Foundation Study Guide I

First Professional Year MBBS

6 Weeks

Table of Contents

Vision and Mission of KGMC

Khyber Medical University: Vision

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Girls Medical College: Vision

"Excellence in health care, research, teaching and training in the service of Humanity"

Khyber Girls Medical College: Mission

The mission of KGMC is to promote compassionate and professional health care leaders
Who are knowledgeable, skillful, and community oriented lifelong learners serving humanity through evidence based practices.

Curriculum Committee

Chair:

Professor Dr.Zahid Aman, Dean KGMC.

Co-Chair:

Dr. Sabina Aziz, Associate Dean KGMC.

Clinical Sciences:

- Dr. Mohammad Noor Wazir, Department of Medicine KGMC/HMC
- Dr. Bushra Rauf Department of Gynae KGMC/HMC.
- Dr. Sofia Iqbal, Department of Ophthalmology KGMC/HMC.
- Dr. Said Amin Department of Medicine KGMC/HMC.
- Dr. Ghareeb Nawaz Department of ENT KGMC/HMC.
- Dr. Jamshed Alam Department of Surgery KGMC/HMC.
- Dr. Ambreen Ahmad, Department of Pediatrics KGMC/HMC.
- Dr. Ain-ul-Hadi Department of Surgery KGMC/HMC.
- Dr. Fawad Rahim Department of Medicine KGMC/HMC.

Behavioral Sciences:

- Dr. Ameer Abbas Department of Psychiatry KGMC/HMC.

Medical Education

- Dr. Naheed Mahsood, Department of Medical Education, KGMC.
- Dr. Naveed Afzal Khan, Department of Medical Education, KGMC.
- Dr. Khurram Naushad, Department of Medical Education, KGMC.

Basic Sciences:

- Dr. Amin-ul-Haq Department of Biochemistry, KGMC.
- Dr. Khalid Javed Department of Pathology, KGMC.
- Dr. Raheela Amin Department of Community Medicine, KGMC.
- Dr. Zubia Shah Department of Physiology, KGMC.
- Dr. Naheed Siddique Department of Forensic Medicine, KGMC.
- Dr. Shams Suleman Department of Pharmacology, KGMC.

- Dr. Shahab-ud-Din, Department of Anatomy, KGMC.

Integrated curriculum:

An integrated curriculum is all about making connections, whether to real life or across the disciplines, about skills or about knowledge. An integrated curriculum fuses subject areas, experiences, and real-life knowledge together to make a more fulfilling and tangible learning environment for students. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples. Case based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab are characteristics of integrated teaching program.

Outcomes of the curriculum:

The Curricular Outcomes of the MBBS Program for a Graduating Doctor according to the PMDC are as follows:

1. Knowledgeable

Knowledgeable about the diseases and health conditions prevalent in the population of Pakistan and use Evidence-based medicine to provide best possible cost-effective care.

2. Skillful

Skillful in History taking and Physical examination to compassionately deal with a patient.

3. Community health promoter

Take appropriate decisions and actions for protecting and promoting the health of their community.

4. Critical Thinker

Evaluate critically the patient data to effectively deal with complexity of medical decisions for the best possible outcomes using evidence-based practices in service of humanity.

5. Professional

Display professional values (honesty, accountability, cultural and religious sensitivity), attitudes and behaviors (empathy, ethics, good communication skills and lifelong learner) that embody good medical practice.

6. Researcher

Exhibit a spirit of inquisitiveness, inventiveness, and ethical conduct while carrying out research in accordance with the prescribed guidelines.

7. Leader and role Model

Demonstrate exemplary conduct and leadership in Advancing healthcare, enhancing medical education, and Enhancing the trust of the public in the medical profession by being exceptional role models

KNOWLEDGE

By the end of five year MBBS program the KGMC student should be able to;

1. Acquire a high level of clinical proficiency in history taking, physical examination, differential diagnosis, and the effective use of

   medicine's evolving diagnostic and procedural capabilities including therapeutic and palliative modalities

2. Manage the common prevalent diseases in community
3. Identify the common medical emergencies
4. Develop plan for prevention of common community diseases
5. Formulate a referral plan
6. Compose a prescription plan

PSYCHOMOTOR

By the end of five year MBBS program the KGMC student should be able to;

1. Demonstrate the ability to perform the disease specific relevant examination
2. Respond to common medical emergencies
3. Master the skill of first aid
4. Perform BLS
5. Apply the best evidenced practices for local health problems

AFFECTIVE

By the end of five year MBBS program the KGMC student should be able to

1. Relate to patient and careers vulnerability

2. Demonstrate ethical self-management

3. Counsel and educate patients and their families to empower them to participate in their care and enable shared decision-making.

4. Display compassion with patient and colleagues

5. Demonstrate in clinical care an understanding of the impact of psychological, social, and economic factors on human health and disease

General Learning Outcomes

By the end of this module the students would be able to;

Knowledge

1. Familiarize with the MBBS system-based curriculum
2. Recognize the role of different disciplines in studying human body and its diseases.
3. Describe the structure, function and biochemical composition of cell.
4. Describe the cell division, its types and genetic material along with its clinical correlation.
5. Describe the basic organization of human body.
6. Explain the maintenance of homeostatic mechanism.
7. Describe the various stages of pre embryonic human development and correlate them with various malformations.
8. Describe the importance of buffer and PH system.
9. Describe various cellular adaptations during cell growth, differentiation and cell injury.

Skills

1. Describe the basic laboratory techniques and use of microscope.
2. Follow the basic laboratory protocols.
3. Perform biochemical analysis of carbohydrates.

Attitude

1. Follow the basic laboratory protocols.
2. Participate in class and practical work efficiently.
3. Maintain discipline of the college.
4. Follow the norms of the college properly.
5. Communicate effectively in a team with colleagues and teachers.
6. Demonstrate professionalism and ethical values in dealing with patients, cadavers, colleagues and teachers.
7. Communicate effectively in a team with colleagues and teachers.
8. Demonstrate the ability to reflect on the performance.

THEMES FOR FOUNDATION MODULE

SNO	Theme	Duration
1	Orientation	1 week
2	Cell	1 week
3	Growth & Development of Human Body	2 weeks
4	Human Body tissues, bones & joints	2 weeks

THEME-I: Orientation				
SNO	Topic	Learning Outcomes	MOT	Assessment
ANATOMY				
1	Anatomy and its subbranches	Define anatomy and its branches Describe purpose of study of anatomy and its branches	SGD/LGF	MCQ
PHYSIOLOGY				
2	Physiology and its subbranches	Enumerate the branches of physiology	SGD/LGF	MCQ
BIOCHEMISTRY				
3	Introduction to biochemistry and its	Define biochemistry Discuss the role of biochemistry in medicine.	SGD/LGF	MCQ
PATHOLOGY				
4	Introduction to pathology and its implication in	Define pathology Enumerate the different branches of pathology. Identify different sampling and processing techniques in different branches of pathology.	SGD/LGF	MCQ
PHARMACOLOGY				
5	Introduction to pharmacology and its	Define pharmacology and role of pharmacology in medicine. Define the pharmaco dynamics and pharmacokinetics	SGD/LGF	MCQ
COMMUNITY MEDICINE				
6	Introduction to community Medicine	Describe Role of community medicine/public health in health care system.	SGD/LGF	MCQ
FORENSIC MEDICINE				

7	Introduction to Forensic Medicine and Toxicology	Define Forensic Medicine, forensic pathology and state Medicine. Identify the Branches of Forensic Medicine. Describe the History of Forensic Medicine. Discuss the scope of Forensic Medicine. Identify the essential facilities for medico legal investigation. Define Medical Jurisprudence (not included for assessment	SGD/LGF	MCQ
8	Pakistan Medical Commission, Consent.	Describe the structure and functions of Pakistan Medical Commission.	SGD/LGF	MCQ
MEDICAL EDUCATION				
9	Curriculum structure Teaching learning strategies	Discuss the curriculum and modules. Describe the use of study guides. (not to be assessed) Differentiate between various teaching & learning strategies. Enlist various assessment tools & assessment policy. (Not to be assessed).	SGD/LGF	MCQ
IT Skills				
10	Importance of IT skills	Define IT and its importance	SGD/LGF	MCQ
11	MS word skills PowerPoint skills Excel sheet	Prepare the assignment on MS word Prepare the presentation on power point Use the excel sheet	SGD/LGF	MCQ
Library				
12	Literature search and library resources	Literature search skills		

THEME-II: CELL

#	Topic	Learning Outcomes	MOT	Assessment
ANATOMY				
13	Cell structure and its Organelles	Describe the cell as a living unit of body Describe the structure of cell and its organelles. Describe the structure of cytoplasmic organelles of the cell & correlate it with their functions.	SGD/LGF	MCQ
14	Nuclear structure & components	Describe the structure of the nucleus, nucleolus & chromosome and their functions in cell integrity.	SGD/LGF	MCQ
15	Cell division Mitosis	Explain the process of cell division. Describe mitotic cell division with its stages.	SGD/LGF	MCQ
16	Meiosis	Explain the process of Meiosis Describe karyotyping. Explain the non-disjunction of chromosomes. Correlate the process of non-disjunction with chromosomal abnormalities	SGD/LGF	MCQ
PHYSIOLOGY				
17	Cell membrane physiology	Explain Intra cellular and extra cellular environment. Correlate cytoplasmic organelles with their functions.	SGD/LGF	MCQ
18	Homeostasis	Define homeostasis. Describe the Homeostatic mechanism of major functional systems. Describe the characteristics of control systems with examples	SGD/LGF	MCQ
19	Membrane potential	Define membrane potential Describe ionic conc. differences across cell membrane Explain the Nernst equation. Explain origin of normal resting membrane potential	SGD/LGF	MCQ
20	Movements of cell	Explain the amoeboid movement of cells. Describe the ciliary movements	SGD/LGF	MCQ

21	Depolarization & Repolarization	Explain the role of voltage gated Na+ and K+ channels in action potentials. Discuss the changes in conductance of Na and K channels with changes in membrane potentials	SGD/LGF	MCQ
BIOCHEMISTRY				
22	Biochemical structure of cell Biochemical structure of Mitochondri	Explain the Bio-chemical composition of cell organelles and cytoplasm Describe the chemical structure of mitochondrial membrane. Explain the biochemical importance of mitochondrial membrane.	SGD/LGF	MCQ
23	Nuclear membrane	Describe Bio-chemical structure of nuclear membrane and its functions.	SGD/LGF	MCQ
24	RNA & DNA	Define and explain nucleotides and nucleosides. Describe the components of nucleotides Describe the functions of Nucleotides Describe the types of nucleic acids Differentiate between	SGD/LGF	MCQ
25				
26	Buffer	Define Buffer and its role in maintenance of body PH Define colloidal state and Henderson Hasselbalch equation. Define adsorption and how it occurs.	SGD/LGF	MCQ
		Explain ion exchange resin	SGD/LGF	MCQ
27	Cellular membrane transport mechanism	Explain membrane transport. Discuss passive diffusion, active transport, and facilitated transport via a channel or carrier. Describe and evaluate the role of ion gradients, co transporters, and ATP in active transport	SGD/LGF	MCQ

PATHOLOGY				
28	Cell injury	Describe the various causes of cell injury. Describe the response of a normal cell to stimuli. Describe the mechanisms of cell injury.	SGD/LGF	MCQ
PHARMACOLOGY				
29	Routes of administration of drugs	Enlist the route of administration of a drug.	SGD/LGF	MCQ
30	Transmembrane drug transport	Explain how drugs are transported across cell membrane and factors affecting it	SGD/LGF	MCQ
31	Receptor and cellular basis	Enlist the types of drug receptors	SGD/LGF	MCQ
LAB WORK				
32	The Microscope	Identify parts of microscope. Demonstrate operation of microscope. Describe the method of focusing slide at different magnifications.	Practical	OSPE
		Follow the specified norms of lab work.	practical	OSPE
33	Lab Equipment	Introduction to lab techniques Identify the equipment used in lab work	practical	OSPE
34	PH and buffer solutions	Define normal solution Define standard solution. Prepare 0.1N solution of NaOH. Prepare 0.1N solution of HCL.	practical	OSPE

THEME-III: GROWTH & DEVELOPMENT OF HUMAN BODY				
SNO	Topic	Learning Outcome	MOT	ASSESSMENT
35	Introduction to Embryology	Describe the developmental stages. Describe the embryologic terminology.	SGD/LGF	MCQ
36	Spermato-Genesis	Describe the process of spermatogenesis. Differentiate between spermiogenesis and spermatogenesis. Describe the morphological changes during	SGD/LGF	MCQ
37	Oogenesis	Describe oogenesis and its correlation with meiosis. Compare the male and female gametes.	SGD/LGF	MCQ
38	Transport Of Gametes	Explain the transport of gametes. Describe the transport of sperms. Describe the oocyte transport. Explain	SGD/LGF	MCQ
39	Female reproductive cycle	Describe the ovarian cycle. Discuss the process of follicular development Explain the process of ovulation. Correlate ovulation with the phases of menstrual cycle	SGD/LGF	MCQ
40	Fertilization –Events	Define fertilization. Describe the process of fertilization. Explain assisted reproductive technologies like In-vitro fertilization (IVF), assisted IVF and intra cytoplasmic sperm injection (ICSI).	SGD/LGF	MCQ
41	Fertilization –Clinical Correlates Cleavage & Blastocyst	Discuss the clinical correlation of the fertilization. Describe the process of cleavage of zygote. Discuss the formation of blastocyst.	SGD/LGF	MCQ

42	Implantation & Its Abnormalities	Describe the process of implantation. Enumerate the sites of implantation. Explain the clinical correlations of the implantation process.	SGD/LGF	MCQ
43	Amniotic cavity	Describe the formation of amniotic cavity Describe the development of embryonic disc Describe the development of umbilical vesicle.	SGD/LGF	MCQ
44	Events Of 2nd Week of Development	Summarize the events of second week of development. Explain the clinical correlates of the second week of development.	SGD/LGF	MCQ
45	Formation of Notocord	Explain the process of formation of Notocord	SGD/LGF	MCQ
46	Events of 3rd Week of Development	Describe the process of gastrulation. Explain the process of Neurulation. Explain the development of somites.	SGD/LGF	MCQ
47	Derivatives of germ layers	Describe briefly derivatives of germ layers Ectoderm Mesoderm Endoderm	SGD/LGF	MCQ
48	Further development of Trophoblast and Neuralation	Describe the process of development of Trophoblast and neurulation	SGD/LGF	MCQ
50	Fetal membranes	Describe the formation of fetal membranes	SGD/LGF	MCQ
51	4th week: Folding of embryo	Describe the process and types of folding of embryo	SGD/LGF	MCQ
52	Highlights of 4-8 weeks	Enlist the events occurring in 4-8 weeks of development	SGD/LGF	MCQ

BIOCHEMISTRY				
47	Chemistry of Acids and Bases	Define acids, bases Describe strong acids and weak acids. Describe strong bases and weak bases. List different types and sources of acids and bases in our body Describe the mechanism of their normal balance and biochemical importance	SGD/LGF	MCQ
48	Importance of surface tension and	Explain surface tension, viscosity, vapor pressure, normal boiling point and capillary action	SGD/LGF	MCQ
49	Carbohydrates -I	Describe carbohydrates and give their Bio-chemical importance. Classify Carbohydrates Explain carbohydrate and its Bio-chemical structure. Describe the different isomers of monosaccharides. e.g. Galactose, mannose, fructose, dextrose. Describe the role of dextrose in I/V infusion. Describe the role of mannitol in cerebral edema.	SGD/LGF	MCQ
50	Carbohydrates -II	Describe the structure of disaccharides and oligosaccharides.	SGD/LGF	MCQ
51	Carbohydrates -III	Relate the structure of polysaccharides with its clinical importance. List the functions of carbohydrates in cell membrane, energy provision and nutrition supply to different parts of body.	SGD/LGF	MCQ
COMMUNITY MEDICINE				
52	Determinants of health	Define health Describe the Determinants of Health	SGD/LGF	MCQ
53	Disease causation	Describe Spectrum of Disease Explain Natural History of Disease Explain Theories of Disease Causation. Differentiate between Disease Elimination and Eradication.	SGD/LGF	MCQ
54	Chain of infection	Describe reservoirs of infection & chain of infection.	SGD/LGF	MCQ
55	Levels of prevention	Discuss /describe Levels of Prevention	SGD/LGF	MCQ

LAB WORK				
56	Sterilization	Explain the process of sterilization Enumerate the different methods of sterilization Observe the process of autoclaving in the laboratory	DEMO/SGD	MCQ
57	Capillary Blood Sampling	Obtain capillary blood sample for hematological investigations through prick method Identify the sites for obtaining blood sample with	DEMO/SGD	MCQ
58	Detection of Monosaccharide's	Define Monosaccharide's Discuss structure and types Perform the sequence of tests to identify the monosaccharides in a	DEMO/SGD	MCQ
59	Detecting of Reducing and non-reducing Sugars	Define reducing sugars, types. Discuss structure and types of reducing sugars Perform Benedicts test	DEMO/SGD	MCQ
60	Detection of Polysaccharides in a given Solution	Define Polysaccharides. Discuss structures and types of Polysaccharides Perform the sequence of tests to identify the polysaccharides	DEMO/SGD	MCQ

THEME-IV: HUMAN BODY TISSUES, BONES & JOINTS				
SN0	Topic	Learning Outcome		
ANATOMY				
61	Organization of human body	Describe the levels of organization of human body	SGD/LGF	MCQ
62	Anatomical terms	Describe the anatomical terms for planes, position and movements		
63	Classification of Bones	Describe the structure and function of bone Classify bones on the basis of length and shape. Identify the markings on bone		
64	Cartilage	Describe cartilage Classify the types of cartilage Describe the types of cartilages		
65	Introduction to Joints	Classify joints on the basis of structure. Describe the mechanism of movements of joint		
66	Muscles	Describe various muscle types along with structure.		
67	Skin / Integumentary system Skin (dermis & epidermis) Skin creases, Nails, Hairs, Glands (Sebaceous &	Discuss the anatomical structures of Skin / Integumentary system		
68	Lymphatic system	Describe the lymphatic system. Explain the functions of lymphatic system Describe the organization of lymphatic system Explain the mechanisms for the movement of lymph in the body.		
69	Nervous system Divisions (central & peripheral and somatic & autonomic)	Define the organization of nervous system Describe the divisions of nervous system Describe the formation of spinal nerve and concept of dermatome and myotome Describe the formation of nerve plexus.		
70	Autonomic Nervous system Sympathetic. parasympathetic nervous system	Describe the organization of autonomic nervous system Differentiate between sympathetic and parasympathetic nervous system on the basis of structure.	SGD/LGF	MCQ
71	Membranes: Mucous membranes,	Describe the structure of membranes of human body		
72	Fascia, ligaments and raphe	Describe the anatomy and significance of fascia, ligaments and raphe.		
73	Radiological anatomy	Identify various anatomical landmarks on radiography. Describe commonly used radiographs. Describe various view used for obtaining radiographs.		

Foundation Module I

HISTOLOGY				
74	Basic Body tissue Definition of tissue Epithelial tissue Connective tissue Muscular	Define tissue Describe the basic tissues in human body	SGD/LGF	MCQ
75	Epithelial tissues Classification of epithelium General characteristics and Functions of	Classify epithelium describe the general features of epithelium explain the specialized functions of different types of epithelial cells Describe the structure of main types of cell junctions	SGD/LGF	MCQ
76	Glandular Epithelium	Enlist glandular epithelia Classify them on the basis of morphology, nature of secretion and mode of secretion Differentiate between exocrine & endocrine glands on the basis of structure and function.	SGD/LGF	MCQ
77	Epithelial Cell Surface Specialization	Describe the surface specialization of epithelia Correlate their structure, with their location and function	SGD/LGF	MCQ
78	Structure & Function of Basement Membrane	Describe the structure of basement membrane & correlate it with its function.	SGD/LGF	MCQ
79	Connective tissue	Define connective tissue. Classify connective tissues. Explain the different types of Connective tissues	SGD/LGF	MCQ
Physiology				
80	Autonomic Nervous system	Describe the functions of the autonomic nervous system. Compare and contrast the functions of sympathetic and para sympathetic nervous system. Classify autonomic receptors.	SGD/LGF	MCQ
Biochemistry				
81	structure and function of	Describe the structure and function of GAGS and its clinical importance	SGD/LGF	MCQ
PATHOLOGY				
82	Necrosis	Discuss the Process of necrosis Explain the process of apoptosis Differentiate between apoptosis and necrosis	SGD/LGF	MCQ
83	Inflammation	Describe acute inflammation Describe events of acute inflammation Describe chronic inflammation Differentiate between acute and chronic inflammation.	SGD/LGF	MCQ

FORENSIC MEDICINE				
84	Death	Define death. Describe stages of death. Describe medico legal importance of stages of death.	SGD/LGF	MCQ
LAB WORK				
85	Tissue Processing	Describe the process of tissue processing for histo- pathological examination.	practical	OSPE
86	Anatomical terms	Demonstrate anatomical terms for planes, position and movements. Demonstrate standard anatomical position and	practical	OSPE
87	H& E staining	Perform H & E staining of tissue slides under supervision in the laboratory	practical	OSPE
88	Simple Epithelia	Identify and describe simple epithelia under M/S.	practical	OSPE
89	Stratified Epithelia	Identify and describe stratified epithelia under M/S.		
90	Glands	Identify different types of glands under M/S.	practical	OSPE
91	Smear preparation	Prepare a blood smear.		

Teaching and learning strategies:

The following teaching / learning methods are used to promote better understanding:

- Interactive Lectures
- Hospital / Clinic visits
- Small Group Discussion
- Skills session
- Self-Directed Study

Interactive lectures:

An interactive lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture-based class of any size. Interactive lectures are classes in which the instructor breaks the lecture at least once per class to have students participate in an activity that lets them work directly with the material.

- The instructor might begin the interactive segment with an engagement trigger that captures and maintains student attention.
- Then the instructor incorporates an activity that allows students to apply what they have learned or give them a context for upcoming lecture material.
- As the instructor feels more comfortable using interactive techniques he or she might begin to call upon a blend of various interactive techniques all in one class period.

Hospital / Clinic visits:

In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

Small group discussion (SGD):

The shy and less articulate are more able to contribute. Students learn from each other. Everyone gets more practice at expressing their ideas. A two way discussion is almost always more creative than individual thoughts. Social skills are practiced in a 'safe' environment e.g. tolerance, cooperation. This format helps students to clarify concepts acquire skills or attitudes. Students exchange opinions and apply knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

Skills/Practical session:

Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Laboratories of various departments.

Self-Directed learning (SDL):

Self-directed learning, which involves studying without direct supervision in a classroom/Library, is a valuable way to learn and is quickly growing in popularity among parents and students. Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Centre, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

Time tables:

The timetables for the module will be shared via Edmodo and the notice boards in advance.

1. Assessment tools:

Theoretical knowledge is tested by a written examination system constituted by multiple choice questions (MCQs). The assessment of practical knowledge involves oral, spot, or objective structured practical examinations (OSPE).

Multiple Choice Questions (MCQs):

- Multiple choice questions (MCQs) are a form of assessment for which students are asked to select the best choice from a list of answers.
- MCQ consists of a stem and a set of options. The stem is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the key and the incorrect answers called distractors.
- Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.
- Students mark their responses on specified computer-based sheet designed for the college.
- The block exam will comprise of 120 MCQs and will be compiled according to the shared blueprint.

. **Short Essay Questions (SEQ)**

Short answer questions generally ask for brief, text-based responses and may also be referred to as *fill-in-the-blank*; or *completion* questions.

Variations of the short answer question may request a list of terms or rules in which the order is not important, or may require a numerical or formula response.

Here is some general information about short answer questions:

- Does not measure interpretation.
- Can be used to check for preciseness such as correct spelling (good when using computer grading), proper or specific names of things, especially factual knowledge, and proper creation of formulas.
- Requires specific, definite, exact information.
- Can be used to discriminate whether errors can be detected in a diagram, for example.

1. Advantages of Short Answer Questions

- Easy to write.
- Reduces possibility of guessing.
- Can have a lengthy stem such as a paragraph. (Caution: You generally should not expect an exact answer character-by-character.)
- May be easy to score if the required answer is short.

2. Disadvantages of Short Answer Questions

- It can take time to create items with complex formulas.
- Can be turned into a measure of memorization ability.
- Grading can be subjective.
- Correct responses may appear incorrect due to minor errors such as misspellings, order of words, etc.
- Difficult to machine score. Much work is being conducted in this area, but it is still in early stages of development.

Objective Structured Practical Examination (OSPE)

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which students will have to answer the questions related to the given pictures, models or specimens the provided response sheet.

- Rest station is a station where there is no task given, and in this time student can organize his/her thoughts.
- The Block OSPE will be comprise of 18 examined station and 7 rest stations. The stations will be assigned according to the shred blueprint.

Internal Evaluation:

Internal evaluation is a process of quality review undertaken within an institution for its own ends. 10% marks of internal evaluation will be added to final marks. This 10% will be based on

Distribution of 12 Marks for block F paper	
Marks obtained	**Average of Percentage in Block exam and Pre-Professional exam.**

Distribution of 12 Marks for Block F OSCE/OSPE	
Marks obtained	**Average of percentage in Block OSPE Exam and Block Pre-Prof OSPE**
	Practical copies

Attendance Requirement:

More than 75% attendance is mandatory to sit for the examinations.

Learning resources for students

Anatomy

- Snell Neuroanatomy
- B.D Churasia
- Nelter Atlas
- Langman embryology
- Keithalmore embryology
- Laiq Hassain Basic Histology
- Difore Atlas Histology

Physiology

- Guyton nd Hall physiology
- Ganong physiology
- Human Physiology from cells to system by lauralee sherwood
- BRS Physiology
- Neuroscience by Dale Purves

Biochemistry

- Chatterjee text book of Biochemistry
- Harpers Biochemistry
- Lippincotts Biochemistry
- Satya Narayan biochemistry

Apart from these resource learning, students can consult books available in library or recommended by the specialty experts.