	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PH1.37	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used as sex hormones, their analogues and anterior Pituitary hormones	K	KH	Y	Lecture	Written/ Viva voce			
PH1.38	Describe the mechanism of action, types, doses, side effects, indications and contraindications of corticosteroids	K	KH	Y	Lecture	Written/ Viva voce			
PH1.39	Describe mechanism of action, types, doses, side effects, indications and contraindications the drugs used for contraception	K	KH	Y	Lecture	Written/ Viva voce		Obstetrics & Gynaecology	
PH1.40	Describe mechanism of action, types, doses, side effects, indications and contraindications of 1. Drugs used in the treatment of infertility, and 2. Drugs used in erectile dysfunction	K	KH	Y	Lecture	Written/ Viva voce		Obstetrics & Gynaecology	
PH1.41	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of uterine relaxants and stimulants	K	KH	Y	Lecture	Written/ Viva voce		Obstetrics & Gynaecology	
PH1.42	Describe general principles of chemotherapy	K	KH	Y	Lecture	Written/ Viva voce			
PH1.43	Describe and discuss the rational use of antimicrobials including antibiotic stewardship program	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Microbiology

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
PH1.44	Describe the first line antitubercular drugs, their mechanisms of action, side effects and doses.	K	KH	Y	Lecture	Written/ Viva voce		Respiratory Medicine	
PH1.45	Describe the drugs used in MDR and XDR Tuberculosis	K	KH	Y	Lecture	Written/ Viva voce		Respiratory Medicine	Microbiology
PH1.46	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs	K	KH	Y	Lecture	Written/ Viva voce		Dermatology, Venereology & Leprosy	Microbiology
PH1.47	Describe the mechanisms of action, types, doses, side effects, indications and contra indications of the drugs used in malaria, KALA-AZAR, amebiasis and intestinal helminthiasis	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Microbiology
PH1.48	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in UTI/ STD and viral diseases including HIV	K	KH	Y	Lecture	Written/ Viva voce			Microbiology
PH1.49	Describe mechanism of action, classes, side effects, indications and contraindications of anticancer drugs	K	KH	Y	Lecture	Written/ Viva voce			
PH1.50	Describe mechanisms of action, types, doses, side effects, indications and contraindications of immune modulators and management of organ transplant rejection	K	KH	Y	Lecture	Written/ Viva voce			
PH1.51	Describe occupational and environmental pesticides, food adulterants, pollutants and insect repellents	K	KH/	Y	Lecture	Written/ Viva voce			

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
PH1.52	Describe management of common poisoning, insecticides, common sting and bites	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	
PH1.53	Describe heavy metal poisoning and chelating agents	K	KH	N	Lecture	Written/ Viva voce			
PH1.54	Describe vaccines and their uses	K	KH	Y	Lecture	Written/ Viva voce			
PH1.55	Describe and discuss the following National Health Programmes including Immunisation, Tuberculosis, Leprosy, Malaria, HIV, Filaria, Kala Azar, Diarrhoeal diseases, Anaemia & nutritional disorders, Blindness, Non-communicable diseases, cancer and Iodine deficiency	K	KH	Y	Lecture	Written/ Viva voce			Community Medicine
PH1.56	Describe basic aspects of Geriatric and Pediatric pharmacology	K	KH	Y	Lecture	Written/ Viva voce		Pediatrics	
PH1.57	Describe drugs used in skin disorders	K	KH	Y	Lecture	Written/ Viva voce		Dermatology, Venereology & Leprosy	
PH1.58	Describe drugs used in Ocular disorders	K	KH	Y	Lecture	Written/ Viva voce		Ophthalmology	
PH1.59	Describe and discuss the following: Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines	K	KH	Y	Lecture	Written/ Viva voce			
PH1.60	Describe and discuss Pharmacogenomics and Pharmacoeconomics	K	KH	N	Lecture	Written/ Viva voce			
PH1.61	Describe and discuss dietary supplements and nutraceuticals	K	KH	N	Lecture	Written/ Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PH1.62	Describe and discuss antiseptics and disinfectants	K	KH	Y	Lecture	Written/ Viva voce			
PH1.63	Describe Drug Regulations, acts and other legal aspects	K	KH	Y	Lecture	Written/ Viva voce			
PH1.64	Describe overview of drug development, Phases of clinical trials and Good Clinical Practice	K	KH	Y	Lecture	Written/ Viva voce			
	<b>SKILLS: Topic:2.Clinical Pharmacy</b>		<b>Number of competencies: (04)</b>		<b>Number of procedures that require certification :(NIL)</b>				
PH2.1	Demonstrate understanding of the use of various dosage forms (oral/local/parenteral; solid/liquid)	S/C	SH	Y	DOAP sessions	Skills assessment			
PH2.2	Prepare oral rehydration solution from ORS packet and explain its use	S/C	SH	Y	DOAP sessions	Skills assessment			
PH2.3	Demonstrate the appropriate setting up of an intravenous drip in a simulated environment	S	SH	Y	DOAP sessions	Skills assessment			
PH2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations	S	SH	Y	DOAP sessions	Skills assessment		Pediatrics, General Medicine	
	<b>SKILLS: Topic:3.Clinical Pharmacology</b>		<b>Number of competencies: (08)</b>		<b>Number of procedures that require certification :(04)</b>				
PH3.1	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient	S/C	P	Y	Skill station	Skill station	5	General Medicine	
PH3.2	Perform and interpret a critical appraisal (audit) of a given prescription	S	P	Y	Skill Lab	Maintenance of log book	3		
PH3.3	Perform a critical evaluation of the drug promotional literature	S	P	Y	Skill Lab	Maintenance of log book/ Skill station	3	General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PH3.4	To recognise and report an adverse drug reaction	S	SH	Y	Skill station	Maintenance of log book/ Skill station			
PH3.5	To prepare and explain a list of P-drugs for a given case/condition	S	P	Y	Skill station	Maintenance of log book	3	General Medicine	
PH3.6	Demonstrate how to optimize interaction with pharmaceutical representative to get authentic information on drugs	S	SH	N	Skill station	maintenance of log book			
PH3.7	Prepare a list of essential medicines for a healthcare facility	S	SH	Y	Skill station	Maintenance of log book			
PH3.8	Communicate effectively with a patient on the proper use of prescribed medication	C/A	SH	Y	Skill Lab	Skill station			
	<b>SKILLS: Topic:4.Experimental Pharmacology</b>		<b>Number of competencies: (02)</b>		<b>Number of procedures that require certification:(NIL)</b>				
PH4.1	Administer drugs through various routes in a simulated environment using mannequins	S	SH	Y	DOAP sessions	Skills assessment			
PH4.2	Demonstrate the effects of drugs on blood pressure (vasopressor and vaso-depressors with appropriate blockers) using computer aided learning	S	SH	Y	Skill lab	Skill station			
	<b>Communication Topic:5.Pharmacology</b>		<b>Number of competencies: (07)</b>		<b>Number of procedures that require certification :(NIL)</b>				
PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use	A/C	SH	Y	Small group discussion	skill station		General Medicine	
PH5.2	Communicate with the patient regarding optimal use of a) drug therapy, b) devices and c) storage of medicines	A/C	SH	Y	Small group discussion	Skill station			



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PH5.3	Motivate patients with chronic diseases to adhere to the prescribed management by the health care provider	A/C	SH	Y	Small group discussion	short note/skill station			
PH5.4	Explain to the patient the relationship between cost of treatment and patient compliance	A/C	SH	Y	Small group discussion	short note/viva voce		General Medicine	
PH5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management	K	KH	Y	Small group discussion	short note/Viva voce		Psychiatry	
PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs	A/C	SH	Y	Small group discussion	Skill station		Psychiatry	
PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs	K	KH	Y	Small group discussion	short note/Viva voce			Forensic Medicine
<p><b>Column C: K-Knowledge, S-Skill, A-Attitude/professionalism, C-Communication. Column D: K-Knows, KH-Knows How, SH-Shows how, P-performs independently, Column F: DOAP session – Demonstrate, Observe, Assess, Perform.</b></p> <p><b>Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation</b></p>									
<b>INTEGRATION</b>									
<b>PHYSIOLOGY</b>									
PY3.5	Discuss the action of neuro-muscular blocking agents	K	KH	Y	Lectures, Small group discussion	Written/Viva voce		Anaesthesiology, Pharmacology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>MICROBIOLOGY</b>									
MI1.6	Describe the mechanisms of drug resistance, methods of antimicrobial susceptibility testing and monitoring of antimicrobial therapy.	K	K	Y	Lecture , Small group discussion	Written Viva			Pharmacology
MI3.3	Describe the enteric fever pathogens and discuss the evolution of the clinical course, the laboratory diagnosis of the diseases caused by them	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology, Pathology
MI3.5	Enumerate the causative agents of food poisoning and discuss the pathogenesis, clinical course and laboratory diagnosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology
MI3.6	Describe the etio-pathogenesis of Acid Peptic Disease (APD) and the clinical course. Discuss the diagnosis and management of the causative agent of APD	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology, Pathology
<b>COMMUNITY MEDICINE</b>									
CM3.8	Describe the mode of action & application cycle of commonly used insecticides and rodenticides	K	KH	Y	Lecture, Small group Discussion	Written/ Viva voce		Pharmacology	
CM19.1	Define and describe the concept of Essential Medicine List (EML)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Pharmacology
CM19.2	Describe roles of essential medicine in primary health care	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Pharmacology
CM19.3	Describe counterfeit medicine and its prevention	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Pharmacology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>FORENSIC MEDICINE &amp; TOXICOLOGY</b>									
FM4.11	Describe and discuss euthanasia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM4.12	Discuss legal and ethical issues in relation to stem cell research	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM4.17	Describe and discuss ethical Principles: Respect for autonomy, non-maleficence, beneficence & justice	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM4.22	Explain Oath – Hippocrates, Charaka and Sushruta and procedure for administration of Oath	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM4.23	Describe the modified Declaration of Geneva and its relevance	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM4.25	Clinical research & Ethics: Discuss human experimentation including clinical trials	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM4.26	Discuss the constitution and functions of ethical committees	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM4.27	Describe and discuss Ethical Guidelines for Biomedical Research on Human Subjects & Animals	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		AETCOM	Pharmacology
FM8.1	Describe the history of Toxicology	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
FM8.2	Define the terms Toxicology, Forensic Toxicology, Clinical Toxicology and poison	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
FM8.3	Describe the various types of poisons, Toxicokinetics & Toxicodynamics and diagnosis of poisoning in living and dead	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
FM8.4	Describe the Laws in relations to poisons including NDPS Act, Medico-legal aspects of poisons	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
FM8.5	Describe Medico-legal autopsy in cases of poisoning including preservation and dispatch of viscera for chemical analysis	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voce/ OSPE		Pharmacology	
FM8.6	Describe the general symptoms, principles of diagnosis and management of common poisons encountered in India	K	K/KH	Y	Lecture, Small group discussion	Written/ Viva voce/OSCE		Pharmacology	
FM8.7	Describe simple Bedside clinic tests to detect poison/drug in a patient's body fluids	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, DOAP session	Written/ Viva voce/OSCE		Pharmacology, General Medicine	
FM8.8	Describe basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	
FM9.1	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Caustic Inorganic – sulphuric, nitric, and hydrochloric acid Organic- Carbolic Acid (phenol), Oxalic and acetylsalicylic acids.	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, Autopsy, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	
FM9.2	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Phosphorus,	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, Autopsy, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	Iodine, Barium								
FM9.3	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Arsenic, lead, mercury, copper, iron, cadmium and thallium	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, Autopsy, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	
FM9.4	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ethanol, methanol, ethylene glycol	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, Autopsy, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	
FM9.5	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Organophosphates, Carbamates, Organ chlorines, Pyrethroids, Paraquat, Aluminium and Zinc phosphide	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, Autopsy, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	Pharmacology
FM9.6	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ammonia, carbon monoxide, hydrogen cyanide & derivatives, methyl isocyanate, tear (riot control) gases	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, Autopsy, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
FM10.1	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to:  i. Antipyretics – Paracetamol, Salicylates ii. Anti-Infectives (Common antibiotics – an overview) iii. Neuropsychotoxicology Barbiturates, benzodiazepines, phenytoin, lithium, haloperidol, neuroleptics, tricyclics iv. Narcotic Analgesics, Anaesthetics, and Muscle Relaxants v. Cardiovascular Toxicology Cardiotoxic plants–oleander, odollam, aconite, digitalis vi. Gastro-Intestinal and Endocrinal Drugs –Insulin	K	K/KH	Y	Lectures, Small group discussion, Bed side clinic, Autopsy, DOAP session	Written/ Viva voce/ OSCE		Pharmacology, General Medicine	Pharmacology
<b>DERMATOLOGY, VENEREOLOGY &amp; LEPROSY</b>									
DR5.3	Enumerate and describe the pharmacology, administration and adverse reaction of pharmacotherapies for scabies	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		Pediatrics	Pharmacology
DR7.3	Describe the pharmacology and action of antifungal (systemic and topical). agents Enumerate side effects of antifungal therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology, Pharmacology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
DR8.7	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for common viral illnesses of the skin	K	KH	Y	Lecture, Small group discussion	Written / Viva voce			Pharmacology
DR9.4	Enumerate, describe and identify lepra reactions and supportive measures and therapy of lepra reactions	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Medicine	Pharmacology
DR9.5	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for various classes of leprosy based on National Guidelines	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Medicine	Pharmacology, Community Medicine
DR9.6	Describe the treatment of Leprosy based on WHO guidelines	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Medicine	Pharmacology, Community Medicine
DR9.7	Enumerate and describe the complications of leprosy and its management, including understanding disability and stigma	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Medicine	Pharmacology, Psychiatry
DR10.3	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for syphilis	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Medicine	Pharmacology, Microbiology
DR10.8	Enumerate the indications and describe the pharmacology, indications and adverse reactions of drugs used in the non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Medicine	Pharmacology, Microbiology
DR11.3	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for dermatologic lesions in HIV	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Medicine	Pharmacology, Microbiology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
DR14.5	Enumerate the indications and describe the pharmacology indications and adverse reactions of drugs used in theurticaria and angioedema	K	KH	Y	Lecture, Small group discussion	Written / Viva voce			Pharmacology
DR15.3	Enumerate the indications and describe the pharmacology indications and adverse reactions of topical and systemic drugs used in treatment of pyoderma	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		General Surgery	Microbiology, Pharmacology
<b>ANESTHESIOLOGY</b>									
AS3.6	Choose and write a prescription for appropriate premedications for patients undergoing surgery	S	SH	Y	DOAP session, Bedside clinic session	Skill station			Pharmacology
AS4.1	Describe and discuss the pharmacology of drugs used in induction and maintenance of general anaesthesia (including intravenous and inhalation induction agents, opiate and non-opiate analgesics, depolarising and non-depolarising muscle relaxants, anticholinesterases	K	KH	Y	Lecture, Small group discussion	Written / Viva voce			Pharmacology
AS4.3	Observe and describe the principles and the practical aspects of induction and maintenance of anaesthesia	S	KH	Y	Lecture, Small group discussion, DOAP session	Written / Viva voce			Pharmacology
AS5.4	Observe and describe the pharmacology and correct use of commonly used drugs and adjuvant agents in regional anaesthesia	S	KH	Y	Lecture, Small group discussion, DOAP session	Written / Viva voce			Pharmacology
AS8.3	Describe the pharmacology and use of drugs in the management of pain	K	KH	Y	Lecture, Small group discussion, DOAP session	Written / Viva voce			Pharmacology



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
AS8.4	Describe the principles of pain management in palliative care	K	KH	Y	Lecture, Small group discussion, DOAP session	Written / Viva voce		Pharmacology	General Medicine
AS8.5	Describe the principles of pain management in the terminally ill	K	KH	Y	Lecture, Small group discussion, DOAP session	Written / Viva voce		Pharmacology	General Medicine
AS10.4	Define and describe common medical and medication errors in anaesthesia	K	KH	Y	Lecture, Small group discussion, DOAP session	Written / Viva voce		Pharmacology	General Medicine
<b>PSYCHIATRY</b>									
PS4.4	Describe the treatment of alcohol and substance abuse disorders including behavioural and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	General Medicine
PS4.6	Enumerate and describe the pharmacologic basis and side effects of drugs used in alcohol and substance abuse	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	General Medicine
PS5.3	Describe the treatment of schizophrenia including behavioural and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS5.5	Enumerate and describe the pharmacologic basis and side effects of drugs used in schizophrenia	K	KH	Y	Lecture Small group discussion	Written/ Viva voce		Pharmacology	
PS6.4	Describe the treatment of depression including behavioural and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS6.6	Enumerate and describe the pharmacologic basis and side effects of drugs used in depression	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PS7.4	Describe the treatment of bipolar disorders including behavioural and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS7.6	Enumerate and describe the pharmacologic basis and side effects of drugs used in bipolar disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS8.4	Describe the treatment of anxiety disorders including behavioural and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS8.6	Enumerate and describe the pharmacologic basis and side effects of drugs used in anxiety disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS10.4	Describe the treatment of somatoform disorders including behavioural, psychosocial and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	General Medicine
PS10.6	Enumerate and describe the pharmacologic basis and side effects of drugs used in somatoform, dissociative and conversion disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	General Medicine
PS11.4	Describe the treatment of <b>personality</b> disorders including behavioural, psychosocial and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS11.6	Enumerate and describe the pharmacologic basis and side effects of drugs used in personality disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS12.4	Describe the treatment of <b>psychosomatic</b> disorders including behavioural, psychosocial and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	General Medicine
PS12.6	Enumerate and describe the pharmacologic basis and side effects of drugs used in psychosomatic disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PS13.4	Describe the treatment of psychosexual and gender identity disorders including behavioural, psychosocial and pharmacologic therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
PS18.1	Enumerate the indications and describe the pharmacology, dose and side effects of commonly use drugs in psychiatric disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
<b>GENERAL MEDICINE</b>									
IM1.24	Describe and discuss the pharmacology of drugs including indications & contraindications in the management of heart failure including diuretics, ACE inhibitors, Beta blockers, aldosterone antagonists and cardiac glycosides	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM1.27	Describe and discuss the role of penicillin prophylaxis in the prevention of rheumatic heart disease	K	KH	Y	Bedside clinic, Small group discussion	Written		Microbiology Pharmacology	
IM1.30	Administer an intramuscular injection with an appropriate explanation to the patient	S	SH	Y	Bedside clinic, Skill assessment	log book documentati on of completion		Pharmacology	
IM2.15	Discuss and describe the medications used in patients with an acute coronary syndrome based on the clinical presentation	K	KH	Y	Lecture Small group discussion	Written/ Viva voce		Pharmacology	
IM2.18	Discuss and describe the indications, formulations, doses, side effects and monitoring for drugs used in the management of dyslipidemia	K	KH	Y	Lecture Small group discussion	Written/ Viva voce		Pharmacology, Biochemistry	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM2.20	Discuss and describe the assessment and relief of pain in acute coronary syndromes	K	KH	Y	Lecture Small group discussion	Written/ Viva voce		Pharmacology	
IM2.23	Describe and discuss the indications for nitrates, anti platelet agents, gpIIb - IIIa inhibitors, beta blockers, ACE inhibitors etc in the management of coronary syndromes	K	KH	Y	Lecture Small group discussion	Written/ Viva voce		Pharmacology	
IM3.12	Select, describe and prescribe based on the most like Iyaetiology, an appropriate empirical antimicrobial based on the pharmacology and antimicrobial spectrum	S	SH	Y	Bed side clinic, DOAP session	Skill Assessment/ Written/ Viva voce		Pharmacology, Microbiology	
IM3.13	Select, describe and prescribe based on culture and sensitivity appropriate empalinganti microbial based on the pharmacology and antimicrobial spectrum	S	SH	Y	Bed side clinic, DOAP session	Skill Assessment/ Written/ Viva voce		Pharmacology, Microbiology	
IM4.22	Describe and discuss the pharmacology, indications, adverse reactions, interactions of antimalarial drugs and basis of resistance	K	KH	Y	Small group, Lecture	Written/ Viva voce		Pharmacology	
IM4.23	Prescribe drugs for malaria based on the species identified, prevalence of drug resistance and National Programs	S	SH	Y	Skill assessment	Skill assessment		Microbiology, Pharmacology	
IM4.26	Counsel the patient on malarial prevention	C	SH	Y	DOAP session	Skill assessment		Microbiology, Pharmacology	
IM5.7	Enumerate and describe the causes and pathophysiology of drug induced liver injury	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Pharmacology	
IM5.16	Describe and discuss the management of hepatitis, cirrhosis, portal hypertension, ascites spontaneous, bacterial peritonitis and hepatic encephalopathy	K	KH	Y	Written, Small group	Skill Assessment/ Written/ Viva voce		Pharmacology	General Surgery

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM6.13	Describe and enumerate the indications and side effects of drugs for bacterial, viral and other types of diarrhea	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology, Microbiology	
IM6.17	Discuss and describe the principles of HAART, the classes of antiretrovirals used, adverse reactions and interactions	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Pharmacology	
IM6.18	Discuss and describe the principles and regimens used in post exposure prophylaxis	K	K	Y	Lecture Small group discussion	Written/ Viva voce		Microbiology, Pharmacology	
IM7.21	Select, prescribe and communicate appropriate medications for relief of joint pain	K/C	SH	Y	DOAP session	Skill assessment/ written		Pharmacology	Orthopedics
IM7.22	Select, prescribe and crystalline arthropathies for communicate preventive therapy	K/C	SH	Y	DOAP session	Skill assessment/ written		Pharmacology	
IM7.23	Select, prescribe and communicate treatment option for systemic rheumatologic conditions	K/C	SH	Y	DOAP session	Skill assessment/ written		Pharmacology	
IM7.24	Describe the basis for biologic and disease modifying therapy in rheumatologic diseases	K	KH	Y	Bed side clinic, Small group discussion	Skill assessment/ written		Pharmacology	
IM8.14	Develop an appropriate treatment plan for essential hypertension	K	KH	Y	Small group discussion	Skill assessment/ Written/ Viva voce		Pharmacology	
IM8.15	Recognise, prioritise and manage hypertensive emergencies	S	SH	Y	DOAP session	Skill assessment/ written		Pharmacology	
IM9.14	Prescribe replacement therapy with iron, B12, folate	S	SH	Y	Bed side clinic, DOAP session	Skill assessment/ written		Pharmacology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM9.15	Describe the national programs for anemia prevention	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology, Community Medicine	
IM10.25	Identify and describe the priorities in the management of ARF including diet, volume management, alteration in doses of drugs, monitoring and indications for dialysis	K/C	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM11.16	Discuss and describe the pharmacologic therapies for diabetes their indications, contraindications, adverse reactions and interactions	K	KH	Y	Small group discussion, Lecture	Written/ Viva voce		Pharmacology	
IM11.18	Describe and discuss the pharmacology, indications, adverse reactions and interactions of drugs used in the prevention and treatment of target organ damage and complications of Type II Diabetes including neuropathy, nephropathy, retinopathy, hypertension, dyslipidemia and cardiovascular disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM11.19	Demonstrate and counsel patients on the correct technique to administer insulin	S/C	SH	Y	DOAP session	Skill assessment		Pharmacology	
IM12.13	Describe the pharmacology, indications, adverse reaction, interactions of thyroxine and antithyroid drugs	K	KH	Y	Lecture, Small group discussion	Viva voce/ short note		Pharmacology	General Surgery
IM12.14	Write and communicate to the patient appropriately a prescription for thyroxine based on age, sex, and clinical and biochemical status	S/C	SH	Y	Skill assessment	Skill assessment		Pharmacology	

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
IM12.15	Describe and discuss the indications of thionamide therapy, radio iodine therapy and General Surgery in the management of thyrotoxicosis	K	KH	Y	Bedside clinic, small group discussion	short note/ Viva voce		Pharmacology	General Surgery
IM13.6	Describe and distinguish the difference between curative and palliative care in patients with cancer	K	K	N	Lecture, Small group discussion	short note/ Viva voce		Pharmacology	
IM13.13	Describe and assess pain and suffering objectively in a patient with cancer	K	KH	Y	Bedside clinic, small group discussion	short note/ Viva voce		Pharmacology	General Surgery
IM13.14	Describe the indications for General Surgery, radiation and chemotherapy for common malignancies	K	KH	Y	Bedside clinic, small group discussion	short note/ Viva voce		Pharmacology	General Surgery
IM13.17	Describe and enumerate the indications, use, side effects of narcotics in pain alleviation in patients with cancer	K	KH	Y	Bedside clinic, small group discussion	short note/ Viva voce		Pharmacology	Anesthesiology
IM14.13	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for obesity	K	K	Y	Lecture, small group discussion	short note/ Viva voce		Pharmacology	
IM15.14	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy of pressors used in the treatment of Upper GI bleed	K	K	Y	Lecture, Small group discussion	Viva voce/ short note		Pharmacology	General Surgery
IM15.15	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy of acid peptic disease including Helicobacter pylori	K	K	Y	Lecture, small group discussion	short note/ Viva voce		Pharmacology, Microbiology	General Surgery
IM16.13	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for parasitic causes of diarrhea	K	K	Y	Lecture, small group discussion	short note/ Viva voce		Pharmacology, Microbiology	

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
IM16.14	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for bacterial and viral diarrhea	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pharmacology, Microbiology	
IM16.16	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy including immunotherapy	K	K	Y	Lecture, small group discussion	short note/ Viva voce		Pharmacology	
IM17.11	Describe the indications, pharmacology, dose, side effects of abortive therapy in migraine	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce		Pharmacology	
IM17.12	Describe the indications, pharmacology, dose, side effects of prophylactic therapy in migraine	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce		Pharmacology	
IM17.13	Describe the pharmacology, dose, adverse reactions and regimens of drugs used in the treatment of bacterial, tubercular and viral meningitis	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce		Pharmacology	
IM17.14	Counsel patients with migraine on lifestyle changes and need for prophylactic therapy	A/C	SH	N	DOAP session	Skill Assessment		Pharmacology	
IM19.8	Discuss and describe the pharmacology, dose, side effects and interactions used in the drug therapy of Parkinson's syndrome	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM19.9	Enumerate the indications for use of surgery and botulinum toxin in the treatment of movement disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	General Surgery
IM20.1	Enumerate the poisonous snakes of your area and describe the distinguishing marks of each	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Forensic Medicine, Pharmacology	



<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
IM20.7	Enumerate the indications and describe the pharmacology, dose, adverse reactions, hypersensitivity reactions of anti-snake venom	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM20.8	Describe the diagnosis, initial approach, stabilisation and therapy of scorpion envenomation	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM20.9	Describe the diagnosis, initial approach, stabilisation and therapy of bee sting allergy	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM21.1	Describe the initial approach to the stabilisation of the patient who presents with poisoning	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM21.2	Enumerate the common plant poisons seen in your area and describe their toxicology, clinical features, prognosis and specific approach to detoxification	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Forensic Medicine, Pharmacology	
IM21.3	Enumerate the common corrosives used in your area and describe their toxicology, clinical features, prognosis and approach to therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Forensic Medicine, Pharmacology	
IM21.4	Enumerate the commonly observed drug overdose in your area and describe their toxicology, clinical features, prognosis and approach to therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Forensic Medicine, Pharmacology	
IM21.5	Observe and describe the functions and role of a poison center in suspected poisoning	S	KH	Y	DOAP session	document in log book		Forensic Medicine, Pharmacology	
IM21.6	Describe the medico-legal aspects of suspected suicidal or homicidal poisoning and demonstrate the correct procedure to	S	KH	Y	Lecture, Small group discussion,	Written/ Viva voce / Skill		Forensic Medicine, Pharmacology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	write a medico-legal report on a suspected poisoning				DOAP session	assessment			
IM21.7	Counsel family members of a patient with suspected poisoning about the clinical and medico-legal aspects with empathy	A/C	SH	Y	DOAP session	Skill assessment		Forensic Medicine, Pharmacology	
IM22.3	Describe the approach to the management of hypercalcemia	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pharmacology	
IM25.11	Develop an appropriate empiric treatment plan based on the patient's clinical and immune status pending definitive diagnosis	C	SH	Y	DOAP session	Skill assessment		Microbiology, Pharmacology	
<b>Pediatrics</b>									
PE13.5	Propose a management plan for Fe Deficiency Anaemia	S	SH	Y	Bed side clinics, Skill lab	Skill Assessment		Pathology, Pharmacology	
PE13.6	Discuss the National recommendations Anaemia Control Program	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology, Community Medicine	
PE14.1	Discuss the risk factors, clinical features, diagnosis & management of Lead poisoning	K	KH	N	Lecture, Small group Discussion	Written/ Viva voce		Pharmacology	
PE14.3	Discuss the risk factors, clinical features, diagnosis and management of Organo phosphorous poisoning	K	KH	N	Lecture, Small group Discussion	Written/ Viva voce		Pharmacology	General Medicine
PE14.4	Discuss the risk factors, clinical features, diagnosis and management of paracetamol Poisoning	K	KH	N	Lecture, Small group Discussion	Written/ Viva voce		Pharmacology	
PE24.5	Discuss the role of antibiotics, antispasmodics, anti-secretory drugs, probiotics, anti-emetics in acute diarrheal diseases	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology, Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PE24.8	Discuss the causes, clinical presentation and management of dysentery in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology, Microbiology	
PE34.3	Discuss the various regimens for management of Tuberculosis as per National Guidelines	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Community Medicine, Pharmacology	Respiratory Medicine
PE34.4	Discuss the preventive strategies adopted and the objectives and outcome of the National Tuberculosis Control Program	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Community Medicine, Pharmacology	Respiratory Medicine
<b>General Surgery</b>									
SU13.2	Discuss the Principles of immunosuppressive therapy. Enumerate indications, describe surgical principles, management of organ transplantation	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Pharmacology	
<b>Physical Medicine &amp; Rehabilitation</b>									
PM3.5	Enumerate the indications and describe the therapies for spasticity including medications, serial casts, nerve blocks, botulinum toxin injections	K	KH	Y	Lectures, Small group discussion			Pharmacology	Pediatrics, Orthopedics
PM7.6	Enumerate the indications and describe the pharmacology and side effects of commonly used drugs in neuropathic bladder	K	KH	Y	Lectures, Small group discussion	Written / Viva voce		Pharmacology	General Medicine
<b>Respiratory Medicine</b>									
CT1.4	Describe the epidemiology, the predisposing factors and microbial and therapeutic factors that determine resistance to drugs	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		Community Medicine, Microbiology, Pharmacology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
CT1.14	Describe and discuss the pharmacology of various antituberculous agents, their indications, contraindications, interactions and adverse reactions	K	KH	Y	Lecture, Small group discussion	short note/ Viva voce		Pharmacology, Microbiology	
CT1.15	Prescribe an appropriate antituberculosis regimen based on the location of disease, smear positivity and negativity and co-morbidities based on current national guidelines including directly observed tuberculosis therapy (DOTS)	K	SH	Y	Bedside clinic, Small group discussion, Lecture	Skill assessment		Pharmacology, Community Medicine	
CT2.16	Discuss and describe therapies for OAD including bronchodilators, leukotriene inhibitors, mast cell stabilisers, theophylline, inhaled and systemic steroids, oxygen and immunotherapy	K	KH	Y	Lecture, Small group discussion	Written / Viva voce		Pharmacology	
<b>Orthopaedics</b>									
OR3.1	Describe and discuss the aetiopathogenesis, clinical features, Investigations and principles of management of Bone and Joint infections a) Acute Osteomyelitis b) Subacute osteomyelitis c) Acute Suppurative arthritis d) Septic arthritis & HIV infection e) Spirochaetal infection f) Skeletal Tuberculosis	K/S	K/KH/S H	Y	Lecture, Small group Discussion, Video assisted lecture	Written/ Viva voce/ OSCE	-	Pathology, Microbiology	General surgery

**Pathology (CODE: PA) Table 5. Topics and outcomes**

<b>Number of topics</b>	<b>Number of outcomes</b>
36	182

**Table 6. Details of Competency, Domain, T-L Methods, Assessment methods, Integration.**

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>PATHOLOGY</b>									
	<b>Topic: 1.Introduction to Pathology</b>		<b>Number of competencies:(03)</b>		<b>Number of procedures that require certification:(NIL)</b>				
PA1.1	Describe the role of a pathologist in diagnosis and management of disease	K	K	Y	Departmental orientation	Written/ Viva voce			
PA1.2	Enumerate common definitions and terms used in Pathology	K	K	Y	Lecture, Small group discussion	Written/ Viva voce			
PA1.3	Describe the history and evolution of Pathology	K	K	N	Lecture, Small group discussion	Written/ Viva voce			
	<b>Topic: 2.Cell Injury and Adaptation</b>		<b>Number of competencies:(08)</b>		<b>Number of procedures that require certification:(NIL)</b>				
PA2.1	Demonstrate knowledge of the causes, mechanisms, types and effects of cell injury and their clinical significance	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA2.2	Describe the etiology of cell injury. Distinguish between reversible-irreversible injury: mechanisms; morphology of cell injury	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA2.3	Intracellular accumulation of fats, pigments proteins, carbohydrates,	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA2.4	Describe and discuss Cell death- types, mechanisms, necrosis, apoptosis (basic as contrasted with necrosis), autolysis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA2.5	Describe and discuss pathologic calcifications, gangrene	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA2.6	Describe and discuss cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA2.7	Describe and discuss the mechanisms of cellular aging and apoptosis	K	KH	N	Lecture, Small group discussion	Written/ Viva voce			
PA2.8	Identify and describe various forms manifestations and consequences in specimens of cell injuries, their gross and microscopic	S	SH	Y	DOAP session	Skill assessment			
<b>Topic: 3.Amyloidosis</b> <b>Number of competencies: (02)</b> <b>Number of procedures that require certification: (NIL)</b>									
PA3.1	Describe the pathogenesis and pathology of amyloidosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA3.2	Identify and describe amyloidosis in a pathology specimen	S	SH	N	DOAP session	Skill assessment			
<b>Topic: 4.Inflammation</b> <b>Number of competencies:(04)</b> <b>Number of procedures that require certification: (NIL)</b>									
PA4.1	Define and describe the general features of acute and chronic inflammation including stimuli, vascular and cellular events	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA4.2	Enumerate and describe the mediators of acute inflammation	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA4.3	Define and describe chronic inflammation including causes, types, non-specific and granulomatous; and enumerate examples of each	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA4.4	Identify and describe acute and chronic inflammation in gross and microscopic specimens	S	SH	Y	DOAP session	Skill assessment			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>Topic: 5.Healing and repair</b>		<b>Number of competencies: (01) Number of procedures that require certification :(NIL)</b>							
PA5.1	Define and describe the process of repair and regeneration including wound healing and its types	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
<b>Topic: 6.Hemodynamic disorders</b>		<b>Number of competencies: (07) Number of procedures that require certification :(NIL)</b>							
PA6.1	Define and describe edema, its types, pathogenesis and clinical correlations	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA6.2	Define and describe hyperemia, congestion, hemorrhage	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA6.3	Define and describe shock, its pathogenesis and its stages	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA6.4	Define and describe normal haemostasis and the etiopathogenesis and consequences of thrombosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA6.5	Define and describe embolism and its causes and common types	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA6.6	Define and describe Ischaemia/infarction its types, etiology, morphologic changes and clinical effects	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA6.7	Identify and describe the gross and microscopic features of infarction in a pathologic specimen	S	SH	Y	DOAP session	Skill Assessment			
<b>Topic: 7.Neoplastic disorders</b>		<b>Number of competencies: (05) Number of procedures that require certification: (NIL)</b>							



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA7.1	Define and classify neoplasia. Describe the characteristics of neoplasia including gross, microscopy, biologic, behaviour and spread. Differentiate between benign from malignant neoplasms	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA7.2	Describe the molecular basis of cancer	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA7.3	Enumerate carcinogens and describe the process of carcinogenesis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA7.4	Describe the effects of tumor on the host including paraneoplastic syndrome	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA7.5	Describe immunology and the immune response to cancer	K	KH	N	Lecture, Small group discussion	Written/ Viva voce			Microbiology
<b>Topic:8. Basic diagnostic cytology</b>		<b>Number of competencies:(03)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA8.1	Describe the diagnostic role of cytology and its application in clinical care	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA8.2	Describe the basis of exfoliative cytology including the technique & stains used	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce / Skill assessment		General Surgery	
PA8.3	Observe a diagnostic cytology and its staining and interpret the specimen	S	KH	Y	DOAP session	Skill assessment			
<b>Topic: 9.Immunopathology and AIDS</b>		<b>Number of competencies: (07)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA9.1	Describe the principles and mechanisms involved in immunity	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	Microbiology
PA9.2	Describe the mechanism of hypersensitivity reactions	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
PA9.3	Describe the HLA system and the immune principles involved in transplant and mechanism of transplant rejection	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology
PA9.4	Define autoimmunity. Enumerate autoimmune disorders	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA9.5	Define and Erythematosus describe the Pathogenesis of systemic Lupus	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA9.6	Define and describe the pathogenesis and pathology of HIV and AIDS	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA9.7	Define and describe autoimmune diseases the pathogenesis of other common	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
<b>Topic: 10. Infections and Infestations</b>		<b>Number of competencies: (04) Number of procedures that require certification:(NIL)</b>							
PA10.1	Define and describe the pathogenesis and pathology of malaria	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA10.2	Define and describe cysticercosis the pathogenesis and pathology	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA10.3	Define and describe the pathogenesis and pathology of leprosy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA10.4	Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
<b>Topic: 11.Genetic and paediatric diseases</b>		<b>Number of competencies: (03) Number of procedures that require certification :(NIL)</b>							
PA11.1	Describe the pathogenesis and features of common cytogenetic abnormalities and mutations in childhood	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA11.2	Describe the pathogenesis and pathology of tumor and tumour- like conditions in infancy and childhood	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	
PA11.3	Describe the pathogenesis of common storage disorders in infancy and childhood	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	
<b>Topic: 12. Environmental and nutritional diseases</b> <b>Number of competencies:(03) Number of procedures that require certification: (NIL)</b>									
PA12.1	Enumerate and describe the pathogenesis of disorders caused by air pollution, tobacco and alcohol	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Community Medicine
PA12.2	Describe the pathogenesis of disorders caused by protein calorie malnutrition and starvation	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, Pediatrics	
PA12.3	Describe the pathogenesis of obesity and its consequences	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
<b>Topic: 13.Introduction to haematology</b> <b>Number of competencies: (05) Number of procedures that require certification:(NIL)</b>									
PA13.1	Describe hematopoiesis and extramedullary hematopoiesis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA13.2	Describe the role of anticoagulants in hematology	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA13.3	Define and classify anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA13.4	Enumerate and describe the investigation of anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA13.5	Perform, Identify and describe the peripheral blood picture in anemia	S	SH	Y	DOAP session	Skill assessment		General Medicine	
<b>Topic: 14.Microcytic anemia</b> <b>Number of competencies: (03) Number of procedures that require certification : (NIL)</b>									

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA14.1	Describe iron metabolism	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry	
PA14.2	Describe the etiology, investigations and differential diagnosis of microcytic hypochromic anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA14.3	Identify and describe the peripheral smear in microcytic anemia	S	SH	Y	DOAP session	Skill assessment		General Medicine	
<b>Topic: 15.Macrocytic anemia</b>		<b>Number of competencies: (04) Number of procedures that require certification :(NIL)</b>							
PA15.1	Describe the metabolism of Vitamin B12 and the etiology and pathogenesis of B12 deficiency	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, General Medicine	
PA15.2	Describe laboratory investigations of macrocytic anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA15.3	Identify and describe the peripheral blood picture of macrocytic anemia	S	SH	Y	DOAP session	Skill assessment			
PA15.4	Enumerate the differences and describe the etiology and distinguishing features of megaloblastic and non-megaloblastic macrocytic anemia	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
<b>Topic: 16.Hemolytic anemia</b>		<b>Number of competencies: (07) Number of procedures that require certification: (01)</b>							
PA16.1	Define and classify hemolytic anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, General Medicine	
PA16.2	Describe the pathogenesis and clinical features and hematologic indices of hemolytic anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, General Medicine	
PA16.3	Describe the pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anemia & thalassemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA16.4	Describe the etiology pathogenesis, hematologic indices and peripheral blood picture of Acquired hemolytic anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, General Medicine	
PA16.5	Describe the peripheral blood picture in different hemolytic anaemias	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA16.6	Prepare a peripheral blood smear and identify hemolytic anaemia from it	S	P	Y	DOAP session	Skill assessment	1		
PA16.7	Describe the correct technique to perform a cross match	S	SH	Y	Lecture, Small group discussion	Written/ Viva voce			
<b>Topic: 17. Aplastic anemia</b> <b>Number of competencies: (02)</b> <b>Number of procedures that require certification: (NIL)</b>									
PA 17.1	Enumerate the etiology, pathogenesis and findings in aplastic anemia	K	K	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA17.2	Enumerate the indications and describe the findings in bone marrow aspiration and biopsy	K	K	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
<b>Topic: 18.Leukocyte disorders</b> <b>Number of competencies: (02)</b> <b>Number of procedures that require certification:(NIL)</b>									
PA18.1	Enumerate and describe the causes of leucocytosis leucopenia lymphocytosis and leukemoid reactions	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA`18.2	Describe the etiology, genetics, pathogenesis classification, features, hematologic features of acute and chronic leukemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
<b>Topic: 19.Lymph node and spleen</b> <b>Number of competencies: (07)</b> <b>Number of procedures that require certification :(NIL)</b>									
PA19.1	Enumerate the causes and describe the differentiating features of lymphadenopathy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA19.2	Describe the pathogenesis and pathology lymphadenitis of tuberculous	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA19.3	Identify and describe the features of tuberculous lymphadenitis in a gross and microscopic specimen	S	SH	Y	DOAP session	Skill assessment			
PA19.4	Describe and discuss the pathogenesis, pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA19.5	Identify and describe the features of Hodgkin's lymphoma in a gross and microscopic specimen	S	SH	Y	DOAP session	Skill assessment		General Surgery	
PA19.6	Enumerate and differentiate the causes of splenomegaly	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery, General Medicine	
PA19.7	Identify and describe the gross specimen of anenlargedspleen	S	SH	Y	DOAP session	Skill assessment			
<b>Topic: 20. Plasma cell disorders</b>		<b>Number of competencies: (01)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA20.1	Describe the features of plasma cell myeloma	S	SH	Y	DOAP session	Skill assessment			
<b>Topic: 21. Hemorrhagic disorders</b>		<b>Number of competencies: (05)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA21.1	Describe normal hemostasis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA21.2	Classify and describe the etiology, pathogenesis and pathology of vascular and platelet disorders including ITP and haemophilia's	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA21.3	Differentiate platelet from clotting disorders based on the clinical and hematologic features	S	SH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA21.4	Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of disseminated intra vascular coagulation	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA21.5	Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of Vitamin K deficiency	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
<b>Topic: 22.Blood banking and transfusion</b>		<b>Number of competencies: (07)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA22.1	Classify and describe blood group systems (ABO and RH)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA22.2	Enumerate the indications, describe the principles, enumerate and demonstrate the steps of compatibility testing	S	SH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA22.4	Enumerate blood components and describe their clinical uses	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery, General Medicine	
PA22.5	Enumerate and describe infections transmitted by blood transfusion	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology
PA22.6	Describe transfusion reactions and enumerate the steps in the investigation of a transfusion reaction	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA22.7	Enumerate the indications and describe the principles and procedure of autologous transfusion	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>Topic:23. Clinical Pathology</b>		<b>Number of competencies: (03)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA23.1	Describe abnormal urinary findings in disease states and identify and describe common urinary abnormalities in a clinical specimen	S	SH	Y	DOAP session	Skill Assessment			
PA23.2	Describe abnormal findings in body fluids in various disease states	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA23.3	Describe and interpret the abnormalities in a panel containing semen analysis, thyroid function tests, renal function tests or liver function tests	S	SH	Y	DOAP session	Skill Assessment			
<b>Topic: 24. Gastrointestinal tract</b>		<b>Number of competencies: (07)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA24.1	Describe the etiology, pathogenesis, pathology and clinical features of oral cancers	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Dentistry	
PA24.2	Describe the etiology, pathogenesis, pathology, microbiology, clinical and microscopic features of peptic ulcer disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA24.3	Describe and identify the microscopic features of peptic ulcer	S	SH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA24.4	Describe and etiology and pathogenesis and pathologic features of carcinoma of the stomach	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA24.5	Describe and etiology and pathogenesis and pathologic features of Tuberculosis of the intestine	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA24.6	Describe and etiology and pathogenesis and pathologic and distinguishing features	K	KH	Y	Lecture, Small group	Written/ Viva voce		General Surgery	



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	of Inflammatory bowel disease				discussion				
PA24.7	Describe the etiology, pathogenesis, pathology and distinguishing features of carcinoma of the colon	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
<b>Topic: 25. Hepatobiliary system</b> <b>Number of competencies: (06)</b> <b>Number of procedures that require certification : (01)</b>									
PA25.1	Describe bilirubin metabolism, enumerate the etiology and pathogenesis of jaundice, distinguish between direct and indirect hyperbilirubinemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, General Medicine	
PA25.2	Describe the pathophysiology and pathologic changes seen in hepatic failure and their clinical manifestations, complications and consequences	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, General Surgery	
PA25.3	Describe the etiology and pathogenesis of viral and toxic hepatitis: distinguish the causes of hepatitis based on the clinical and laboratory features. Describe the pathology, complications and consequences of hepatitis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA25.4	Describe the pathophysiology, pathology and progression of alcoholic liver disease including cirrhosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, General Surgery	
PA25.5	Describe the etiology, pathogenesis and complications of portal hypertension	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, General Surgery	
PA25.6	Interpret liver function and viral hepatitis serology panel. Distinguish obstructive from non-obstructive jaundice based on clinical features and liver function tests	S	P	Y	DOAP session	Skill assessment	1	General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>Topic: 26. Respiratory system</b>		<b>Number of competencies: (07)</b>			<b>Number of procedures that require certification: (NIL)</b>				
PA26.1	Define and describe the etiology, types, pathogenesis, stages, morphology and complications of pneumonia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA26.2	Describe the etiology, gross and microscopic appearance and complications of lung abscess	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA26.3	Define and describe the etiology, types, pathogenesis, stages, morphology and complications and evaluation of Obstructive airway disease (OAD) and bronchiectasis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	Microbiology
PA26.4	Define and describe the etiology, types, pathogenesis, stages, morphology microscopic appearance and complications of tuberculosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA26.5	Define and describe the etiology, types, exposure, environmental influence, pathogenesis, stages, morphology, microscopic appearance and complications of Occupational lung disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Community Medicine	
PA26.6	Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, stages, morphology, microscopic appearance, metastases and complications of tumors of the lung and pleura	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA26.7	Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, morphology,	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Community	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	microscopic appearance and complications of mesothelioma							Medicine	
<b>Topic:27. Cardiovascular Systems</b>									
				<b>Number of Competencis:10)</b>	<b>Number of procedures that require certification: (NIL)</b>				
PA27.1	Distinguish arteriosclerosis from atherosclerosis. Describe the pathogenesis and pathology of various causes and types of arteriosclerosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA27.2	Describe the etiology, dynamics, pathology types and complications of aneurysms including aortic aneurysms	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA27.3	Describe the etiology, types, stages patho physiology, pathology and complications of heart failure	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Physiology	
PA27.4	Describe the etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA27.5	Describe the epidemiology, risk factors, etiology, pathophysiology, pathology, presentations, gross and microscopic features, diagnostic tests and complications of ischemic heart disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA27.6	Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of infective endocarditis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA27.7	Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of pericarditis and pericardial effusion	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA27.8	Interpret abnormalities in cardiac function testing in acute coronary syndromes	S	SH	Y	DOAP session	Skill Assessment		Physiology, General Medicine	
PA27.9	Classify and describe the etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of cardiomyopathies	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Physiology	
PA27.10	Describe the etiology, pathophysiology, pathology features and complications of syphilis on the cardiovascular system	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
<b>Topic: 28. Urinary Tract</b>		<b>Number of competencies: (16)</b>			<b>Number of procedures that require certification:(NIL)</b>				
PA28.1	Describe the normal histology of the kidney	K	K	Y	Lecture, Small group discussion	Written/ Viva voce			
PA28.2	Define, classify and distinguish the clinical syndromes and describe the etiology, pathogenesis, pathology, morphology, clinical and laboratory and urinary findings, complications of renal failure	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
PA28.3	Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings, progression and complications of acute renal failure	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA28.4	Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	progression and complications of chronic renal failure								
PA28.5	Define and classify glomerular diseases. Enumerate and describe the etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	
PA28.6	Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of IgA nephropathy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA28.7	Enumerate and describe the findings in glomerular manifestations of systemic disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA28.8	Enumerate and classify diseases affecting the tubular interstitium	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA28.9	Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of acute tubular necrosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
PA28.10	Describe the etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Human Anatomy, General Surgery	
PA28.11	Define classify and describe the etiology, pathogenesis pathology, laboratory, urinary findings, distinguishing features progression and complications of vascular disease of the kidney	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA28.12	Define classify and describe the genetics, inheritance, etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features, progression and complications of cystic disease of the kidney	K	KH	Y	Lecture, Small group Discussion	Written/ Viva voce		General Medicine, Pediatrics	
PA28.13	Define classify and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features progression and complications of renal stone disease and obstructive uropathy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA28.14	Classify and describe the etiology, genetics, pathogenesis, pathology, presenting features, progression and spread of renal tumors	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	
PA28.15	Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of thrombotic angiopathies	K	KH	N	Lecture, Small group Discussion	Written/ Viva voce		General Medicine	
PA28.16	Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of urothelial tumors	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
<b>Topic: 29.MaleGenitalTract</b>		<b>Number of competencies:(05)</b>			<b>Number of procedures that require certification:(NIL)</b>				
PA29.1	Classify testicular tumors and describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of testicular tumors	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA29.2	Describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the penis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA29.3	Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, urologic findings & diagnostic tests of benign prostatic hyperplasia	K	KH	Y	Lecture, Small group Discussion	Written/ Viva voce		General Surgery	
PA29.4	Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the prostate	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA29.5	Describe the etiology, pathogenesis, pathology and progression of prostatitis	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
<b>Topic:30. Female Genital Tract</b>									
				<b>Number of competencies:(09)</b>			<b>Number of procedures that require certification:(NIL)</b>		
PA30.1	Describe the epidemiology, pathogenesis, etiology, pathology, screening, diagnosis and progression of carcinoma of the cervix	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA30.2	Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the endometrium	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA30.3	Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the leiomyomas and leiomyosarcomas	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA30.4	Classify and describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of ovarian tumors	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA30.5	Describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of gestational trophoblastic neoplasms	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA30.6	Describe the etiology and morphologic features of cervicitis	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA30.7	Describe the etiology, hormonal dependence, features and morphology of endometriosis	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA30.8	Describe the etiology and morphologic features of adenomyosis	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
PA30.9	Describe the etiology, hormonal dependence and morphology of endometrial hyperplasia	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Obstetrics & Gynaecology	
<b>Topic:31.Breast</b>		<b>Number of competencies:(04)</b>			<b>Number of procedures that require certification:(NIL)</b>				
PA31.1	Classify and describe the types, etiology, pathogenesis, pathology and hormonal dependency of benign breast disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Human Anatomy, General Surgery	
PA31.2	Classify and describe the epidemiology, pathogenesis, classification, morphology, prognostic factors, hormonal dependency, staging and spread of carcinoma of the breast	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA31.3	Describe and identify the morphologic and microscopic features of carcinoma of the breast	S	SH	N	DOAP session	Skill Assessment		General Surgery	
PA31.4	Enumerate and describe the etiology, hormonal dependency and pathogenesis of gynecomastia	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pediatrics, General Medicine	
<b>Topic:32. Endocrine system</b>		<b>Number of competencies:(09)</b>			<b>Number of procedures that require certification:(NIL)</b>				
PA32.1	Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Human Anatomy, Physiology, General Medicine, General Surgery	
PA32.2	Describe the etiology, cause, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	
PA32.3	Describe the etiology, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis/hypothyroidism	K	KH	Y	Lecture, Small group	Written/ Viva voce		Physiology, General Medicine	
PA32.4	Classify and describe the epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression of diabetes mellitus	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	
PA32.5	Describe the etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features of hyperparathyroidism	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA32.6	Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases of pancreatic cancer	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
PA32.7	Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of adrenal insufficiency	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	
PA32.8	Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of Cushing's syndrome	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	
PA32.9	Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Human Anatomy, Physiology, General Medicine, General Surgery	
<b>Topic: 33. Bone and soft tissue</b>		<b>Number of competencies:(05) Number of procedures that require certification: (NIL)</b>							
PA33.1	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Human Anatomy, Orthopaedics	Microbiology
PA33.2	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications & metastases of bone tumors	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Orthopaedics	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA33.3	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of soft tissue tumors	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Orthopaedics	
PA33.4	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of Paget's disease of the bone	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Orthopaedics	
PA33.5	Classify and describe the etiology, immunology, pathogenesis, manifestations, radiologic and laboratory features, diagnostic criteria and complications of rheumatoid arthritis	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
<b>Topic: 34. Skin</b> <span style="float: right;">Number of competencies:(04)    Number of procedures that require certification:(NIL)</span>									
PA34.1	Describe the risk factors pathogenesis, pathology and natural history of squamous cell carcinoma of the skin	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Dermatology, Venereology & Leprosy	
PA34.2	Describe the risk factors pathogenesis, pathology and natural history of basal cell carcinoma of the skin	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Dermatology, Venereology & Leprosy	
PA34.3	Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors morphology clinical features and metastases of melanoma	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Dermatology, Venereology & Leprosy	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration	
PA34.4	Identify, distinguish and describe common tumors of the skin	S	SH	N	DOAP session	Skill Assessment		Dermatology, Venereology & Leprosy		
<b>Topic: 35. Central Nervous System</b>										
					<b>Number of competencies:(03)</b>	<b>Number of procedures that require certification:(01)</b>				
PA35.1	Describe the etiology, types and pathogenesis, differentiating factors, CSF findings in meningitis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology	
PA35.2	Classify and describe the etiology, genetics, pathogenesis, pathology, presentation sequelae and complications of CNS tumors	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics		
PA35.3	Identify the etiology of meningitis based on given CSF parameters	S	P	Y	DOAP session	Skill Assessment	1	General Medicine	Microbiology	
<b>Topic:36.Eye</b>										
					<b>Number of competencies:(01)</b>	<b>Number of procedures that require certification:(NIL)</b>				
PA36.1	Describe the etiology, genetics, pathogenesis, pathology, presentation, sequelae and complications of retinoblastoma	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Ophthalmology		
<b>Column C: K-Knowledge, S-Skill, A-Attitude/professionalism, C-Communication. Column D: K-Knows, KH-Knows How, S-Shows how, P-performs independently, Column F: DOAP session – Demonstrate, Observe, Assess, Perform.</b>										
<b>Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation</b>										
<b>INTEGRATION</b>										
<b>HUMAN ANATOMY</b>										
AN5.8	Define thrombosis, infarction & aneurysm	K	KH	N	Lecture	Written		Pathology	Physiology	
AN66.2	Describe the ultrastructure of connective tissue	K	KH	N	Lecture, Practical	Written		Pathology		

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
AN70.1	Identify exocrine gland under the microscope & distinguish between serous, mucous and mixed acini	K/S	SH	Y	Lecture, Practical	Written/ skill assessment		Pathology	
AN70.2	Identify the lymphoid tissue under the microscope & describe microanatomy of lymph node, spleen, thymus, tonsil and correlate the structure with function	K/S	SH	Y	Lecture, Practical	Written/ skill assessment		Pathology	
AN71.1	Identify bone under the microscope, Classify various types and describe the structure-function correlation of the same	K/S	SH	Y	Lecture, Practical	Written/ skill assessment		Pathology	
AN71.2	Identify cartilage under the microscope & describe various types and structure-function correlation of the same describe various types and structure-function correlation of the same	K/S	SH	Y	Lecture, Practical	Written/ skill assessment		Pathology	
<b>PHYSIOLOGY</b>									
PY1.4	Describe apoptosis – programmed cell death	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PY2.5	Describe different types of anemia & Jaundice	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	Biochemistry
PY2.8	Describe the physiological basis of hemostasis and anticoagulants. Describe bleeding & clotting disorders (Hemophilia, purpura)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PY2.9	Describe different blood groups and discuss the clinical importance of blood grouping, blood banking and transfusion	K	KH	Y	Lecture, Small group discussion, ECE- Visit to blood bank	Written/ Viva voce		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PY2.11	Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups, BT/CT	S	SH	Y	DOAP sessions	Practical/OS PE/ viva voce		Pathology	
PY2.12	Describe test for ESR, Osmotic fragility, Hematocrit. Note the findings and interpret the test results etc	K	KH	Y	Demonstration	Written/ Viva voce		Pathology	
PY2.13	Describe steps for reticulocyte and platelet count	K	KH	Y	Demonstration sessions	Written/ Viva voce		Pathology	
PY3.6	Describe the pathophysiology of Myasthenia gravis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
<b>BIOCHEMISTRY</b>									
BI2.4	Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes	K	KH	Y	Lecture, small group discussions	Written/ Viva voce		Pathology, General Medicine	
BI2.5	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions	K	KH	Y	Lecture, small group discussions	Written/ Viva voce		Pathology, General Medicine	
BI2.6	Discuss use of enzymes in laboratory investigations (Enzyme- based assays)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, General Medicine	
BI2.7	Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions	K	KH	Y	Lecture, Small group discussion /DOAP sessions	Written/ Viva voce		Pathology, General Medicine	
BI3.8	Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, General Medicine	
BI5.2	Describe and discuss functions of proteins and structure- function relationships in relevant areas eg, hemoglobin and selected	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Pathology, General Medicine	Physiology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	hemoglobinopathies								
BI6.11	Describe the functions of haemin the body and describe the processes involved in its metabolism and describe porphyrin metabolism	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Pathology, General Medicine	Physiology
BI6.12	Describe the major types of haemoglobin and its derivatives found in the body and their physiological/ pathological relevance	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Pathology, General Medicine	Physiology
BI6.13	Describe the functions of the kidney, liver, thyroid and adrenal glands.	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Pathology, General Medicine	Physiology, Human Anatomy
BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of kidney, liver, thyroid and adrenal glands	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Pathology, General Medicine	Physiology, Human Anatomy
BI6.15	Describe the abnormalities of kidney, liver, thyroid and adrenal glands	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Pathology, General Medicine	Physiology, Human Anatomy
BI7.7	Describe the role of oxidative stress in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		General Medicine, Pathology	
BI8.1	Discuss the importance of various dietary components and explain importance of dietary fibre	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		General Medicine, Pediatrics, Pathology	
BI8.2	Describe the types and causes of protein energy malnutrition and its effects	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		General Medicine, Pediatrics, Pathology	

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
BI8.4	Describe the causes (including dietary habits), effects and health risks associated with being overweight/obesity	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		General Medicine, Pathology	
BI8.5	Summarize the nutritional importance of commonly used items of food including fruits and vegetables (macro-molecules & its importance)	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Community Medicine, General Medicine, Pediatrics	
BI10.1	Describe the cancer initiation, promotion oncogenes & oncogene activation	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Obstetrics & Gynaecology, General Surgery, Pathology	
BI10.2	Describe various biochemical tumor markers and the biochemical basis of cancer therapy	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Obstetrics & Gynaecology, General Surgery, Pathology	
BI10.3	Describe the cellular and humoral components of the immune system & describe the types and structure of antibody	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Obstetrics & Gynaecology, General Surgery, Pathology	
BI10.4	Describe & discuss innate and adaptive immune responses, self/non-self recognition and the central role of T-helper cells in immune responses	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		General Medicine, Pathology	Physiology
BI10.5	Describe antigens and concepts involved in vaccine development	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		Pathology, Pediatrics, Microbiology	



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
BI11.17	Explain the basis and rationale of biochemical tests done in the following conditions: diabetes mellitus, dyslipidemia, myocardial infarction, renal failure, gout, proteinuria, nephrotic syndrome, edema, jaundice, liver diseases, pancreatitis, disorders of acid- base balance, thyroid disorders	K	KH	Y	Lecture, Small group discussions	Written/ Viva voce		General Medicine, Pathology	
<b>MICROBIOLOGY</b>									
MI1.7	Describe the immunological mechanisms in health	K	KH	Y	Lecture	Written/ Viva voce			Pathology
MI1.8	Describe the mechanisms of immunity and response of the host immune system to infections	K	KH	Y	Lecture	Written/ Viva voce		Pediatrics	Pathology
MI2.1	Describe the etiologic agents in rheumatic fever and their diagnosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology
MI2.2	Describe the classification etio-pathogenesis, clinical features and discuss the diagnostic modalities of Infective endocarditis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology
MI2.3	Identify the microbial agents causing Rheumatic heart disease & infective Endocarditis	S	SH	Y	DOAP session	Skill assessment		General Medicine	Pathology
MI2.4	List the common microbial agents causing anemia. Describe the morphology, mode of infection and discuss the pathogenesis, clinical course, diagnosis and prevention and treatment of the common microbial agents causing Anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
MI2.5	Describe the etio-pathogenesis and discuss the clinical evolution and the laboratory diagnosis of kalaazar, malaria, filariasis and other common parasites prevalent in India	K	KH	Y	Lecture, Small group discussion	Written/ viva voce		General Medicine	Pathology
MI2.7	Describe the epidemiology, the etio-pathogenesis, evolution, complications, opportunistic infections, diagnosis, prevention and the principles of management of HIV	K	KH	Y	Lecture, Small group discussion	Written/ viva voce		General Medicine	Pathology
MI3.1	Enumerate the microbial agents causing diarrhea and dysentery. Describe the epidemiology, morphology, pathogenesis, clinical features, and diagnostic modalities of these agents	K	KH	Y	Lecture, Small group discussion	Written/ viva voce		General Medicine, Pediatrics	Pathology
MI3.3	Describe the enteric fever pathogens and discuss the evolution of the clinical course, the laboratory diagnosis of the diseases caused by them	K	KH	Y	Lecture, Small group discussion	Written/ viva voce		General Medicine	Pharmacology, Pathology
MI3.4	Identify the different modalities for diagnosis of enteric fever. Choose the appropriate test related to the duration of illness	S	KH	Y	DOAP session	Skill assessment		General Medicine	Pathology
MI3.6	Describe the etio-pathogenesis of Acid Peptic disease (APD) and the clinical course. Discuss the diagnosis and management of the causative agent of APD.	K	KH	Y	Lecture, Small group discussion	Written/ viva voce		General Medicine	Pharmacology, Pathology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
MI3.7	Describe the epidemiology, the etio-pathogenesis and discuss the viral markers in the evolution of Viral hepatitis. Discuss the modalities in the diagnosis, and prevention of viral hepatitis	K	KH	Y	Lecture, Small group discussion	Written/ viva voce		General Medicine	Pathology
MI3.8	Choose the appropriate laboratory test in the diagnosis of viral hepatitis	K	KH	Y	small group discussion, Case discussion	Written/ Viva voce/ OSPE		General Medicine	Pathology
MI5.1	Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of meningitis	K	KH	Y	Lecture	Written/ viva voce		General Medicine, Pediatrics	Pathology
MI5.2	Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of encephalitis.	K	KH	Y	Lecture	Written/ viva voce		General Medicine, Pediatrics	Pathology
MI8.2	Describe the etio-pathogenesis of opportunistic infections (OI) and discuss the factors contributing to the occurrence of OI, and the laboratory diagnosis	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Pathology
MI8.3	Describe the role of oncogenic viruses in the evolution of virus associated malignancy	K	KH	Y	Lecture	Written		General Medicine	Pathology
<b>COMMUNITY MEDICINE</b>									
CM8.1	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases	K	KH	Y	Small group discussion, Lecture	Written/ Viva voce		General Medicine, Pediatrics	Microbiology, Pathology
<b>FORENSIC MEDICINE &amp; TOXICOLOGY</b>									
FM2.1	Define, describe and discuss death and its types including somatic/clinical/cellular, molecular and brain-death, Cortical death and Brainstem death	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Pathology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
FM2.2	Describe and discuss natural and unnatural deaths	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Pathology
FM2.3	Describe and discuss issues related to sudden natural deaths	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Pathology
FM2.5	Discuss moment of death, modes of death-coma, asphyxia and syncope	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Pathology
FM2.11	Describe and discuss autopsy procedures including post- mortem examination, different types of autopsies, aims and objectives of post-mortem examination	K	KH	Y	Lecture, Small group discussion, Autopsy, DOAP session	Written/ Viva voce / OSPE			Pathology
FM2.12	Describe the legal requirements to conduct post-mortem examination and procedures to conduct medico-legal post- mortem examination	K	KH	Y	Lecture, Small group discussion, Autopsy, DOAP session	Written/ Viva voce / OSPE			Pathology
FM2.13	Describe and discuss obscure autopsy	K	KH	Y	Lecture, Small group discussion	Written/viva voce			Pathology
FM3.28	Describe evidences of abortion - living and dead, duties of doctor in cases of abortion, investigations of death due to criminal abortion	K	K/KH	Y	Lecture, Small group discussion	Written/viva voce		Obstetrics & Gynaecology, Pathology	
FM6.1	Describe different types of specimens and tissues to be collected both in the living and dead: body fluids (blood, urine, semen, faeces, saliva), skin, nails, tooth pulp, vaginal smear, viscera, skull, specimen for histo-pathological examination, blood grouping, HLA Typing and DNA Fingerprinting. Describe Locard's	K	K/KH	Y	Lecture, Small group discussion	Written/viva voce			Pathology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	Exchange Principle								
FM14.7	Demonstrate & identify that a particular stain is blood and identify the species of its origin	S	KH	Y	Small group discussion, Lecture	Log book/skill station/Viva voce		Forensic Medicine, Physiology	
FM14.8	Demonstrate the correct technique to perform and identify ABO & RH blood group of a person	S	SH	Y	Small group discussion, DOAP session	Log book/skill station/Viva voce		Forensic Medicine, Physiology	
<b>DERMATOLOGY, VENEREOLOGY &amp; LEPROSY</b>									
DR12.7	Identify and distinguish fixed drug eruptions and Steven Johnson syndrome from other skin lesions	S	SH	Y	Bedside clinic	Skill assessment	1	General Medicine	Pathology, Microbiology
DR14.1	Describe the etiology, pathogenesis and clinical precipitating features and classification of Urticaria and angioedema	K	KH	Y	Lecture, Small group discussion	Written/viva voce			Microbiology, Pathology
DR16.1	Identify and distinguish skin lesions of SLE	S	SH	Y	Bedside clinic discussion	Skill assessment	2	General Medicine	Pathology
DR16.2	Identify and distinguish Raynaud's phenomenon	S	SH	Y	Bedside clinic discussion	Skill assessment	2	General Medicine	Pathology
<b>ANESTHESIOLOGY</b>									
AS9.4	Enumerate blood products and describe the use of blood products in the preoperative period	K	KH	Y	Lecture, Small group discussion, DOAP session	Written/Viva voce		Pathology	General Surgery
<b>ENT</b>									
EN1.2	Describe the pathophysiology of common diseases in ENT	K	KH	Y	Lecture, Small group discussion, DOAP session	Written/Viva voce		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>OPHTHALMOLOGY</b>									
OP7.2	Describe and discuss the aetio-pathogenesis, stages of maturation and complications of cataract	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
OP8.1	Discuss the aetiology, pathology, clinical features and management of vascular occlusions of the retina	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Human Anatomy, Pathology	
<b>DENTISTRY</b>									
DE4.1	Discuss the prevalence of oral cancer and enumerate the common types of cancer that can affect tissues of the oral cavity	K	K	N	Lecture, Small group discussion	Viva voce		Pathology	ENT
DE4.2	Discuss the role of etiological factors in the formation of precancerous /cancerous lesions	K	KH	Y	Lecture, Small group discussion	Viva voce		Pathology	ENT
DE4.3	Identify potential pre-cancerous / cancerous lesions	S	SH	N	Observation, Bed side clinics	Skill assessment		Pathology	ENT
DE4.4	Counsel patients to risks of oral cancer with respect to tobacco, smoking, alcohol and other causative factors.	A/C	SH	Y	DOAP session	Document in Log book	2	Pathology	ENT
<b>GENERAL MEDICINE</b>									
IM1.1	Describe and discuss the epidemiology, pathogenesis clinical evolution and course of common causes of heart disease including: rheumatic/ valvular, ischemic, hypertrophic inflammatory	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM1.2	Describe and discuss the genetic basis of some forms of heart failure	K	KH	N	Lecture, Small group discussion	Written		Pathology, Physiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM1.3	Describe and discuss the aetiology, microbiology, pathogenies and clinical evolution of rheumatic fever, criteria, degree of rheumatic activity and rheumatic valvular heart disease and its complications including infective endocarditis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology, Microbiology	
IM1.4	Stage heart failure	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM1.5	Describe, discuss and differentiate the processes involved in R vs L heart failure, systolic vs diastolic failure	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM1.6	Describe and discuss the compensatory mechanisms involved in heart failure including cardiac remodelling and neurohormonal adaptations	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM1.7	Enumerate, describe and discuss the factors that exacerbate heart failure including ischemia, arrhythmias, anemia, thyrotoxicosis, dietary factors drugs etc.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM1.8	Describe and discuss the pathogenesis and development of common arrhythmias involved in heart failure particularly atrial fibrillation	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM1.9	Describe and discuss the clinical presentation and features, diagnosis, recognition and management of acuter heumatic fever	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
IM2.1	Discuss and describe the epidemiology, antecedents and risk factors for	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology,	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	atherosclerosis and ischemic heart disease							Community Medicine	
IM2.2	Discuss the aetiology of risk factors both modifiable and non- modifiable of atherosclerosis and IHD	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM2.4	Discuss and describe the pathogenesis natural history, evolution and complications of atherosclerosis and IHD	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM2.5	Define the various acute coronary syndromes and describe their evolution, natural history and outcomes	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM3.1	Define, discuss, describe and distinguish community acquired pneumonia, nosocomial pneumonia and aspiration pneumonia	K	K	Y	Lecture , Small group discussion	short note/ Viva voce		Human Anatomy, Pathology, Microbiology	
IM3.3	Discuss and describe the pathogenesis, presentation, natural history and complications of pneumonia	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology, Microbiology	
IM4.5	Describe and discuss the pathophysiology and manifestations of malignant causes of fever including hematologic and lymph nodemalignancies	K	KH	Y	Lecture, Small group discussion	written		Pathology, Microbiology	
IM4.12	Order and interpret diagnostic tests based on the differential diagnosis including: CBC with differential, peripheral smear, urinary analysis with sediment, Chest X ray, blood and urine cultures, sputum gram stain and cultures, sputum AFB and cultures, CSF analysis, pleural and body fluid analysis, stool routine and culture and QBC	K	SH	Y	Bed side clinic, Skill assessment	Skill assessment		Pathology, Microbiology	



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM4.16	Enumerate the indications and describe the findings in tests of inflammation and specific rheumatologic tests, serologic testing for pathogens including HIV, bone marrow aspiration and biopsy	K	KH	N	Lecture, Small group discussion	written		Pathology	
IM4.17	Observe and assist in the performance of a bone marrow aspiration and biopsy in a simulated environment	S	SH	N	skills lab	log book documentation/ DOAP		Pathology	
IM5.1	Describe and discuss the physiologic and biochemical basis of Hyper bilirubinemia	K	K	Y	Lecture, Small group Discussion	Written/Viva voce		Pathology, Physiology	
IM5.2	Describe and discuss the aetiology and pathophysiology of liver injury	K	K	Y	Lecture, Small group discussion	Written/Viva voce		Pathology, Physiology	
IM5.3	Describe and discuss the pathologic changes in various forms of liver disease	K	K	Y	Lecture, Small group discussion	Written/Viva voce		Pathology	
IM5.4	Describe and discuss the epidemiology, microbiology, immunology and clinical evolution of infective (viral) hepatitis	K	K	Y	Lecture, Small group discussion	Written/Viva voce		Pathology, Microbiology	
IM5.5	Describe and discuss the pathophysiology and clinical evolution of alcoholic liver disease	K	K	Y	Lecture, Small group discussion	Written/Viva voce		Pathology	
IM5.6	Describe and discuss the pathophysiology, clinical evolution and complications of cirrhosis and portal hyper tension including ascites, spontaneous bacterial peritonitis, hepatorenal syndrome and hepatic encephalopathy	K	K	Y	Lecture, Small group Discussion	Written/Viva voce		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM5.7	Enumerate and describe the causes and pathophysiology of drug induced liver injury	K	K	Y	Lecture, Small group Discussion	Written/Viva voce		Pathology, Pharmacology	
IM5.12	Choose and interpret appropriate diagnostic tests including: CBC, bilirubin, function tests, Hepatitis serology and ascitic fluid examination in patient with liver diseases	S	KH	Y	Bedside clinic, DOAP session	Skill assessment		Pathology	
IM5.14	Outline a diagnostic approach to liver disease based on hyperbilirubinemia, liver function changes and hepatitis serology	S	SH	Y	Bedside clinic, Small group discussion	viva voce/ written		Pathology, Microbiology	
IM6.5	Describe and discuss the pathogenesis, evolution and clinical features of common HIV related malignancies	K	KH	Y	Lecture, Small group discussion	short notes/ Viva voce		Pathology, Microbiology	
IM6.6	Describe and discuss the pathogenesis, evolution and clinical features of common HIV related skin and oral lesions	K	KH	Y	Lecture, Small group discussion	short notes/ Viva voce		Pathology, Microbiology	
IM6.10	Choose and interpret appropriate diagnostic tests to diagnose and classify the severity of HIV-AIDS including specific tests of HIV, CDC	K	KH	Y	Bed side clinic, DOAP session, Small group discussion	written/ Skill assessment		Pathology, Microbiology	
IM6.19	Enumerate the indications of and discuss about prophylactic drugs used to prevent HIV related opportunistic infections	K/C	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
IM7.1	Describe the pathophysiology of autoimmune disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM7.2	Describe the genetic basis of autoimmune disease	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM7.16	Enumerate the indications for and interpret the results of: CBC, anti CCP (Anti-cyclic	K	SH	Y	Bed side clinic, small group	Skill assessment/		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	citrullinated peptide), RA, ANA, DNA and other tests of autoimmunity					written			
IM8.1	Describe and discuss the epidemiology, aetiology and the prevalence of primary and secondary hypertension	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM8.2	Describe and discuss the pathophysiology of hypertension	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM8.3	Describe and discuss the genetic basis of hypertension	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM8.4	Define and classify hypertension	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM8.5	Describe and discuss secondary hypertension the differences between primary	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM8.7	Describe and discuss the clinical manifestations of the various aetiologies of secondary causes of hypertension	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM8.8	Describe, discuss hypertension and identify target organ damage due to	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM9.1	Define, describe and classify anemia based on red blood cell size and reticulocyte count	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM9.2	Describe and discuss the morphological characteristics, aetiology and prevalence of each of the causes of anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM9.6	Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology	S	SH	Y	Bed side clinic, DOAP session, Small group discussion	Skill assessment/ written		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM9.7	Describe the appropriate diagnostic work up based on the presumed aetiology	S	SH	Y	Bed side clinic, DOAP session	Skill assessment/ written		Pathology	
IM9.8	Describe and discuss the meaning and utility of various components of the hemogram	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce / Skill assessment		Pathology	
IM9.9	Describe and discuss the various tests for iron deficiency	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce / Skill assessment		Pathology	
IM9.10	Order and interpret tests for anemia including hemogram, red cell indices, reticulocyte count, iron studies, B12 and folate.	S	SH	Y	Bed side clinic, DOAP session	Skill assessment/ written		Pathology	
IM9.11	Describe, perform and interpret a peripheral smear and stool occult blood	S	SH	P	Bed side clinic, DOAP session	Skill assessment/ written		Pathology	
IM9.12	Describe the indications and interpret the results of a bone marrow aspirations and biopsy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce / Skill assessment		Pathology	
IM9.13	Describe, develop a diagnostic plan to determine the aetiology of anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce / Skill assessment		Pathology	
IM9.18	Describe the indications for blood transfusion and the appropriate use of blood components	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce / Skill assessment		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM10.1	Define, describe and differentiate between acute and chronic renal failure	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.2	Classify, describe and differentiate the pathophysiologic causes of acute renal failure	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.3	Describe the pathophysiology and causes of pre renal ARF, renal and post renal ARF	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.4	Describe the evolution, natural history and treatment of ARF	K	KH	Y	Lecture, small group	Written/ Viva voce		Pathology	
IM10.5	Describe and discuss the aetiology of CRF	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.6	Stage Chronic Kidney Disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.7	Describe and discuss the pathophysiology and clinical findings of uraemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.8	Classify, describe and discuss the significance of proteinuria in CKD	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.9	Describe and discuss the pathophysiology of anemia and hyperparathyroidism in CKD	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.10	Describe and discuss the association between CKD glycemia and hypertension	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.11	Describe and discuss the relationship between CAD risk factors and CKD and in dialysis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM10.16	Enumerate the indications for and interpret the results of: renal function tests, calcium, phosphorus, PTH, urine electrolytes, osmolality, Anion gap	K	KH	Y	DOAP session, Small group discussion	Skill assessment/ Written/ Viva voce		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM10.17	Describe and calculate indices of renal function based on available laboratories including FENa (Fractional Excretion of Sodium) and CrCl (Creatinine Clearance)	S	SH	Y	DOAP session, Small group discussion	Skill assessment/ Written/ Viva voce		Pathology	
IM11.2	Describe and discuss the epidemiology and pathogenesis and risk factors and clinical evolution of type 1 diabetes	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM11.3	Describe and discuss the epidemiology and pathogenesis & risk factors, economic impact & clinical evolution of type 2 diabetes	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM11.5	Describe and discuss the pathogenesis and temporal evolution of microvascular and macrovascular complications of diabetes	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM11.11	Order and interpret laboratory tests to diagnose diabetes and its complications including: glucoses, glucose tolerance test, glycosylated hemoglobin, urinary micro albumin, ECG, electrolytes, ABG, ketones, renal function tests and lipid profile	S	SH	Y	Bed side clinic, DOAP session, Small group discussion	Skill assessment		Pathology	
IM11.12	Perform and interpret a capillary blood glucose test	S	P	Y	Bed side clinic, DOAP session, Small group discussion	Skill assessment	2	Pathology, Biochemistry	
IM11.13	Perform and interpret a urinary ketone estimation with a dipstick	S	P	Y	Bed side clinic, DOAP session	Skill assessment	2	Pathology, Biochemistry	
IM11.22	Enumerate the causes of hypoglycaemia and describe the counter hormone response and the initial approach and treatment	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	

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IM12.1	Describe the epidemiology and pathogenesis of hypothyroidism and hyperthyroidism including the influence of iodine deficiency and autoimmunity in the pathogenesis of thyroid disease	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM12.3	Describe and discuss the physiology of the hypothalamo- pituitary - thyroid axis, principles of thyroid function testing and alterations in physiologic function	K	K	Y	Lecture, Small group discussion	short notes		Pathology, Physiology	
IM13.1	Describe the clinical epidemiology and inherited & modifiable risk factors for common malignancies in India	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology, Biochemistry	
IM13.2	Describe the genetic basis of selected cancers	K	K	N	Lecture, Small group discussion	short note/ Viva voce		Pathology	
IM13.3	Describe the relationship between infection and cancers	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology, Microbiology	
IM13.4	Describe the natural history, presentation, course, complications and cause of death for common cancers	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology	
IM13.15	Describe the need, tests involved, their utility in the prevention of common malignancies	K	KH	Y	Bedside clinic, small group discussion	short note/ Viva voce		Pathology	
IM14.2	Describe and discuss the aetiology of obesity including modifiable and non-modifiable risk factors and secondary causes	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology	
IM14.3	Describe and discuss the monogenic forms of obesity	K	K	N	Lecture, Small group discussion	short note/ Viva voce		Pathology	

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
IM14.4	Describe and discuss the impact of environmental factors including eating habits, food, work, environment and physical activity on the incidence of obesity	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology, Community Medicine	
IM14.5	Describe and discuss the natural history of obesity and its complications	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology	
IM15.1	Enumerate, describe and discuss the aetiology of upper and lower GI bleeding	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology	General Surgery
IM15.2	Enumerate, describe and discuss the evaluation and steps involved in stabilizing a patient who presents with acute volume loss and GI bleed	S	SH	Y	DOAP session, Small group discussion, Lecture	Written/ Viva voce/Skill assessment		Pathology	General Surgery
IM15.3	Describe and discuss the physiologic effects of acute blood and volume loss	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Pathology, Physiology	General Surgery
IM15.9	Choose and interpret diagnostic tests based on the clinical Diagnosis including complete blood count, PT and PTT, stool examination, occult blood, liver function tests, H.pyloritest	S	SH	Y	Bedside clinic, DOAP session, Small group discussion	Skill assessment/ short note/ Viva voce		Pathology	General Surgery
IM15.11	Develop document and present a treatment plan that includes fluid resuscitation, blood and blood component transfusion and specific therapy for arresting blood loss	S	KH	Y	Lecture, Small group discussion	Short note/ viva voce		Pathology	General Surgery
IM15.12	Enumerate the indications for whole blood, component and platelet transfusion and describe the clinical features and management of a mismatched transfusion	K	K	Y	Lecture, Small group discussion	Short note/ viva voce		Pathology	General Surgery



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM15.13	Observe cross matching and blood / blood component transfusion	S	SH	Y	Bedside clinic	Short note/ Viva voce/ Skill assessment		Pathology	General Surgery
IM16.4	Elicit and document and present an appropriate history that includes the natural history, dietary history, travel, sexual history and other concomitant illnesses	S	SH	Y	Bedside clinic skills lab	Skill assessment		Microbiology, Pathology	
IM16.8	Choose and interpret diagnostic tests based on the clinical diagnosis including complete blood count, and stool examination	S	SH	Y	Bedside clinic, Skills lab, Small group discussion	Skill assessment/ Short note/ viva voce		Microbiology, Pathology	
IM16.12	Enumerate and discuss the indications for further investigations including antibodies, colonoscopy, diagnostic imaging and biopsy in the diagnosis of chronic diarrhea	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	General Surgery
IM16.15	Distinguish, based on the clinical presentation, Crohn's disease from ulcerative colitis	S	SH	Y	Lecture, Small group discussion	Short note/ viva voce		Pathology	General Surgery
IM17.7	Enumerate the indications and describe the findings in the CSF in patients with meningitis	K	K	Y	Small group, Bedside clinic	Skill Assessment		Microbiology, Pathology	
IM17.8	Demonstrate in a mannequin or equivalent the correct technique for performing a lumbar puncture	S	SH	Y	DOAP session	Skill assessment		Microbiology, Pathology	
IM17.9	Interpret the CSF findings when presented with various parameters of CSF fluid analysis	S	SH	Y	Small group discussion, Bedside clinic	Skill assessment		Microbiology, Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM18.2	Classify cerebrovascular accidents and describe the aetiology, predisposing genetic and risk factors pathogenesis of hemorrhagic and non hemorrhagic stroke	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM18.3	Elicit and document and present an appropriate history including onset, progression precipitating and aggravating relieving factors, associated symptoms that help identify the cause of the cerebrovascular accident	S	SH	Y	Bedside clinic	Skill assessment		Pathology	
IM22.1	Enumerate the causes of hypercalcemia and distinguish the features of PTH vs non PTH mediated hypercalcemia	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
IM22.2	Describe the aetiology, clinical manifestations, diagnosis and clinical approach to primary hyperparathyroidism	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	General Surgery
IM22.4	Enumerate the components and describe the genetic basis of the multiple endocrine neoplasia syndrome	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	
IM25.7	Order and interpret diagnostic tests based on the differential diagnosis including: CBC with differential, blood biochemistry, peripheral smear, urinary analysis with sediment, Chest X ray, blood and urine cultures, sputum gram stain and cultures, sputum AFB and cultures, CSF analysis, pleural and body fluid analysis, stool routine and culture and QBC	K	SH	Y	Bed side clinic, Skill assessment	Skill assessment		Pathology, Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>OBSTETRICS &amp; GYNAECOLOGY</b>									
OG10.2	Enumerate the indications and describe the appropriate use of blood and blood products, their complications and management	K	KH	Y	Lecture, Small group discussion			Pathology	
<b>PEDIATRICS</b>									
PE11.1	Describe the common etiology, clinical features and management of obesity in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Biochemistry, Pathology	
PE11.2	Discuss the risk approach for obesity and discuss the prevention strategies	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
PE12.7	Describe the causes, clinical features, diagnosis and management of deficiency /excess of Vitamin D (Rickets and Hypervitaminosis D)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, Physiology, Pathology	
PE12.8	Identify the clinical features of dietary deficiency of Vitamin D	S	p	Y	Bedside clinics, Skills lab	Document in log book	3	Biochemistry, Physiology Pathology	
PE12.9	Assess patients with Vitamin D deficiency, diagnose, classify and plan management	S	SH	Y	Bed side clinics	Document in log book		Biochemistry, Physiology, Pathology	
PE12.13	Discuss the RDA , dietary sources of Vitamin K and their role in Health and disease	K	K	N	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, Physiology, Pathology	
PE12.14	Describe the causes, clinical features, diagnosis, management and prevention of Deficiency of Vitamin K	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, Physiology, Pathology	
PE13.1	Discuss the RDA, dietary sources of Iron and their role in health and disease	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Biochemistry	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PE13.2	Describe the causes, diagnosis and management of Fe deficiency	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology Biochemistry	
PE13.3	Identify the clinical features of dietary deficiency of Iron and make a diagnosis	S	SH	Y	Bed side clinics, Skill Lab	Document in log book		Pathology, Biochemistry	
PE13.4	Interpret hemogram and Iron Panel	S	P	Y	Bed side clinic, Small group discussion	Skill Assessment	5	Pathology, Biochemistry	
PE13.5	Propose a management plan for Fe Deficiency Anaemia	S	SH	Y	Bed side clinics, Skill lab	Skill Assessment		Pathology, Pharmacology	
PE21.2	Enumerate the etio-pathogenesis, clinical features, complications and management of Acute post streptococcal Glomerular Nephritis in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE21.3	Discuss the approach and referral criteria to a child with Proteinuria	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE21.5	Enumerate the etio-pathogenesis clinical features, complications and management of Acute Renal Failure in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE21.6	Enumerate the etio-pathogenesis, clinical features, complications and management of Chronic renal Failure in Children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE21.7	Enumerate the etio-pathogenesis clinical features, complications and management of Wilms Tumor	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE21.11	Perform and interpret the common analytes in a Urine examination	S	SH	Y	Bed side clinic Labs, Skill lab	Skill assessment		Biochemistry, Pathology	
PE23.1	Discuss the Hemodynamic changes, clinical presentation, complications and management of Acyanotic Heart Diseases	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	–VSD, ASD and PDA								
PE23.2	Discuss the Hemodynamic changes, clinical presentation, complications and management of Cyanotic Heart Diseases – Fallot’s Physiology	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
PE23.3	Discuss the etio-pathogenesis, clinical	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
PE23.4	Discuss the etio-pathogenesis, clinical	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
PE23.5	Discuss the clinical features, complications, diagnosis, management and prevention of Acute Rheumatic Fever	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
PE23.6	Discuss the etio-pathogenesis and clinical features and management of Infective endocarditis in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology, Microbiology	
PE24.1	Discuss the etio-pathogenesis, classification, clinical presentation and management of diarrheal diseases in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
PE24.2	Discuss the classification and clinical presentation of various types of diarrheal dehydration	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
PE25.1	Discuss the etio-pathogenesis, clinical presentation and management of Malabsorption in children and its causes including celiac disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE26.1	Discuss the etio-pathogenesis, clinical features and management of acute hepatitis in children	K	KH	Y	Lecture, Small group activity	Written/ Viva voce		Pathology, Microbiology	

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
PE26.2	Discuss the etio-pathogenesis, clinical features and management of Fulminant Hepatic Failure in children	K	KH	Y	Lecture, Small group activity	Written/ Viva voce		Pathology, Microbiology	
PE26.3	Discuss the etio-pathogenesis, clinical features and management of chronic liver diseases in children	K	KH	Y	Lecture, Small group activity	Written/ Viva voce		Pathology, Microbiology	
PE26.4	Discuss the etio-pathogenesis, clinical features and management of Portal Hypertension in children	K	KH	Y	Lecture, Small group activity	Written/ Viva voce		Pathology	
PE26.9	Interpret Liver Function Tests, viral markers, ultra sonogram report	S	SH	Y	Bedside clinics, Skills lab	Skill Assessment		Pathology	
PE29.1	Discuss the etio-pathogenesis, clinical features, classification and approach to a child with anaemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
PE29.2	Discuss the etio-pathogenesis, clinical features and management of Iron Deficiency anaemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
PE29.3	Discuss the etiopathogenesis, clinical features and management of VIT B12, Folate deficiency anaemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
PE29.4	Discuss the etio-pathogenesis, clinical features and management of Hemolytic anemia, Thalassemia Major, Sickle cellanaemia, Hereditary spherocytosis, Auto-immunehemolytic anaemia and hemolytic uremicsyndrome	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
PE29.6	Discuss the cause of thrombocytopenia in children: describe the clinical features and management of Idiopathic Thrombocytopenic Purpura (ITP)	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PE29.7	Discuss the etiology, classification, pathogenesis and clinical features of Hemophilia in children	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE29.8	Discuss the etiology, clinical presentation and management of Acute Lymphoblastic Leukemia in children	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	
PE29.9	Discuss the etiology, clinical presentation and management of lymphoma in children	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Pathology	
<b>GENERAL SURGERY</b>									
SU2.1	Describe pathophysiology of shock, types of shock, principles of resuscitation including fluid replacement and monitoring	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology	
SU3.1	Describe the indications and appropriate use of blood and blood products and complications of blood transfusion.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
SU5.1	Describe normal wound healing and factors affecting healing.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
SU9.1	Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, Microbiology, Pathology	
SU22.2	Describe the etiopathogenesis of thyroidal swellings	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology,	
<b>RESPIRATORY MEDICINE</b>									
CT2.1	Define and classify obstructive airway disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
CT2.2	Describe and discuss the epidemiology, risk factors and evolution of obstructive airway disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
CT2.4	Describe and discuss the physiology and pathophysiology of hypoxia and hypercapnia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
CT2.5	Describe and discuss the genetics of alpha 1 antitrypsin deficiency in emphysema	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology	
CT2.6	Describe the role of the environment in the cause and exacerbation of obstructive airway disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology	
CT2.7	Describe and discuss allergic and non-allergic precipitants of obstructive airway disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology,	
CT2.11	Describe, discuss and interpret pulmonary function tests	S	SH	Y	Bed side clinic, DOAP session	Skill assessment		Physiology, Pathology	
<b>ORTHOPEDICS</b>									
OR3.1	Describe and discuss the aetio-pathogenesis, clinical features, investigations and principles of management of Bone and Joint infections a) Acute Osteomyelitis b) Subacute osteomyelitis c) Acute Suppurative arthritis d) Septic arthritis & HIV infection e) Spirochaetal infection f) Skeletal Tuberculosis	K/S	K/KH/S H	Y	Lecture, Small group discussion, Video assisted lecture	Written/ Viva voce / OSCE		Pathology, Microbiology	General surgery
OR4.1	Describe and discuss the clinical features, investigation and principles of management of Tuberculosis affecting major joints (Hip, Knee) including cold abscess and caries spine	K	K/KH	Y	Lecture, Small group discussion, Case discussion	Written/ Viva voce / OSCE		Pathology	General surgery



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
OR10.1	Describe and discuss the aetiopathogenesis, clinical features, Investigations and principles of management of benign and malignant bone tumours and pathological fractures	K	K/KH	Y	Lecture, Small group discussion, Video assisted interactive lecture	Written/ Viva voce/ OSCE		Pathology	General surgery, Radiotherapy
<b>RADIOTHERAPY</b>									
RT1.3	Enumerate, describe and discuss classification and staging of cancer (AJCC, FIGO etc.)	K	KH	Y	Lecture	Written/ Viva voce		Pathology	General Surgery, General Medicine
RT4.5	Describe and discuss role of radiation in management of common malignancies in India (region specific)	K	KH	Y	Lecture and Bed side clinic	Written/ Viva voce		Pathology	General Surgery, Obstetrics & Gynaecology
RT4.6	Describe and discuss radiotherapy for benign disease	K	KH	Y	Lecture	Written/ Viva voce		Pathology	General Surgery, Obstetrics & Gynaecology
RT4.7	Counsel patients regarding acute and late effects of radiation and supportive care	K/A/S	KH	Y	Bed side clinic, Group discussion	Written/ Viva voce		Pathology	General Surgery, Obstetrics & Gynaecology
RT5.1	Describe and discuss cancer prevention, screening, vaccination, cancer registry	K	K	Y	Group discussion	Written/ Viva voce		Pathology	General Surgery, Obstetrics & Gynaecology

**Microbiology (CODE: MI) Table 7. Topics and outcomes**

<b>Number of topics</b>	<b>Number of outcomes</b>
08	54

**Table 8. Details of Competency, Domain, T-L Methods, Assessment methods, Integration.**

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>MICROBIOLOGY</b>									
<b>Topic: 1.General Microbiology and Immunity</b>		<b>Number of competencies: (11)</b>			<b>Number of procedures that require certification : (01)</b>				
MI1.1	Describe the different causative agents of Infectious diseases+A208, the methods used in their detection, and discuss the role of microbes in health and disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			
MI1.2	Perform and identify the different causative agents of Infectious diseases by Gram Stain, ZN stain and stool routine microscopy	S	P	Y	DOAP session	Skill assessment	5		
MI1.3	Describe the epidemiological basis of common infectious diseases	K	KH	Y	Lecture	Written/ Viva voce			Community Medicine
MI1.4	Classify and describe the different methods of sterilization and disinfection. Discuss the application of the different methods in the laboratory, in clinical and surgical practice	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
MI1.5	Choose the most appropriate method of sterilization and disinfection to be used in specific situations in the laboratory, in clinical and surgical practice	K	KH	Y	Small group discussion, Case discussion	Written/ Viva voce / OSPE		General Surgery	
MI1.6	Describe the mechanisms of drug resistance, and the methods of antimicrobial susceptibility testing and monitoring of antimicrobial therapy	K	K	Y	Lecture, Small group discussion	Written/ Viva voce			Pharmacology
MI1.7	Describe the immunological mechanisms in health	K	KH	Y	Lecture	Written/ Viva voce			Pathology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
MI1.8	Describe the mechanisms of immunity and response of the host immune system to infections	K	KH	Y	Lecture	Written/ Viva voce		Pediatrics	Pathology
MI1.9	Discuss the immunological basis of vaccines and describe the Universal Immunisation schedule	K	KH	Y	Lecture	Written/ Viva voce		Paediatrics	
MI1.10	Describe the immunological mechanisms in immunological disorder (hypersensitivity, autoimmune disorders and immunodeficiency states) and discuss the laboratory methods used in detection.	K	KH	Y	Lecture	Written/ Viva voce		Paediatrics	
MI1.11	Describe the immunological mechanisms of transplantation and tumor immunity	K	KH	Y	Lecture	Written/ Viva voce			
	<b>Topic: 2.CVS and Blood</b>	<b>Number of competencies: (7)</b>			<b>Number of procedures that require certification : (NIL)</b>				
MI2.1	Describe the etiologic agents in rheumatic fever and their diagnosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology
MI2.2	Describe the classification etio-pathogenesis, clinical features and discuss the diagnostic modalities of Infective endocarditis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology
MI2.3	Identify the microbial agents causing Rheumatic Heart Disease & infective Endocarditis	S	SH	Y	DOAP session	Skill assessment		General Medicine	Pathology
MI2.4	List the common microbial agents causing anemia. Describe the morphology, mode of infection and discuss the pathogenesis, clinical course, diagnosis and prevention and treatment of the common microbial agents causing Anemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
MI2.5	Describe the etio-pathogenesis and discuss the clinical evolution and the laboratory diagnosis of kalaazar, malaria, filariasis and other common parasites prevalent in India	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology
MI2.6	Identify the causative agent of malaria and filariasis	K/S	SH	Y	DOAP session	Skill assessment		General Medicine	
MI2.7	Describe the epidemiology, the etio-pathogenesis, evolution complications, opportunistic infections, diagnosis, prevention and the principles of management of HIV	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology
<b>Topic:3. Gastrointestinal and hepatobiliary system</b>		<b>Number of competencies: (8)</b>			<b>Number of procedures that require certification : (NIL)</b>				
MI3.1	Enumerate the microbial agents causing diarrhea and dysentery. Describe the epidemiology, morphology, pathogenesis, clinical features and diagnostic modalities of these agents	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Paediatrics	Pathology
MI3.2	Identify the common etiologic agents of diarrhea and dysentery	S	SH	Y	DOAP session	Skill assessment		General Medicine, Paediatrics	
MI3.3	Describe the enteric fever pathogens and discuss the evolution of the clinical course and the laboratory diagnosis of the diseases caused by them	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology , Pathology
MI3.4	Identify the different modalities for diagnosis of enteric fever. Choose the appropriate test related to the duration of illness	S	KH	Y	DOAP session	Skill assessment		General Medicine	Pathology
MI3.5	Enumerate the causative agents of food poisoning and discuss the pathogenesis, clinical course and laboratory diagnosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
MI3.6	Describe the etio-pathogenesis of Acid peptic disease (APD) and the clinical course. Discuss the diagnosis and management of the causative agent of APD	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology , Pathology
MI3.7	Describe the epidemiology, the etio-pathogenesis and discuss the viral markers in the evolution of Viral hepatitis. Discuss the modalities in the diagnosis and prevention of viral hepatitis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pathology
MI3.8	Choose the appropriate laboratory test in the diagnosis of viral hepatitis with emphasis on viral markers	K	KH	Y	Small group discussion, Case discussion	Written/ Viva voce / OSPE		General Medicine	Pathology
<b>Topic:4. Musculoskeletal system skin and soft tissue infections</b>		<b>Number of competencies: (3)</b>			<b>Number of procedures that require certification : (NIL)</b>				
MI4.1	Enumerate the microbial agents causing anaerobic infections. Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of anaerobic infections	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	
MI4.2	Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of bone & joint infections	K	KH	Y	Lecture	Written/ Viva voce		Orthopaedics	
MI4.3	Describe the etio-pathogenesis of infections of skin and soft tissue and discuss the clinical course and the laboratory diagnosis	K	KH	Y	Lecture	Written/ Viva voce		Dermatology, Venereology & Leprosy, General Surgery	
<b>Topic: 5. Central Nervous System infections</b>		<b>Number of competencies: (3)</b>			<b>Number of procedures that require certification : (NIL)</b>				
MI5.1	Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of meningitis	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Pathology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
MI5.2	Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of encephalitis	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Pathology
MI5.3	Identify the microbial agents causing meningitis	S	SH	Y	DOAP session	Skill assessment		General Medicine, Pediatrics	
<b>Topic:6. Respiratory tract infections</b>		<b>Number of competencies: (3)</b>			<b>Number of procedures that require certification : (02)</b>				
MI6.1	Describe the etio-pathogenesis, laboratory diagnosis and prevention of Infections of upper and lower respiratory tract	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
MI6.2	Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)	S	P	Y	DOAP session	Skill assessment	3	General Medicine	
MI6.3	Identify the common etiologic agents of lower respiratory tract infections (Gram Stain & Acid fast stain)	S	P	Y	DOAP session	Skill assessment	3	General Medicine	
<b>Topic: 7.Genitourinary &amp; Sexually transmitted infections</b>		<b>Number of competencies: (3)</b>			<b>Number of procedures that require certification : (NIL)</b>				
MI7.1	Describe the etio-pathogenesis and discuss the laboratory diagnosis of infections of genitourinary system	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	
MI7.2	Describe the etio-pathogenesis and discuss the laboratory diagnosis of sexually transmitted infections. Recommend preventive measures	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Dermatology, Venereology & Leprosy, Obstetrics & Gynaecology	
MI7.3	Describe the etio-pathogenesis, clinical features, the appropriate method for specimen collection, and discuss the laboratory diagnosis of Urinary tract infections	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	<b>Topic: 8.Zoonotic diseases and miscellaneous</b>	<b>Number of competencies: (16)</b>			<b>Number of procedures that require certification : (01)</b>				
MI8.1	Enumerate the microbial agents and their vectors causing Zoonotic diseases. Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course, laboratory diagnosis and prevention	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	
MI8.2	Describe the etio-pathogenesis of opportunistic infections (OI) and discuss the factors contributing to the occurrence of OI, and the laboratory diagnosis	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Pathology
MI8.3	Describe the role of oncogenic viruses in the evolution of virus associated malignancy	K	KH	Y	Lecture	Written		General Medicine	Pathology
MI8.4	Describe the etiologic agents of emerging Infectious diseases. Discuss the clinical course and diagnosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Community Medicine	
MI8.5	Define Healthcare Associated Infections (HAI) and enumerate the types. Discuss the factors that contribute to the development of HAI and the methods for prevention	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Community Medicine	
MI8.6	Describe the basics of Infection control	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Community Medicine
MI8.7	Demonstrate Infection control practices and use of Personal Protective Equipments (PPE)	S	P	Y	DOAP session	Skill assessment	3 each in (Hand hygiene &PPE)	General Surgery	Community Medicine
MI8.8	Describe the methods used and significance of assessing the microbial contamination of food, water and air	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration	
MI8.9	Discuss the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing infectious diseases	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce				
MI8.10	Demonstrate the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing Infectious diseases	S	SH	Y	DOAP session	Skill assessment				
MI8.11	Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases	A	SH	Y	DOAP session	Skill assessment				
MI8.12	Discuss confidentiality pertaining to patient identity in laboratory results	A	KH	Y	Lecture, Small group discussion	Viva voce				
MI8.13	Choose the appropriate laboratory test in the diagnosis of the infectious disease	K	KH	Y	Small group discussions, Case discussion	Written/ Viva voce / OSPE				
MI8.14	Demonstrate confidentiality pertaining to patient identity in laboratory results	A	SH	Y	DOAP session	Skill assessment		AETCOM		
MI8.15	Choose and Interpret the results of the laboratory tests used in diagnosis of the infectious disease	K/S	SH	Y	Small group discussion, Case discussion	Written/ Viva voce / OSPE				
MI8.16	Describe the National Health Programs in the prevention of common infectious disease (for information purpose only as taught in CM)	K	K	Y	Lecture	Written/ Viva voce			Community Medicine	
	*causative agents of Infectious diseases are inclusive of bacterial, viral, parasites and fungal agents causing various clinical conditions.									

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<p><b>Column C: K- Knowledge, S – Skill, A - Attitude / professionalism, C- Communication. Column D: K – Knows, KH - Knows How, SH - Shows how, P- performs independently, Column F: DOAP session – Demonstrate, Observe, Assess, Perform. Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation</b></p>									
<b>INTEGRATION</b>									
<b>BIOCHEMISTRY</b>									
BI10.5	Describe antigens and concepts involved in vaccine development.	K	KH	Y	Lectures, Small group discussion	Written/ Viva voce		Pathology, Pediatrics, Microbiology	
<b>PATHOLOGY</b>									
PA7.5	Describe the immunology and the immune response to cancer	K	KH	N	Lecture, Small group discussion	Written/ Viva voce			Microbiology
PA9.1	Describe the principles and mechanisms involved in immunity	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	Microbiology
PA9.2	Describe the mechanism of hypersensitivity reactions	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology
PA9.3	Describe the HLA system and the immune principles involved in transplant and mechanism of transplant rejection	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology
PA9.6	Define and describe the pathogenesis and pathology of HIV and AIDS	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA10.1	Define and describe the pathogenesis and pathology of malaria	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA10.2	Define and describe the pathogenesis and pathology of cysticercosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
PA10.3	Define and describe the pathogenesis and pathology of leprosy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA10.4	Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA22.5	Enumerate and describe infections transmitted by blood transfusion	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology
PA26.1	Define and describe the etiology, types, pathogenesis, stages, morphology and complications of pneumonia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA26.2	Describe the etiology, gross and microscopic appearance and complications of lung abscess	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA26.3	Define and describe the etiology, types, pathogenesis, stages, morphology and complications and evaluation of Obstructive Airway Disease (OAD) and bronchiectasis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, General Medicine	Microbiology
PA26.4	Define and describe the etiology, types, pathogenesis, stages, morphology, microscopic appearance and complications of tuberculosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA27.4	Describe the etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA27.6	Describe the etiology, pathophysiology, pathology, gross and microscopic, features diagnosis and complications of infective endocarditis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PA27.10	Describe the etiology, pathophysiology, pathology features and complications of syphilis on the cardiovascular system	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA33.1	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Human Anatomy, Orthopaedics	Microbiology
PA35.1	Describe the etiology, types and pathogenesis, differentiating factors, CSF findings in meningitis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
PA35.3	Identify the etiology of meningitis based on given CSF parameters	S	P	Y	DOAP session	Skill Assessment	1	General Medicine	Microbiology
<b>PHARMACOLOGY</b>									
PH1.43	Describe and discuss the rational use of antimicrobials including antibiotic stewardship program	K	KH	Y	Lecture	Written/ Viva voce		General Medicine Pediatrics	Microbiology
PH1.45	Describe the drugs used in MDR and XDR Tuberculosis	K	KH	Y	Lecture	Written/ Viva voce		Respiratory Medicine	Microbiology
PH1.46	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs	K	KH	Y	Lecture	Written/ Viva voce		Dermatology, Venereology & Leprosy	Microbiology
PH1.47	Describe the mechanisms of action, types, doses, side effects, indications and contra indications of the drugs used in malaria, KALAAZAR, amebiasis and intestinal helminthiasis	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Microbiology
PH1.48	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in UTI/ STD and viral diseases including HIV	K	KH	Y	Lecture	Written/Viv a voce			Microbiology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
<b>COMMUNITY MEDICINE</b>									
CM3.3	Describe the aetiology and basis of water borne diseases/ jaundice/hepatitis/ diarrheal diseases	K	KH	Y	Lecture, Small group discussion, DOAP session	Written/Viva voce		Microbiology, General Medicine, Pediatrics	
CM3.6	Describe the role of vectors in the causation of diseases. Also discuss National Vector Borne disease Control Program	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Microbiology	
CM3.7	Identify and describe the identifying features and life cycles of vectors of Public Health importance and their control measures	S	SH	Y	Lecture, Small group discussion, DOAP session	Written/Viva voce / Skill assessment		Microbiology	
CM5.7	Describe food hygiene	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Microbiology
CM7.7	Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures	S	SH	Y	Small group discussion, DOAP sessions	Written/Skill assessment		General Medicine	Microbiology
CM8.1	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases	K	KH	Y	Small group discussion, Lecture	Written/Viva voce		General Medicine, Pediatrics	Microbiology, Pathology
CM14.1	Define and classify hospital waste	K	KH	Y	Lecture, Small group discussion, visit to hospital	Written/Viva voce			Microbiology
CM14.2	Describe various methods of treatment of hospital waste	K	KH	Y	Lecture, Small group discussion, visit to hospital	Written/Viva voce			Microbiology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
CM14.3	Describe laws related to hospital waste management	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology
<b>DERMATOLOGY, VENEREOLOGY &amp; LEPROSY</b>									
DR6.1	Describe the etiology pathogenesis and diagnostic features of pediculosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	Microbiology
DR7.1	Describe the etiology microbiology pathogenesis and clinical presentations and diagnostic features of dermatophytes	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	Microbiology
DR7.2	Identify candida species in fungal scrapings and KOH mount	S	SH	Y	DOAP session	Skill assessment			Microbiology
DR7.3	Describe the pharmacology and action of antifungal (systemic and topical) agents. Enumerate side effects of antifungal therapy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology, Pharmacology
DR8.1	Describe the etiology microbiology pathogenesis and clinical presentations and diagnostic features of common viral infections of the skin	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pediatrics	Microbiology
DR9.1	Classify, describe the epidemiology, etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of Leprosy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology, Community Medicine
DR10.1	Identify and classify syphilis based on the presentation and clinical manifestations	S	SH	Y	Bedside clinic	Skill assessment		General Medicine	Microbiology
DR10.2	Identify spirochete in a dark ground microscopy	S	SH	Y	DOAP session	Skill assessment			Microbiology
DR10.3	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for syphilis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology, Microbiology

<b>Number</b>	<b>COMPETENCY The student should be able to</b>	<b>Domain K/S/A/C</b>	<b>Level K/KH/S H/P</b>	<b>Core (Y/N)</b>	<b>Suggested Teaching Learning method</b>	<b>Suggested Assessment method</b>	<b>Number required to certify P</b>	<b>Vertical Integration</b>	<b>Horizontal Integration</b>
DR10.6	Describe the etiology, diagnostic and clinical features of non- syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
DR10.7	Identify and differentiate based on the clinical features non- syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	S	SH	Y	Bedside clinic	Skill assessment		General Medicine	Microbiology
DR10.8	Enumerate the indications and describe the pharmacology, indications and adverse reactions of drugs used in the non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology , Microbiology
DR11.1	Describe the etiology, pathogenesis and clinical features of the dermatologic manifestations of HIV and its complications including opportunistic infections	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Microbiology
DR11.2	Identify and distinguish the dermatologic manifestations of HIV its complications, opportunistic infections and adverse reactions	S	SH	Y	Bedside clinic	Skill assessment		General Medicine	Microbiology
DR11.3	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for dermatologic lesions in HIV	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Pharmacology Microbiology
DR12.7	Identify and distinguish fixed drug eruptions and Steven Johnson syndrome from other skin lesions	S	SH	Y	Bedside clinic	Skill assessment		General Medicine	Pathology, Microbiology

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
DR14.1	Describe the etiology, pathogenesis and clinical precipitating features and classification of Urticaria and angioedema	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Microbiology, Pathology
DR15.2	Identify staphylococcus on a gram stain	S	SH	Y	Bedside clinic	Skill assessment			Microbiology
DR15.3	Enumerate the indications and describe the pharmacology, indications and adverse reactions of topical and systemic drugs used in treatment of pyoderma	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Surgery	Microbiology, Pharmacology
<b>DENTISTRY</b>									
DE1.2	Discuss the role of causative microorganisms in the aetio- pathogenesis of dental caries	K	KH	Y	Lecture, Small group discussion	Viva voce		Microbiology	
DE1.4	Discuss the role of dental caries as a focus of sepsis	K	KH	Y	Lecture, Small group discussion	Viva voce		Microbiology, General Medicine	
<b>GENERAL MEDICINE</b>									
IM1.3	Describe and discuss the aetiology, microbiology, pathogenies and clinical evolution of rheumatic fever, criteria, degree of rheumatic activity and rheumatic valvular heart disease and its complications including infective endocarditis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Physiology, Microbiology	
IM1.9	Describe and discuss the clinical presentation and features, diagnosis, recognition and management of acute rheumatic fever	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
IM1.22	Assist and demonstrate the proper technique in collecting specimen for blood culture	S	SH	Y	DOAP session	Skill assessment		Microbiology	



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM1.27	Describe and discuss the role of penicillin prophylaxis in the prevention of rheumatic heart disease	K	KH	Y	Bedside clinic, Small group discussion	Written		Microbiology, Pharmacology	
IM3.1	Define, discuss, describe and distinguish community acquired pneumonia, nosocomial pneumonia and aspiration pneumonia	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Human Anatomy, Pathology, Microbiology	
IM3.2	Discuss and describe the aetiology of various kinds of pneumonia and their microbiology depending on the setting and immune status of the host	K	K	Y	Lecture, Small group discussion	short note/ Viva voce		Microbiology	
IM3.3	Discuss and describe the pathogenesis, presentation, natural history and complications of pneumonia	K	KH	Y	Lecture , Small group discussion	short note/ Viva voce		Pathology, Microbiology	
IM3.7	Order and interpret diagnostic tests based on the clinical presentation including: CBC, Chest X ray PA view, Mantoux, sputum gram stain, sputum culture and sensitivity, pleural fluid examination and culture, HIV testing and ABG	S	SH	Y	Bed side clinic, DOAP session	Skill assessment		Radiodiagnosi s, Microbiology	
IM3.10	Demonstrate the correct technique in a mannequin and interpret results of a blood culture	S	SH	Y	DOAP session	Skill assessment		Microbiology	
IM3.11	Describe and enumerate the indications for further testing including HRCT, Viral cultures, PCR and specialised testing	S	SH	Y	Bed side clinic, DOAP session	Skill assessment		Radiodiagnosi s, Microbiology	
IM3.12	Select, describe and prescribe based on the most likely aetiology, an appropriate empirical antimicrobial based on the pharmacology and antimicrobial spectrum	S	SH	Y	Bed side clinic, DOAP session	Skill Assessment / Written/ Viva voce		Pharmacology , Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM3.13	Select, describe and prescribe based on culture and sensitivity appropriate empirical antimicrobial based on the pharmacology and antimicrobial spectrum.	S	SH	Y	Bed side clinic, DOAP session	Skill assessment/ Written/ Viva voce		Pharmacology , Microbiology	
IM3.14	Perform and interpret a sputum gram stain and AFB	S	P	Y	DOAP session	Skill assessment		Microbiology	
IM3.19	Discuss, describe and enumerate the indications and communicate to patients on pneumococcal and influenza vaccines	S/C	K	Y	Lecture, Small group discussion	Short note/ Viva voce		Microbiology	
IM4.1	Describe and discuss the febrile response and the influence of host immune status, risk factors and co-morbidities on the febrile response	K	K	Y	Lecture, Small group discussion	Written		Microbiology	
IM4.2	Describe and discuss the influence of special populations on the febrile response including: the elderly, immune suppression, malignancy and neutropenia, HIV and travel	K	K	Y	Lecture, Small group discussion	Written		Microbiology	
IM4.3	Discuss and describe the common causes, pathophysiology and manifestations of fever in various regions in India including bacterial, parasitic and viral causes (e.g. Dengue, Chikungunya, Typhus)	K	K	Y	Lecture, Small group discussion	Written		Microbiology, Community Medicine	
IM4.4	Describe and discuss the pathophysiology and manifestations of inflammatory causes of fever	K	KH	Y	Lecture, Small group discussion	Written		Microbiology	
IM4.5	Describe and discuss the pathophysiology and manifestations of malignant causes of fever including hematologic and lymph node malignancies	K	KH	Y	Lecture, Small group discussion	Written		Pathology, Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM4.6	Discuss and describe the pathophysiology and manifestations of malaria	K	KH	Y	Lecture, Small group discussion	Written		Microbiology	
IM4.8	Discuss and describe the pathophysiology, aetiology and clinical manifestations of fever of unknown origin (FUO) including in a normal host, neutropenic host, nosocomial host and a host with HIV disease	K	K	Y	Lecture, Small group discussion	Written		Microbiology	
IM4.9	Elicit document and present a medical history that helps delineate the aetiology of fever that includes the evolution and pattern of fever, associated symptoms, immune status, comorbidities, risk factors, exposure through occupation, travel and environment and medication use	S	SH	Y	Bed side clinic, DOAP session	Skill assessment		Microbiology	
IM4.12	Order and interpret diagnostic tests based on the differential diagnosis including: CBC with differential, peripheral smear, urinary analysis with sediment, Chest X ray, blood and urine cultures, sputum gram stain and cultures, sputum AFB and cultures, CSF analysis, pleural and body fluid analysis, stool routine and culture and QBC	K	SH	Y	Bedside clinic, Skill assessment	Skill assessment		Pathology, Microbiology	
IM4.13	Perform and interpret a sputum gram stain	S	SH	Y	DOAP session	Log book documentation		Microbiology	
IM4.14	Perform and interpret a sputum AFB	S	SH	Y	DOAP session	Log book documentation		Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM4.15	Perform and interpret a malarial smear	S	SH	Y	DOAP session	Log book documentat ion/ Skill assessment		Microbiology	
IM4.19	Assist in the collection of blood and wound cultures	S	SH	Y	DOAP session	Log book/ documentat ion		Microbiology	
IM4.20	Interpret a PPD (Mantoux)	S	SH	Y	DOAP session	Log book/ documentat ion		Microbiology	
IM4.23	Prescribe drugs for malaria based on the species identified, prevalence of drug resistance and national programs	S	SH	Y	Small group discussion	Skill assessment		Microbiology, Pharmacology	
IM4.26	Counsel the patient on malarial prevention	C	SH	Y	DOAP session	Skill assessment		Microbiology, Pharmacology	
IM5.4	Describe and discuss the epidemiology, microbiology, immunology and clinical evolution of infective (viral) hepatitis	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
IM5.14	Outline a diagnostic approach to liver disease based on hyper bilirubinemia, liver function changes and hepatitis serology	S	SH	Y	Bedside clinic, Small group discussion	Viva voce/ Written		Pathology, Microbiology	
IM5.17	Enumerate the indications precautions and counsel patients on vaccination for hepatitis	K/C	SH	Y	written Small group discussion	Written/ Viva voce		Microbiology	
IM6.1	Describe and discuss the symptoms and signs of acute HIV sero conversion	K	KH	Y	Lecture, Small group discussion	Short notes/ Viva voce		Microbiology	
IM6.2	Define and classify HIV AIDS based on the CDC criteria	K	KH	Y	Lecture, Small group discussion	Short notes/ Viva voce		Microbiology	
IM6.3	Describe and discuss the relationship between CDC count and the risk of opportunistic infections	K	KH	Y	Lecture, Small group discussion	Short notes/ Viva voce		Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM6.4	Describe and discuss the pathogenesis, evolution and clinical features of common HIV related opportunistic infections	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
IM6.10	Choose and interpret appropriate diagnostic tests to diagnose and classify the severity of HIV-AIDS including specific tests of HIV, CDC	K	KH	Y	Bedside clinic, DOAP session, Small group discussion	Written/ Skill assessment		Pathology, Microbiology	
IM6.13	Describe and enumerate the indications and side effects of drugs for bacterial, viral and other types of diarrhea	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology, Microbiology	
IM6.14	Perform and interpret a gram stain of the sputum	S	P	Y	DOAP session	Skill assessment		Microbiology	
IM6.17	Describe and discuss the principles of HAART, the classes of antiretroviral used, adverse reactions and interactions	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Pharmacology	
IM6.18	Describe and discuss the principles and regimens used in post exposure prophylaxis	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Pharmacology	
IM6.19	Enumerate the indications of and discuss about prophylactic drugs used to prevent HIV related opportunistic infections	K/C	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
IM13.3	Describe the relationship between infection and cancers	K	K	Y	Lecture, Small group discussion	Short notes/ Viva voce		Pathology, Microbiology	General Surgery
IM15.15	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy of acid peptic disease including <i>Helicobacter pylori</i>	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology, Microbiology	
IM16.1	Describe and discuss the aetiology of acute and chronic diarrhea including infectious and non-infectious causes	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
IM6.13	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for bacterial, viral and other types of diarrhea	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology , Microbiology	
IM16.8	Choose and interpret diagnostic tests based on the clinical diagnosis including complete blood count, and stool examination	S	SH	Y	Bedside clinic, Skills lab, Small group discussion	Skill assessment/ Short note/ Viva voce		Microbiology, Pathology	
IM16.9	Identify common parasitic causes of diarrhea under the microscope in a stool specimen	S	SH	Y	DOAP session	Skill assessment		Microbiology	
IM16.10	Identify Vibrio cholera in a hanging drop specimen	S	SH	Y	DOAP session	Skill Assessment		Microbiology	
IM16.11	Enumerate the indications for stool cultures and blood cultures in patients with acute diarrhea	K	KH	Y	Lectures, Small group discussion	Written/ Viva voce		Microbiology	
IM16.13	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for parasitic causes of diarrhea	K	K	Y	Lectures, Small group discussion	Written/ Viva voce		Pharmacology , Microbiology	
IM17.7	Enumerate the indications and describe the findings in the CSF in patients with meningitis	K	K	Y	Small group discussion, Bedside clinic	Skill Assessment		Microbiology, Pathology	
IM17.8	Demonstrate in a mannequin or equivalent the correct technique for performing a lumbar puncture	S	SH	Y	DOAP session	Skill assessment		Microbiology, Pathology	
IM17.9	Interpret the CSF findings when presented with various parameters of CSF fluid analysis	S	SH	Y	Small group discussion, Bedside clinic	Skill assessment		Microbiology, Pathology	
IM25.1	Describe and discuss the response and the influence of host immune status, risk factors and comorbidities on zoonotic disease (eg. Leptospirosis, Rabies) and	K	K	Y	Lecture, Small group discussion	Written		Microbiology, Community Medicine	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	non-febrile infectious disease (eg. Tetanus)								
IM25.2	Describe and discuss the common causes pathophysiology and manifestations of these diseases	K	K	Y	Lecture, Small group discussion	Written		Microbiology, Community Medicine	
IM25.3	Describe and discuss the pathophysiology and manifestations of these diseases	K	KH	Y	Lecture, Small group discussion	Written		Microbiology	
IM25.9	Assist in the collection of blood and other specimen cultures	S	SH	Y	DOAP session	Log book documentat ion		Microbiology	
IM25.11	Develop an appropriate empiric treatment plan based on the patient's clinical and immune status pending definitive diagnosis	C	SH	Y	DOAP session	Skill assessment		Microbiology	
<b>PEDIATRICS</b>									
PE19.1	Explain the components of the Universal immunization Program and the sub National Immunization Programs	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Community Medicine, Microbiology	
PE19.2	Explain the epidemiology of Vaccine preventable diseases	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Community Medicine, Microbiology	
PE19.3	Vaccine description with regard to classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, indications and contraindications	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Community Medicine, Microbiology	
PE19.4	Define cold chain and discuss the methods of safe storage and handling of vaccines	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Community Medicine, Microbiology	
PE19.5	Discuss immunization in special situations – HIV positive children, immunodeficiency, preterm, organ	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Community Medicine, Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
	transplants, those who received blood and blood products, splenectomised children, adolescents, travellers								
PE21.1	Enumerate the etio-pathogenesis clinical features, complications and management of Urinary Tract infection in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
PE23.6	Discuss the etio-pathogenesis and clinical features and management of Infective endocarditis in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Physiology, Pathology, Microbiology	
PE24.1	Discuss the etio-pathogenesis, classification, clinical presentation and management of diarrheal diseases in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
PE24.2	Discuss the classification and clinical presentation of various types of diarrheal dehydration	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, Microbiology	
PE24.5	Discuss the role of antibiotics, antispasmodics, anti-secretory drugs, probiotics, anti-emetics in acute diarrheal diseases	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology , Microbiology	
PE24.6	Discuss the causes, clinical presentation and management of persistent diarrhoea in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
PE24.8	Discuss the causes, clinical presentation and management of dysentery in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pharmacology , Microbiology	
PE24.12	Perform and interpret stool examination including Hanging Drop	S	P	N	Bed side clinics, Skills lab	log book	2	Microbiology	
PE26.1	Discuss the etio-pathogenesis, clinical features and management of acute hepatitis in children	K	KH	Y	Lecture, Small group activity	Written/ Viva voce		Pathology, Microbiology	



Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PE26.2	Discuss the etio-pathogenesis, clinical features and management of Fulminant Hepatic Failure in children	K	KH	Y	Lecture, Small group activity	Written/ Viva voce		Pathology, Microbiology	
PE26.3	Discuss the etio-pathogenesis, clinical features and management of chronic liver diseases in children	K	KH	Y	Lecture, Small group activity	Written/ Viva voce		Pathology, Microbiology	
PE26.12	Discuss the prevention of Hep B infection – Universal precautions and Immunisation	K	KH	Y	Lecture, Small group discussion activity	Written/ Viva voce		Microbiology	
PE30.1	Discuss the etio-pathogenesis, clinical features, complications, management and prevention of meningitis in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
PE30.2	Distinguish bacterial, viral and tuberculous meningitis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
PE30.13	Discuss the etio-pathogenesis, clinical features, management and prevention of Poliomyelitis in children	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
PE30.21	Interpret and explain the findings in a CSF analysis	S	SH	Y	Small group discussion	Log book		Microbiology	Respiratory Medicine
PE34.1	Discuss the epidemiology, clinical features, clinical types, complications of Tuberculosis in Children and Adolescents	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	Respiratory Medicine
PE34.2	Discuss the various diagnostic tools for childhood tuberculosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	Respiratory Medicine
PE34.3	Discuss the various regimens for management of Tuberculosis as per National Guidelines	K	KH	Y	Lecture, Small group Discussion	Written/ Viva voce		Microbiology, Community Medicine Pharmacology	Respiratory Medicine

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PE34.4	Discuss the preventive strategies adopted and the objectives and outcome of the National Tuberculosis Control Program	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Community Medicine Pharmacology	Respiratory Medicine
PE34.6	Identify a BCG scar	S	P	Y	Bed side clinics, Skills lab	Skill Assessment	3	Microbiology	Respiratory Medicine
PE34.7	Interpret a Mantoux test	S	P	Y	Bed side clinics Skills lab	Skill assessment	3	Microbiology	Respiratory Medicine
PE34.9	Interpret blood tests in the context of laboratory evidence for tuberculosis	S	SH	N	Bed side clinics, Small group discussion	Log book		Microbiology	Respiratory Medicine
PE34.10	Discuss the various samples for demonstrating the organism eg Gastric Aspirate, Sputum, CSF, FNAC	K	KH	Y	Bed side clinics, Small group discussion	Written/ Viva voce		Microbiology	Respiratory Medicine
PE34.11	Perform AFB staining	S	P	Y	DOAP session	Log book/journ al	3	Microbiology	Respiratory Medicine
PE34.12	Enumerate the indications and Discuss the limitation of methods of culturing M. Tuberculi	K	KH	Y	Small group discussion	Written/ Viva voce		Microbiology	
<b>GENERAL SURGERY</b>									
SU6.1	Define and describe the aetiology and pathogenesis of surgical infections	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
SU9.1	Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Biochemistry, Microbiology, Pathology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
SU13.1	Describe the immunological basis of organ transplantation	K	KH	Y	Lecture, Small group Discussion	Written/ Viva voce		Microbiology	
SU13.2	Discuss the Principles of immunosuppressive therapy. Enumerate Indications, describe surgical principles, management of organ transplantation	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology, Pharmacology	
SU14.1	Describe aseptic techniques, sterilization and disinfection	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
SU15.1	Describe Classification of hospital waste and appropriate methods of disposal	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
SU29.3	Describe the Clinical features, Investigations and principles of management of urinary tract infections	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Microbiology	
<b>ORTHOPAEDICS</b>									
OR3.1	Describe and discuss the aetiopathogenesis, clinical features, Investigations and principles of management of Bone and Joint infections a) Acute Osteomyelitis b) Subacute osteomyelitis c) Acute Suppurative arthritis d) Septic arthritis & HIV infection e) Spirochaetal infection f) Skeletal Tuberculosis	K/S	K/KH/S H	Y	Lecture, Small group discussion, Video assisted lecture	Written/ Viva voce / OSCE		Pathology, Microbiology	
<b>RESPIRATORY MEDICINE</b>									
CT1.2	Describe and discuss the microbiology of tubercle bacillus, mode of transmission, pathogenesis, clinical evolution and natural history of pulmonary and extra pulmonary forms (including lymph node, bone and CNS).	K	KH	Y	Lecture, Small group discussion	Written		Microbiology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
CT1.3	Discuss and describe the impact of confection with HIV and other co morbid conditions like diabetes on the natural history of tuberculosis	K	K	Y	Lecture, Small group discussion	Written		Microbiology	
CT1.4	Describe the epidemiology, the predisposing factors and microbial and therapeutic factors that determine resistance to drugs	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Community Medicine, Microbiology, Pharmacology	
CT1.7	Perform and interpret a PPD (Mantoux) and describe and discuss the indications and pitfalls of the test	S	P	Y	DOAP session	Maintenanc e of log book		Microbiology	
CT1.10	Perform and interpret an AFB stain	S	P	Y	DOAP session	Skill assessment	1	Microbiology	
CT1.12	Enumerate the indications for tests including: serology, special cultures and polymerase chain reaction and sensitivity testing	K	KH	Y	Small group discussion, Lecture	Short note/ Viva voce		Microbiology	
CT1.13	Describe and discuss the origins, indications, technique of administration, efficacy and complications of the BCG vaccine	K	KH	Y	Lecture, Small group discussion	Short note/ Viva voce		Microbiology	

## 8. Assessment

### Introduction:

Competency based education has been defined as an outcome-based approach to the design, implementation, assessment and evaluation of a medical education program using an organizing framework of competencies. It mandates greater emphasis on setting up an ongoing and longitudinal assessment . Assessment in competency based curriculum plays a crucial role in its implementation. Competency is not an all or none phenomenon. Rather it is incremental. Thus, it is more about integration of the required knowledge, skills and attitudes rather than anyone of them in isolation. Therefore, assessment in competency based curriculum should incorporate integration to the extent feasible while maintaining subject identity.

### Purpose of assessment in competency based curriculum:

While an obvious purpose of assessment in competency based curriculum is to help the teachers decide if the students have acquired the desired competencies, an equally important purpose is to help the students acquire and improve their competencies. Quality assurance also requires quality assessment. Major characteristics of competency based assessment are their longitudinal nature, provision of developmental feedback and authentic settings, all of which result in lowering the stakes on individual assessments. This has other important implications also for assessment design. Since the stakes are low and purpose is to improve learning, high standardization and psychometric rigor is not required. Authenticity of assessment task is more important than its structure or objectivity. Expert subjective judgment plays a major role in assessment of competencies.

### Formative & Internal Assessment (IA):

Formative assessment is an assessment conducted during the instruction with the primary purpose of providing feedback for improving learning. It also helps the teachers and learners to modify their teaching learning strategies. The feedback is central to formative assessment and is linked to deep learning, seeking to explore the educational literature and its pedagogical lessons for healthcare educational practice. It provides inputs to both students and teachers regarding adequacy of teaching-learning. In competency based curriculum, IA provides useful avenues for both formative and summative assessment. IA focuses on the content and process of learning i.e. what and how students have learnt throughout the course. This assessment gives priority to psychomotor, communication and affective domains. These domains are usually not assessed by the traditional assessment methods. It should involve all

faculty members of a department (Senior Residents upwards) and not just one or two senior teachers. This helps to build ownership of teaching-learning and assessment as well as provide “hands-on” experience in assessment to all teachers. IA can be a very useful tool for assessing all competencies in any competency based curriculum. IA should not be considered as an assessment without external controls and can be utilized in a manner to overcome some of its perceived weaknesses. Utility of IA can be further improved by involving all teachers in the department and limiting the contribution of individual teacher, test or tool.

#### Designing a system of assessment

Miller’s pyramid will be followed while designing an internal assessment taking all domains of learning i.e. cognitive, psychomotor and affective should be taken into account and weightage should be assigned to these domains for assessment. [**Knows**- Knowledge tested by written examination; **Knows how**-Application of knowledge tested by clinical problem solving; **Shows how**-Demonstration of clinical skills tested by OSCE, Case presentation, SP; **Dose**- Daily patient care tested by work based assessment.

While assessment will continue to be subject based, efforts must be made to ensure that phase appropriate correlates are assessed to determine if the learner has internalized and integrated the concept and its application

### 8.1 Internal Assessment

**Table 9.** Scheduling of tests for internal assessment for 2<sup>nd</sup> MBBS

Number of tests and Subjects	Remarks
<p><b>Three/Four tests</b></p> <ul style="list-style-type: none"> <li>• Pathology</li> <li>• Pharmacology</li> <li>• Microbiology</li> </ul>	<ul style="list-style-type: none"> <li>• Clinical subjects should also be assessed at end of each posting (EOP) – Theory and Practical</li> <li>• There should be at least one short question from AETCOM in each subject</li> </ul>

<p><b>Two tests</b></p> <ul style="list-style-type: none"> <li>• General Medicine (Including Psychiatry, Dermatology, Venereology &amp; Leprosy (DVL) and Respiratory Medicine including Tuberculosis)</li> <li>• General Surgery (Including Orthopaedics, Dentistry, Anaesthesiology and Radiodiagnosis), Obstetrics &amp; Gynaecology, Forensic Medicine &amp; Toxicology and Community Medicine</li> <li>• End of posting (EOP) examination at each clinical posting including those of allied subjects</li> </ul>	<ul style="list-style-type: none"> <li>• In addition to 3 IA tests in Para-clinical subjects there will be one prelim or pre-university examination</li> </ul>
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### Components of IA

- i. **Theory IA can include:** Written tests, should have essay questions, short notes and creative writing experiences.
- ii. **Practical / Clinical IA can include:** practical / clinical tests, Objective Structured Clinical Examination (OSCE) / Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), Mini Clinical Evaluation Exercise (mini-CEX), records maintenance and attitudinal assessment.
- iii. **Assessment of Log-book.** Log book should record all activities like seminar, symposia, quizzes and other academic activities. Achievement of certifiable competencies should also be recorded in logbooks. It should be assessed regularly and submitted to the department. Up to twenty per cent IA marks (Theory and Practical) should be from Log book assessment.
- iv. Assessment for Professional development programme (AETCOM) will include:
  - a. Written tests comprising of short notes and creative writing experiences in each subject.
  - b. OSCE based clinical scenarios and/or viva voce. Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical

and viva voce in every subject.

The internal assessment marks for each subject will be out of 100 for theory and out of 100 for practical/clinical. Internal assessment marks will reflect as a separate head of passing at the summative examination and will not be added to the University marks.

### **Feedback in IA**

Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback. The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

Remedial measures should be planned for students who are either not able to score qualifying marks or have missed on some assessments due to any reason(s). It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test. Universities shall guide the colleges regarding formulating policies for remedial measures for students who are either not able to score qualifying marks or have missed on some assessments due to any reason.

Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.

## **8.2 Summative Assessment**

### **Eligibility to appear for Professional examinations**

- (a) **Attendance:** Attendance requirements are 75% in theory and 80% in practical /clinical for eligibility to appear for the examinations in that subject.
- (b) **Internal Assessment:** Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.



- (c) **Certifiable competencies:** Must have completed the required certifiable competencies for that phase of training and completed the log book appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

### University Examinations

University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

### Schedule

1. The second professional examination shall be held at the end of second professional training (**11 months**) in the subjects of Pathology, Microbiology and Pharmacology in Table.10.

**Table 10. Schedule of University Examination**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							Foundation Course	I MBBS			
I MBBS								Exam I MBBS	II MBBS		
II MBBS								Exam II MBBS	III MBBS		
III MBBS Part I								Exam III MBBS Part I	Electives & Skills		
III MBBS Part II											
Exam III MBBS Part II		Internship									
Internship											

### Mark distribution

Summative assessment consists of University examinations. Each theory paper will have 100 marks. Marks distribution as per proposed GMER 2019 for various subjects in given in **Table.11** Marks distribution for Second Professional in University examinations:

Summative assessment consists of University examinations. Each theory paper will have 100 marks. Marks distribution as per proposed GMER 2019 for various subjects in given in

**Table 11. Marks distribution for Para-clinical subjects in University examinations**

<b>Course</b>	<b>Written- Theory – Total</b>	<b>Practicals / Orals/ Clinicals</b>
• Pharmacology –2 Papers	200	100
• Pathology –2 papers	200	100
• Microbiology –2 papers	200	100

**Pass Criteria:**  
Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations  
University Examination: Mandatory 50% marks in theory and practical (practical = practical/ clinical + viva) [theory=theory paper(s) only]  
Internal assessment marks are not to be added to marks of the University examinations and should be shown separately in the grade card.

There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.

## 9. Blue Print for Internal Assessment and Summative Assessment

### 9.1 Internal Assessment

**Table.12** Component and weightage for internal assessment

	<b>Pharmacology (100)</b>	<b>Pathology (100)</b>	<b>Microbiology (100)</b>	<b>FMT (100)</b>
Theory	40	40	40	40
Practical	30	30	30	30
AETCOM	20	20	20	20
Logbook	10	10	10	10

### 9.2 Summative Assessment

#### Scheme for practical and viva

**Table.13. Pharmacology**

<b>Sessions</b>	<b>Components</b>	<b>Marks</b>
<b>Practical (80 marks)</b>	Prescription writing	10
	Prescription audit	10
	Computer assisted learning exercise	10
	Pharmacokinetic/pharmacoeconomic problem/drug dose calculation	10
	Routes of drug administration	10
	Review of drug promotion literature/patient compliance	10
	Emergency drugs	10
	ADR reporting	10
<b>Viva (20 marks)</b>	Applied Pharmacology	5
	Toxicology	5
	Clinical therapeutics & Management	5
	Flash cards (Mechanism of action/interactions/ADR etc.)	5
<b>Total</b>		<b>100</b>

**Table14. Pathology**

Sessions	Components	Marks
<b>Practical (80 marks)</b>	Spotters (Slides-3,Specimen-3,Photographs-2,Instruments-2)	20
	Peripheral Smear ( Certified skill)	20
	UrineAnalysis.	10
	POL and Hematology charts(charts 4, one chart –certified skill)	20
	Hb estimation / Blood grouping	10
<b>Viva (20 marks)</b>	General Pathology	5
	Hematology and Instruments	5
	Systemic Pathology I	5
	Systemic Pathology II	5
<b>Total</b>		<b>100</b>

**Table15. Microbiology**

Sessions	Components	Marks
<b>Practical (80 marks)</b>	Gram Staining	15
	ZN staining	15
	Stool Examination	10
	*OSPE	10
	Problem based Questions(2)	30
<b>Viva (20 marks)</b>	General Microbiology / Immunology CVS & Blood	5
	Musculoskeletal System, GIT & Hepatobiliary	5
	Genitourinary system, CNS, Respiratory System	5
	Zoonotic Diseases, Miscellaneous	5
<b>Total Mark</b>		<b>100</b>

\*OSPE: Out of three exercises, any one will be kept for university examination.

e.g. Steps in hand washing, Collection of blood sample

## Instruction to question paper setter

### Theory

1. Designing of question paper should take into consideration all levels of knowledge domain e.g. Bloom's taxonomy of cognitive domain. Use appropriate verbs for the questions at each level to assess higher levels of learning. Use combination of various types of questions e.g. structured essays (Long Answer Questions - LAQ), Short Answers Questions (SAQ) and objective type questions (e.g. Multiple-Choice Questions-MCQ). Marks for each part should be indicated separately. MCQs, should not have more than 20% weightage.
2. The question paper setter must sample the contents appropriately from competencies. The blueprinting grid can help the paper setters to balance the question papers in content related aspects. (Tab.) Blueprinting will add to the value and quality of these assessments. Moderation of theory question paper by subject expert must be arranged by Universities.
3. The Modified Essay Questions (Problem based long answer questions), Clinical vignette based Short Answers Questions (SAQ), and objective type questions (e.g. Multiple Choice Questions - MCQs).

**Table: 16. Bloom's Taxonomy: Knowledge Domain Action verbs**

Level	Suggested Verbs
Knowledge	Define, Describe, Draw, Find, Enumerate, Cite, Name, Identify, List, label, Match, Sequence, Write, State
Comprehension	Discuss, Conclude, Articulate, Associate, Estimate, Rearrange, Demonstrate, understanding, Explain, Generalise, Identify, Illustrate, Interpret, Review, Summarise
Application	Apply, Choose, Compute, Modify, Solve, Prepare, Produce, Select, Show, Transfer, Use
Analysis	Analyse, Characterise, Classify, Compare, Contrast, Debate, Diagram, Differentiate, Distinguish, Relate, Categorise
Synthesis	Compose, Construct, Create, Verify, Determine, Design, Develop, Integrate, Organise, Plan, Produce, Propose, rewrite
Evaluation	Appraise, Assess, Conclude, Critic, Decide, Evaluate, judge, Justify, Predict, Prioritise, Prove, Rank

**Table: 17. Blueprinting in knowledge domain**

<b>Level</b>	<b>Total</b>
Knowledge	5 (20%)
Comprehension	5 (20%)
Application	5 (20%)
Analysis	6 (24%)
Synthesis	2 (8%)
Evaluation	2 (8%)
Total	25 (100%)

### 9.3 Blue print for question paper and Model Question Paper

#### Pharmacology

##### Paper 1

(Model 1)								
Sl. No	TOPICS	SECTION A	SECTION B		SECTION C		Weightage	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	General Pharmacology	4	1	1		1	24	24
2	Central Nervous System	4		1	1	1	24	24
3	Gastrointestinal System	4		1		2	19	19
4	Anti-Microbial Agents	5		1		1	15	15
5	Cancer Chemotherapy	1		1			6	6
6	Miscellaneous	2				1	7	7
7	AETCOM			1				
	Total Questions	20	1	6	1	6	100	100

(Model 2)								
Sl. No	TOPICS	SECTION A	SECTION B		SECTION C		Weightage	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	General Pharmacology	5		2		1	20	20
2	Central Nervous System	4			1	1	19	19
3	Gastrointestinal System	3	1	1		1	23	23
4	Anti-Microbial Agents	5		1		2	20	20
5	Cancer Chemotherapy	1				1	6	6
6	Miscellaneous	2		1			7	7
7	AETCOM			1			5	5
	Total Questions	20	1	6	1	6	100	100

<b>(Model 3)</b>								
<b>Sl. No</b>	<b>TOPICS</b>	<b>SECTION A</b>	<b>SECTION B</b>		<b>SECTION C</b>		<b>Weightage</b>	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	General Pharmacology	5		2		1	20	20
2	Central Nervous System	5		1		2	20	20
3	GastrointestinaS ystem	3	1			1	18	18
4	Anti-Microbial Agents	4		1	1		19	19
5	Cancer Chemotherapy	1		1			6	6
6	Miscellaneous	2		1		1	12	12
7	AETCOM					1	5	5
	<b>Total Questions</b>	<b>20</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>6</b>	<b>100</b>	<b>100</b>

<b>Model 4</b>								
<b>Sl. No</b>	<b>TOPICS</b>	<b>SECTION A</b>	<b>SECTION B</b>		<b>SECTION C</b>		<b>Weightage</b>	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	General Pharmacology	4	1	1		1	24	24
2	Central Nervous System	5		2		1	20	20
3	Gastrointestinal System	4		1		1	14	14
4	Anti-Microbial Agents	4		1	1	1	24	24
5	Cancer Chemotherapy	2				1	7	7
6	Miscellaneous	1		1			6	6
7	AETCOM					1	5	5
	<b>Total Questions</b>	<b>20</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>6</b>	<b>100</b>	<b>100</b>



**PAPER II**

Model 1								
Sl. No	TOPICS	SECTION A	SECTION B		SECTION C		Weightage	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	Autonomic Nervous System	3	1			1	18	18
2	Autacoids	2		1			7	7
3	Respiratory System	2		1		1	12	12
4	Hormones	3			1	1	18	18
5	Peripheral Nervous System	2		1			7	7
6	Cardiovascular System	4		1		2	19	19
7	Renal System	2		1			7	7
8	Blood	2				1	7	7
9	AETCOM			1			5	5
	Total Questions	20	1	6	1	6	100	100

Model 2								
Sl. No	TOPICS	SECTION A	SECTION B		SECTION C		Weightage	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	Autonomic Nervous System	4		1		1	14	14
2	Autacoids	2		1			7	7
3	Respiratory System	2		1		1	12	12
4	Hormones	3			1	1	18	18
5	Peripheral Nervous System	2		1			7	7
6	Cardiovascular System	3	1	1		1	23	23
7	Renal System	2				1	7	7
8	Blood	2				1	7	7
9	AETCOM			1			5	5
	Total Questions	20	1	6	1	6	100	100

Model 3								
Sl. No	TOPICS	SECTION A	SECTION B		SECTION C		Weightage	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	Autonomic Nervous System	4		1		1	14	14
2	Autacoids	2		1			7	7
3	Respiratory System	2			1	1	17	17
4	Hormones	4		1		1	14	14
5	Peripheral Nervous System	2		1			7	7
6	Cardiovascular System	2	1	1		1	22	22
7	Renal System	2				1	7	7
8	Blood	2		1			7	7
9	AETCOM					1	5	5
	Total Questions	20	1	6	1	6	100	100

Model 4								
Sl. No	TOPICS	SECTION A	SECTION B		SECTION C		Weightage	
		MCQs	LAQ	SAQs	LAQ	SAQs	Marks	%
		(1 M/Q)	(10 M/Q)	(5 M/Q)	(10 M/Q)	(5 M/Q)		
1	Autonomic Nervous System	3	1	1		1	23	23
2	Autacoids	2		1			7	7
3	Respiratory System	2				1	7	7
4	Hormones	3		1		1	13	13
5	Peripheral Nervous System	2		1			7	7
6	Cardiovascular System	4		2		1	19	19
7	Renal System	2				1	7	7
8	Blood	2			1		12	12
9	AETCOM					1	5	5
	Total Questions	20	1	6	1	6	100	100

**Model Question Paper - Pharmacology**  
**SRI BALAJI VIDYAPEETH**  
**DEPARTMENT OF PHARMACOLOGY**

**PAPER – I**

**Duration: 3 hours**

**Max. Mark: 100**

*Answer all the questions asked. Draw schematic diagram wherever necessary.*

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**Section A (20 Marks)**

**MCQ**

**1X20 =20 Marks**

**Section B (40 Marks)**

**Long Answer Question**

**(1 x 10 Marks)**

1. Classify the drugs used in peptic ulcer. Describe the mechanism of action, uses and adverse effects of Omeprazole.

**Short Answer Question**

**(5 x 6 Marks)**

2. Microsomal enzyme induction and Inhibition
3. What is Bioavailability? Write factors affecting bioavailability of drugs
4. Properties of ideal General anesthetic agent
5. Prokinetic agents
6. Amoxicillin - clavulanic acid combination.
7. Drugs used for psoriasis

**SECTION C(40 Marks)**

**Long Answer Question**

**(1 x 10 Marks)**

8. Enumerate sedative hypnotics. What any three advantages of benzodiazepines over barbiturates as sedative hypnotics? Add a note on benzodiazepine overdose.

**Short Answer Question**

**(5 x 6 Marks)**

9. Kinetics of elimination
10. Drug dependence and its management
11. Selective serotonin reuptake inhibitor
12. Oral rehydration therapy
13. Common properties of aminoglycoside antibiotics
14. Directly Observed Treatment Short course chemotherapy (DOTS)
15. Anticancer antibiotics.

**SRI BALAJI VIDYAPEETH  
DEPARTMENT OF PHARMACOLOGY  
PAPER – II**

**Duration: 3 hours**

**Max. Mark: 100**

*Answer all the questions asked. Draw schematic diagram wherever necessary.*

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**Section A (20 Marks)**

**MCQ**

**1X20 =20 Marks**

**Section B (40 Marks)**

**Long Answer Question**

**1 x 10=10 Marks**

1. Enumerate  $\beta$  blockers. Mention their pharmacological actions, uses, adverse effects and contraindications of  $\beta$  blockers.

**Short Answer Question**

**5 x 6=30 Marks**

Disease modifying anti rheumatoid drugs (DMARDs)

2. Management of status asthmaticus
3. Write a note on informed consent?
4. Uses of skeletal muscle relaxants
5. Therapeutic uses and adverse effects of ACE inhibitors.
6. High ceiling diuretics

**Section C (40 Marks)**

**Long Answer Question**

**1 x 10=10 Marks**

7. A 50 years old obese male is diagnosed with type 2 diabetes mellitus. Mention the mechanism of action, uses and precautions of Metformin in this patient.

**Short Answer Question**

**5 x 6=30 Marks**

8. Prostaglandin analogues in glaucoma
9. Antitussives
10. Selective estrogen receptor modulators
11. Class III antiarrhythmic drugs.
12. Mechanism of action and therapeutic uses of digitalis.
13. Antiplatelet drugs

**PATHOLOGY**  
**PAPER I**  
**MULTIPLE CHOICE QUESTIONS**

**SECTION A**

Unit No.	Unit	Weightage (%)	Marks Allotted	Knowledge/ Recall	Understanding	Application
				MCQ (1)	MCQ (1)	MCQ(1)
I	Cell injury and repair	5	1	1		
II	Inflammation & wound healing	10	2	1	1	
III	Hemodynamic disorders	5	1		1	
IV	Neoplasia	10	2	1	1	
V	Genetics	10	2		1	1
VI	Immunity	5	1	1		
VII	Infectious	10	2		1	1
VIII	Nutritional disorders and obesity	5	1	1		
IX	Clinical pathology and cytology	5	1		1	
X	Red blood cell disorders	5	1	1		
XI	White blood cell disorders	5	1		1	
XII	Platelets	5	1	1		
XIII	Lymph node	10	2	1	1	
XIV	Spleen and thymus	5	1			1
XV	Blood banking	5	1		1	
	<b>TOTAL</b>	<b>100%</b>	<b>20</b>	<b>08</b>	<b>09</b>	<b>3</b>

### SECTION B

Unit No	Unit	Weight	Marks	Knowledge/Recall		Understanding		Application	
				LAQ	SAQ	LAQ	SAQ	LAQ	SAQ
				(10)	(5)	(10)	(5)	(10)	(5)
I	Cell injury and repair	25%	10	1	-	-	-	-	-
II	Inflammation & wound healing	12.5%	5	-	1	-	-	-	-
III	Hemodynamic disorders	12.5%	5	-	-	-	1	-	-
IV	Neoplasia	12.5%	5	-	1	-	-	-	-
V	Genetics	12.5%	5	-	1	-	-	-	-
VI	Immunity	12.5%	5	-	-	-	1	-	-
VII	Infectious	-	-	-	-	-	-	-	-
VIII	Nutritional disorders and obesity	-	-	-	-	-	-	-	-
IX	Clinical pathology and cytology	12.5%	5	-	-	-	1	-	-
	<b>TOTAL</b>	<b>100%</b>	<b>40</b>	01	03	-	03	-	-

### SECTION C

Unit No.	Unit	Weightage	Marks Allotted	Knowledge/Recall		Understanding		Application	
				LAQ	SAQ	LAQ	SAQ	LAQ	SAQ
				(10)	(5)	(10)	(5)	(10)	(5)
I	Red blood cell disorders	37.5%	15	-	1	-	-	1	-
II	White blood cell disorders	25%	10	-	1	-	1	-	-
III	Platelets	12.5%	5	-	-	-	1	-	-
IV	Lymph node	12.5%	5	-	1	-	-	-	-
V	Spleen and thymus	-	-	-	-	-	-	-	-
VI	Blood banking	12.5%	5	-	-	-	1	-	-
	<b>TOTAL</b>	<b>100%</b>	<b>40</b>	<b>0</b>	<b>03</b>	-	<b>03</b>	<b>1</b>	-

**PAPER II**  
**SECTION A**  
**MULTIPLE CHOICE QUESTIONS**

Unit No.	Unit	Weightage	Marks Allotted	Knowledge/	Understanding	Application
				Recall		
				MCQ(1)	MCQ(1)	MCQ(1)
I	Cardiovascular system	10	2	1	-	1
II	Blood vessel	5	1	-	1	
III	Respiratory system	10	2	1	-	1
IV	Gastrointestinal system	10	2	-	1	1
V	Liver	5	1	-	1	-
VI	Gall bladder	5	1	-	1	-
VII	Renal system	5	1	-	-	1
VIII	Male genital system	5	1	-	-	1
IX	Female genital system	10	2	1	1	-
X	Breast	10	2	1	1	-
XI	Endocrine	10	2		1	1
XII	Central nervous system	5	1	-	1	-
XIII	Musculoskeletal System, skin and soft tissue	10	2	1	1	-
	<b>TOTAL</b>	<b>100%</b>	<b>20</b>	<b>05</b>	<b>09</b>	<b>06</b>

### SECTION B

Unit No.	Unit	Weightage	Marks Allotted	Knowledge/ Recall		Understanding		Application	
				LAQ (10)	SAQ (5)	LAQ (10)	SAQ (5)	LAQ (10)	SAQ (5)
I	Cardiovascular system	12.5%	5	-	-	-	1	-	-
II	Blood vessel	12.5%	5	-	1	-	-	-	-
III	Respiratory system	25%	10	-	-	-	-	1	-
IV	Gastrointestinal system	25%	10	-	1	-	1	-	-
V	Liver	12.5%	5	-	-	-	1	-	-
VI	Gall bladder	12.5%	5	-	1	-	-	-	-
	<b>TOTAL</b>	<b>100%</b>	<b>40</b>	-	03	-	03	01	-

### SECTION C

Unit No	Unit	Weightage	Marks Allotted	Knowledge / Recall	
				LAQ (10)	SAQ (5)
I	Renal System	25%	10	-	-
II	Male Genital System	12.5%	5	-	-
III	Female Genital System	12.5%	5	-	-
IV	Breast	12.5%	5	-	-
V	Endocrine	12.5%	5	-	-
VI	Central Nervous System	12.5%	5	-	1
VII	Musculoskeletal System, skin and soft tissue	12.5%	5	-	1
	<b>TOTAL</b>	<b>100%</b>	<b>50</b>	<b>0</b>	<b>2</b>



**MODEL QUESTION PAPER**  
**SRI BALAJI VIDYAPEETH**  
**DEPARTMENT OF PATHOLOGY**  
**PAPER – I**

**Duration: 3 hours**

**Max. Mark: 100**

*Answer all the questions asked. Draw schematic diagram wherever necessary.*

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**Section –A**

**MCQs**

**20X1=20 Marks**

**Section B (40 marks)**

**Long Answers Questions: -**

**1X10=10 Marks**

1. A 30 year old female patient came to the OPD with malar skin rashes and joint pain for the past one month. On examination she had minimal plueral effusion. Her peripheral blood examination showed pancytopenia. She had mild proteinuria.
  - a) What is your probable diagnosis and give reasons. (2)
  - b) Explain the pathogenesis and the organs affected in this condition (4)
  - c) Describe the laboratory investigations for this condition (4)

**Short Answers Questions: -**

**6X5=30 Marks**

2. Explain in brief etiopathogenesis of septicemic shock
3. Describe in brief various routes of metastasis with the mechanism of spread and examples
4. Define phagocytosis and explain its mechanisms.
5. Describe the mechanism of oncogenic viruses.
6. Describe the clinical presentation in Turner's syndrome with a mention about modes of testing for genetic diseases
7. Explain the role of cytology in early diagnosis of malignancy

**Section-C (40 marks)**

**Long Answers Question:-**

**1X10=10 Marks**

8. 38 year old male presented with history of fatigability, tingling and numbness in the lower limb. On examination patient is pale with mild splenomegaly. CBC showed Hb-6gms% WBC-2700 cell/cu.mm, MCV-110 fl, Platelet -50,000 cells/cumm
  - a) What is your probable diagnosis and give reason (2)
  - b) Describe in brief Etiopathogenesis and complications (4)
  - c) Describe in brief its relevant laboratory investigations (4)

**Short Answers Questions:-**

**6X5=30 Marks**

9. Describe in brief lab investigations of multiple myeloma
10. Describe the clinical features and the crisis in sickle cell anemia
11. Mention FAB classification of AML with a note on its prognostic markers
12. Mention the types of ITP and add note on diagnostic workup
13. Classify Hodgkin's lymphoma and describe its pathogenesis
14. Classify Transfusion reactions, add a note on TRALI

**SRI BALAJI VIDYAPEETH**  
**DEPARTMENT OF PATHOLOGY**  
**PAPER – II**

**Duration: 3 hours**

**Max. Mark: 100**

*Answer all the questions asked. Draw schematic diagram wherever necessary.*

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**Section –A(20 marks)**

**MCQ:-**

**20X1=20 Marks**

**Section B (40 marks)**

**Long Answer Questions:-**

**1X10=10 Marks**

1. 67 year old male presented to the OPD with history of hemoptysis for past 2days associated with cough. He gives history of weight loss. On examination, patient had left supraclavicular lymphadenopathy. Chest X-ray showed irregular opacities in the left lower lobe.
  - a) What is your probable diagnosis? Reason it (2)
  - b) Describe in brief gross and microscopic features of the above condition (4)
  - c) Classify the above condition and mention its complications (4)

**Short Answer Questions:-**

**6X5=30 Marks**

2. Explain in brief etiopathogenesis of Rheumatic fever with the morphology of the affected organ in acute and chronic stages of the disease.
3. Describe in brief etiopathogenesis and Risk factors of Atherosclerosis.
4. Explain the gross and microscopic features of benign mixed tumour of salivary gland.
5. Enumerate five differences between ulcerative colitis and Crohn's disease.
6. Describe in brief etiopathogenesis of Cholelithiasis with its complications
7. Explain in brief serological markers of Hepatitis B virus with a note on the morphology of affected organ.

**Section-C (40 marks)**

**Long Answer Questions:-**

**1X10=10 Marks**

8. 12 year old boy presented to the pediatric OPD with history of facial puffiness, abdominal distention and pedal edema for past 5 days. He also gives history of fever with pharyngitis before 10 days. Basic investigations done showed Hb- 8gms% .Urine protein - 3+
  - a) What is your probable diagnosis? Reason it (2)
  - b) Describe its etiopathogenesis (4)
  - c) Enumerate its relevant laboratory investigations and mention its complication (4)

**Short Answer Questions****6X5=30 Marks**

9. Classify Germ cell tumours of testis and write a note on gross and microscopic features of Seminoma.
10. Explain the risk factors for carcinoma breast and how to communicate with the women at risk about the screening tests and self examination of breast.
11. Enumerate types and components of MEN syndrome with a note on Pheochromocytoma.
12. Explain etiopathogenesis and morphology of Osteogenic sarcoma.
13. Explain the etiopathogenesis of Carcinoma of endometrium with mention on its types.
14. Explain the various causes of meningitis with note on CSF findings in this condition.

**MICROBIOLOGY  
PAPER I**

**Model 1**

**SECTION A**

**MCQs:-**

**1x20=20 Marks**

<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
General Microbiology / Immunology	6 (30%)	6
CVS & Blood	4(20%)	4
Musculoskeletal system	4(20%)	4
GIT & Hepatobiliary	6(30%)	6

<b>Section B(40 Marks)</b>			
<b>LAQ</b>	<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
1	General Microbiology / Immunology	<b>General Microbiology / Immunology</b>  <b>50%</b>	<b>20</b>
SAQs			
2	General Microbiology / Immunology		
3	General Microbiology / Immunology		
4	CVS & Blood	<b>CVS &amp; Blood</b>  <b>37.5%</b>	<b>15</b>
5	CVS & Blood		
6	CVS & Blood		
7	AETCOM	<b>AETCOM</b> <b>12.5%</b>	<b>5</b>

<b>Section C (40 Marks)</b>			
<b>LAQ</b>	<b>10 MARKS</b>	<b>Weightage</b>	<b>Mark</b>
8	Musculoskeletal System	Musculoskeletal System <b>50%</b>	20
SAQ	5 MARKS EACH		
9	Musculoskeletal System		
10	Musculoskeletal System		
11	GIT & Hepatobiliary	GIT & Hepatobiliary <b>50%</b>	20
12	GIT & Hepatobiliary		
13	GIT & Hepatobiliary		
14	GIT & Hepatobiliary		

**PAPER I**

**Model 2**

**Section A**

**MCQs**

**1x20=20 Marks**

<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
General Microbiology / Immunology	6 (30%)	6
CVS & Blood	4(20%)	4
Musculoskeletal system	4(20%)	4
GIT & Hepatobiliary	6(30%)	6

<b>Section B (40 MARKS)</b>			
<b>LAQ</b>	<b>10 MARKS</b>	<b>Weightage</b>	<b>Marks</b>
1	CVS & Blood	CVS & Blood <b>50%</b> AETCOM <b>12.5%</b>	20
SAQ	5 MARKS EACH		5
2	CVS & Blood		
3	CVS & Blood		
4	AETCOM		
5	General Microbiology/ Immunology	General Microbiology/ Immunology <b>37.5%</b>	15
6	General Microbiology/ Immunology		
7	General Microbiology/ Immunology		

<b>Section C (40 Marks)</b>			
<b>LAQ</b>	<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
8	GIT & Hepatobiliary	GIT & Hepatobiliary <b>50%</b>	20
SAQs			
9	GIT & Hepatobiliary		
10	GIT & Hepatobiliary		
11	Musculoskeletal System	Musculoskeletal System <b>50%</b>	20
12	Musculoskeletal System		
13	Musculoskeletal System		
14	Musculoskeletal System		

**Paper II**

**Model 1**

**Section A**

**MCQs**

**1x20=20 Marks**

<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
Genitourinary system& Sexually transmitting diseases	4(20%)	4
Respiratory System	4(20%)	4
CNS	3(15%)	3
Zoonotic Diseases	5(25%)	5
Miscellaneous	4(20%)	4

<b>Section B (40 MARKS)</b>			
<b>LAQ</b>	<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
1	Genitourinary system	Genitourinary system <b>25%</b>	10
SAQs			
2	AETCOM	<b>12.5%</b>	<b>5</b>
3	Respiratory System	Respiratory System <b>25%</b>	10
4	Respiratory System		
5	CNS	CNS <b>37.5%</b>	15
6	CNS		
7	CNS		
<b>Section C (40 Marks)</b>			
<b>LAQ</b>	<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
8	Zoonotic Diseases	Zoonotic Diseases <b>50%</b>	20
SAQs			
10	Zoonotic Diseases		
11	Zoonotic Diseases		
12	Miscellaneous	Miscellaneous <b>50%</b>	20
13	Miscellaneous		
14	Miscellaneous		
15	Miscellaneous		



**Model 2**  
**Section A**

MCQs:-

1x20=20 Marks

Topics	Weightage	Mark
Genitourinary system& Sexually transmitting diseases	4(20%)	4
Respiratory System	4(20%)	4
CNS	3(15%)	3
Zoonotic Diseases	5(25%)	5
Miscellaneous	4(20%)	4

<b>Section B (40 MARKS)</b>			
LAQ	Topics	Weightage	Mark
1	CNS	CNS	10
SAQs		<b>25%</b>	
2	AETCOM	<b>12.5%</b>	<b>5</b>
3	Respiratory System	Respiratory System	15
4	Respiratory System		
5	Respiratory System		
6	Genitourinary system	Genitourinary system	10
7	Genitourinary system		

<b>Section C (40 Marks)</b>			
<b>LAQ</b>	<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
8	Miscellaneous	<b>Miscellaneous 50%</b>	20
SAQs			
9	Miscellaneous		
10	Miscellaneous		
11	Zoonotic Diseases	<b>Zoonotic Diseases 50%</b>	
12	Zoonotic Diseases		20
13	Zoonotic Diseases		
14	Zoonotic Diseases		

**Model 3  
Section A**

**MCQs: -**

**1x20=20 Marks**

<b>Topics</b>	<b>Weightage</b>	<b>Mark</b>
Genitourinary system& Sexually transmitting diseases	4(20%)	4
Respiratory System	4(20%)	4
CNS	3(15%)	3
Zoonotic Diseases	5(25%)	5
Miscellaneous	4(20%)	4

<b>Section B (40 marks)</b>			
LAQ	Topics	Weightage	Mark
1	Respiratory System	Respiratory System <b>37.5%</b>	<b>15</b>
SAQs			
2	Respiratory System		
3	CNS	CNS <b>25%</b>	10
4	CNS		
5	AETCOM	<b>12.5%</b>	<b>5</b>
6	Genitourinary system	Genitourinary system <b>25%</b>	10
7	Genitourinary system		

<b>Section C (40 Marks)</b>			
LAQ	Topics	Weightage	Mark
8	Miscellaneous	Miscellaneous <b>50%</b>	20
SAQs			
9	Miscellaneous		
10	Miscellaneous		
11	Zoonotic Diseases	Zoonotic Diseases <b>50%</b>	20
12	Zoonotic Diseases		
13	Zoonotic Diseases		
14	Zoonotic Diseases		

**MODEL QUESTION PAPER**  
**SRI BALAJI VIDYAPEETH**  
**DEPARTMENT OF MICROBIOLOGY**  
**PAPER – I**

**Duration: 3 hours**

**Max. Mark: 100**

*Answer all the questions asked. Draw schematic diagram wherever necessary.*

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**Section –A (20 marks)**

**MCQ: -**

**20X1=20 Marks**

**Section B (40 marks)**

**Write Long Essays on:**

**1X10 =10 Marks**

1. A 27 yr old woman with generalised weakness, joint pain and a rash over her cheeks for six months was referred to the rheumatology clinic. She underwent various investigations like Complete hemogram and X Ray. ESR was elevated. Investigations were not suggestive of any infective aetiology. (1+1+4+3+1)
  - a) What is your probable clinical diagnosis?
  - b) Name two other diseases of similar aetiology.
  - c) Explain the pathogenesis of this condition.
  - d) Describe the laboratory diagnosis of this condition
  - e) How do you treat this condition?

**Write Short answers on:**

**6X5 =30 Marks**

2. Describe the various sources of infection with example.
3. Explain Anaerobic culture methods.
4. Describe lab diagnosis of Falciparum Malaria.
5. How do you communicate with the patient before performing ante-retroviral test?
6. Describe lab diagnosis of infective Endocarditis.
7. Describe lifecycle of W.bancrofti in human.

**Section C (40 marks)**

**Write Long Essays on:**

**1X10 =10 Marks**

8. 50 year old man sustained road traffic accident with multiple fractures and open wounds in the left leg. He was brought to the nearest hospital. He developed odema, pain and serous discharge at the site after 2 days of treatment. Crepitation were felt around the wound site.

Microscopic examination of the wound discharge showed thick, brick shaped, gram

positive bacilli and absence of neutrophils. (1+2+4+3)

- a. What is the provisional diagnosis?
- b. What are the causative agents of this condition?
- c. Explain the pathogenesis of this condition.
- d. Describe the laboratory diagnosis of this condition.

**Write Short answers on:**

**6 X 5 =30 Marks**

9. Describe lab diagnosis of Mycetoma
10. Explain Lepra reaction.
11. Describe lab diagnosis of Cholera
12. Describe pathogenesis of Bacterial food poisoning
13. Explain Modes of transmission and prevention of Hepatitis B
14. Describe lifecycle and laboratory diagnosis of E.histolytica.

**SRI BALAJI VIDYAPEETH**  
**DEPARTMENT OF MICROBIOLOGY**  
**PAPER – II**

**Duration: 3 hours**

**Max. Mark: 100**

*Answer all the questions asked. Draw schematic diagram wherever necessary.*

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**Section –A (20 marks)**

**MCQ:-**

**20X1=20 Marks**

**Section B (40 marks)**

**Write Long Essays on:**

**1X10 =10 Marks**

1. A 25 year old male attended STD clinic with the complaints of popular rashes, mucous patches in the oropharynx & condylomata at the mucocutaneous junctions. He gave the past history of sexual exposure. (1+3+4+2)

- a. What is your probable clinical diagnosis?
- b. Explain the pathogenesis of this condition.
- c. Describe the laboratory diagnosis for this condition
- d. Name four bacterial STDs.

**Write Short Essays on:**

**6 X 5 =30 Marks**

2. Describe pathogenesis and laboratory diagnosis of Pulmonary tuberculosis
3. Explain Antigenic variation and its significance of Influenza virus.
4. Describe pathogenesis of Poliovirus.
5. Describe the pathogenesis of Neurocysticercosis.
6. Describe Etiopathogenesis of Cryptococcal meningitis.
7. What instructions would you give a patient before collection of urine sample for culture and sensitivity?

**Section C (40 marks)**

**Write Long Essays on:**

**1X10 =10 Marks**

8. A 40 yrs old male presented to emergency department with 10 days history of fever of unknown origin, headache, body pain and progressive shortness of breath. On examination, he had rashes all over the body with eschar on the right armpit, lymphadenopathy and hepatosplenomegaly (2+4+4)
  - a) Identify the probable diagnosis and its aetiological agent
  - b) Describe the pathogenesis of this condition

c) Describe the laboratory diagnosis of this condition.

**Write Short Essays on:**

**6 X 5 =30 Marks**

9. Describe lab diagnosis of Leptospirosis.
10. Explain post exposure prophylaxis of Rabies.
11. Describe lab diagnosis of Brucellosis.
12. Describe Opportunistic infection with examples.
13. Briefly explain Biomedical Waste Management.
14. Describe sources of hospital infection

## 10. Recommended books (\*Latest edition)

### Pharmacology

1. Basic and clinical Pharmacology by Bertram G. Katzung, \*14th edition, Lange Publishers
2. Pharmacology by H.P. Rang and M.M. Dale, \*8th edition, Elsevier Publishers
3. Principles of Pharmacology by H.L. Sharma & K.K. Sharma, \*3rd edition, Paras Publishers
4. Essentials of Medical Pharmacology by K.D. Tripathi, \*8th edition, JAYPEE publishers
5. Pharmacological Basis of Therapeutics, Goodman & Gilman, \*13th edition, MC Graw Hill
6. Clinical Pharmacology, Bennet & Brown, \*12th edition, Elsevier Publishers
7. Blue Prints Pharmacology – for case oriented Pharmacological discussions

### Pathology

1. Kumar V, Abbas A, Aster JC. Pathologic basis of disease: South Asia edition. \*9<sup>th</sup> edition. Haryana: Elsevier; 2014.
2. Kumar V, Abbas A, Aster JC. Robbins Basic Pathology. \*9<sup>th</sup> edition. Philadelphia: Elsevier; 2013.
3. Walter JB, Talbot IC. Walter and Israel General Pathology. \*7<sup>th</sup> edition. Edinburgh; Elsevier; 1963
4. Cross SS. Underwood's Pathology: A clinical approach. \*6<sup>th</sup> edition. China; Elsevier; 2013
5. Singh T. Text and Practical Hematology for MBBS. New Delhi: APC Publications; 2010.
6. Chaturvedi U, Singh T. Practical Pathology. \*2<sup>nd</sup> edition. New Delhi: Arya Publications; 2015.

### Online Resources:

1. [www.pathologyoutlines.com/](http://www.pathologyoutlines.com/)
2. <http://www.webpathology.com>

### Microbiology

1. Parija SC. Textbook of Microbiology & Immunology, latest edition. All India Publishers and Distributors, New Delhi. India
2. Ananthanarayan & Paniker's Textbook of Microbiology, latest edition. Orient Longman, India; 2009.
3. Parasitology – K.D. Chatterjee, latest edition
4. Textbook of Medical Parasitology – P. Chakraborty, latest edition
5. Parija SC. Textbook of Medical Parasitology. \*latest edition. All India Publishers and Distributors, New Delhi. India
6. Apurba Sankar Sastry Sandhya Bhat K, Essentials of Medical Microbiology, \*latest edition.