KIMS KARAD
KRISHNA INSTITUTE OF MEDICAL SCIENCES
"DEEMED TO BE UNIVERSITY", KARAD
Department of Anatomy
Curriculum implemented by statutory body (MCI/NMC) for MBBS Programme and Human Anatomy course (Programme Code: - 1101)

Programme name:-I M.B.B.S.

Course Code: - 1101-11

Course name: - Anatomy

i) Goal :-

The broad goal of the teaching of undergraduate students in Anatomy aims at providing comprehensive knowledge of the gross and microscopic structure and development of human body to provide a basis for understanding the clinical correlation of organs or structures involved and the anatomical basis for the disease presentations.

ii) Course Objectives :-

A-Knowledge

At the end of the course the student shall be able to

a) Comprehend the normal disposition, clinically relevant interrelationships, functional and cross sectional anatomy of the various structures in the body.

b) Identify the microscopic structure and correlate elementary ultra-structure of various organs and tissues and correlate the structure with the functions as pre requisites for understanding the altered state in various disease processes.

c) Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functions of the organs and systems. He/ She shall be able to locate the site of gross lesions according to the deficits encountered.

d) Demonstrate knowledge of the basic principles and sequential development of the organs and systems; recognize the critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards. He/ She shall be able to explain the development basis of the major variations and abnormalities.

B – Skills:-

C- Integration:-

From the integrated teaching of other basic sciences, students shall be able to comprehend and regulation and integration of various organs and system in the body and thus interpret the anatomical basis of disease process.

MBBS Course Outcome

At the end of 1st MBBS course in Anatomy, the student should know:

1. They should able to Dissect and identify the organs
2. They should know the relations of different organs.
3. They should understand the clinical correlation of different anatomical structure.
4. The cranial nerve, their course and related applied.
5. They should able to Identify Histology slides, know normal histology for understanding Pathological slides
6. They should know development of organs.
7. Know normal karyotype and related diseases.

At the end of course first year medical student should be able to

1. Explain the movements at joint and movements lost in paralysis of muscles.
2. Orthopaedic conditions related to bones.
3. Basic procedure related to radiological investigation.
4. Clinical correlations of common diseases

Program specific Outcomes Faculty of Medical Sciences -

At the end of undergraduate course (MBBS) of Anatomy, the student should:

a) Identify and locate all the structures of the body and mark. The topography of the living anatomy.

b) Identify the organs and tissues under the microscope.

c) Understand principles of karyotyping and identify the gross congenital anomalies.

d) Understand principles of newer imaging techniques and interpretation of C T scan, Sonogram etc.

e) Understand clinical basis of some common clinical procedures i.e. intramuscular and intravenous injection, lumbar puncture and kidney biopsy etc.

In conclusion, A Medical graduate should be a good Clinician, Communicator, and Leader of healthcare team, a Lifelong learner and a Professional.

1. Be competent to practice preventive, promotive, curative and rehabilitative medicine I respect to the commonly encountered health problems
2. Be able to use his/her clinical skills based on history, physical examination and relevant investigations.
3. Be able to understand rationale for different therapeutic modalities, be familiar with the administration of the "essential drugs" and their common side effects.
4. Develop humane attitude towards the patients in discharging one's professional responsibilities.
5. .Be a lifelong learner and pursue research in any chosen area of medicine.
6. .Know the basic factors which are essential for the implementation of the National Health Programs like: (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.
7. Acquire basic management skills in the area of health care delivery, General and hospital management.
8. Be able to identify community health problems and learn to work to resolve these by, instituting corrective measures.
9. Be able to work as a leading partner in health care teams and acquire proficiency in communication skills
10. 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.

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
Human Anatomy									
Topic: Anatomical terminology		**Number of competencies: (2)**				**Number of procedures for certification: (NIL)**			
AN1.1	Demonstrate normal anatomical position, various planes, relation, comparison, laterality & movement in our	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/skills assessment			
AN1.2	Describe composition of bone and bone marrow	K	KH	Y	Lecture	Written/ Viva voce			
Topic: General features of bones & Joints		**Number of competencies: (6)**				**Number of procedures for certification: (NIL)**			
AN2.1	Describe parts, blood and nerve supply of a long bone	K	KH	Y	Lecture, DOAP session	Written/ Viva voce			
AN2.2	Enumerate laws of ossification	K	KH	N	Lecture	Written			
AN2.3	Enumerate special features of a sesamoid bone	K	KH	N	Lecture	Written			
AN2.4	Describe various types of cartilage with its structure &	K	KH	Y	Lecture	Written/ Viva voce		Orthopedics	
AN2.5	Describe varidistribution in bodyous joints with subtypes and examples	K	KH	Y	Lecture	Written/ Viva voce		Orthopedics	

AN2.6	Explain the concept of nerve	K	KH	Y	Lecture	Written/ Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
Topic: General features of Muscle		**Number of competencies: (3)**				**Number of procedures for certification: (NIL)**			
AN3.1	Classify muscle tissue according to structure & action	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN3.2	Enumerate parts of skeletal muscle and differentiate between tendons and aponeuroses with examples	K	KH	Y	Lecture	Written/ Viva voce			
AN3.3	Explain Shunt and spurt muscles	K	KH	N	Lecture	Written			
Topic: General features of skin and fascia		**Number of competencies: (5)**				**Number of procedures for certification: (NIL)**			
AN4.1	Describe different types of skin & dermatomes in body	K	KH	N	Lecture, DOAP session	Written			

AN4.2	Describe structure & function of skin with its appendages	K	KH	Y	Lecture, DOAP session	Written/ Viva voce		Dermatology, Venereology & Leprosy	
AN4.3	Describe superficial fascia along with fat distribution in body	K	KH	Y	Lecture, DOAP session	Written/ Viva voce			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN4.4	Describe modifications of deep fascia with its functions	K	KH	Y	Lecture, DOAP session	Written/ Viva voce		Dermatology, Venereology & Leprosy	
AN4.5	Explain principles of skin incisions	K	KH	N	Lecture	Written		Dermatology, Venereology & Leprosy	
Topic: General features of the cardiovascular system			**Number of competencies: (8)**				**Number of procedures for certification: (NIL)**		
AN5.1	Differentiate between blood vascular and lymphatic system	K	KH	Y	Lecture	Written/ Viva voce			Physiology

AN5.2	Differentiate between pulmonary and systemic circulation	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN5.3	List general differences between arteries & veins	K	KH	Y	Lecture	Written/ Viva voce			
AN5.4	Explain functional difference between elastic, muscular arteries and arterioles	K	KH	Y	Lecture	Written/ Viva voce			
AN5.5	Describe portal system giving examples	K	KH	Y	Lecture	Written/ Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN5.6	Describe the concept of anastomoses and collateral circulation with significance of end-arteries	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN5.7	Explain function of metaarterioles, precapillary sphincters, arterio-venous anastomoses	K	KH	N	Lecture	Written			Physiology
AN5.8	Define thrombosis, infarction & aneurysm	K	KH	N	Lecture	Written		Pathology	Physiology
Topic: General Features of lymphatic system **Number of competencies: (3)** **Number of procedures for certification: (NIL)**									
AN6.1	List the components and functions of the lymphatic system	K	KH	N	Lecture	Written			
AN6.2	Describe structure of lymph capillaries & mechanism of lymph circulation	K	KH	N	Lecture	Written			

AN6.3	Explain the concept of lymphedema and spread of tumors via lymphatic's and venous system	K	KH	N	Lecture	Written		General Surgery	

Topic: Introduction to the nervous system **Number of competencies: (8)** **Number of procedures for certification: (NIL)**									
AN7.1	Describe general plan of nervous system with components of central, peripheral & autonomic nervous systems	K	KH	Y	Lecture	Written			
AN7.2	List components of nervous tissue and their functions	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN7.3	Describe parts of a neuron and classify them based on number of neuritis, size & function	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN7.4	Describe structure of a typical spinal nerve	K	KH	Y	Lecture	Written/ Viva voce			
AN7.5	Describe principles of sensory and motor innervation of muscles	K	KH	N	Lecture	Written		General Medicine	Physiology

AN7.6	Describe concept of loss of innervation of a muscle with its applied anatomy	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/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN7.7	Describe various type of synapse	K	KH	N	Lecture	Written			Physiology
AN7.8	Describe differences between sympathetic and spinal ganglia	K	KH	N	Lecture	Written			
Topic: Features of individual bones (Upper Limb) Number of competencies: (6) Number of procedures for certification: (NIL)									
AN8.1	Identify the given bone, its side, important features & keep it in anatomical position	K/S	SH	Y	DOAP session	Viva voce/ Practical's/ OSPE			
AN8.2	Identify & describe joints formed by the given bone	K/S	SH	Y	Lecture, DOAP session	Viva voce			
AN8.3	Enumerate peculiarities of clavicle	K	KH	Y	Lecture, DOAP session	Viva voce			

AN8.4	Demonstrate important muscle attachment on the given bone	K/S	SH	Y	Practical DOAP session, Small group teaching	Viva voce Practical’s		Orthopedics	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN8.5	Identify and name various bones in articulated hand, Specify the parts of metacarpals and phalanges and enumerate the peculiarities of pisiform	K/S	SH	Y	Practical,F91 DOAP session, Small group teaching	Viva voce Practical’s			
AN8.6	Describe scaphoid fracture and explain the anatomical basis of avascular necrosis	K	KH	N	DOAP session	Viva voce		Orthopedics	
Topic: Pectoral region		**Number of competencies: (3)**			**Number of procedures for certification: (NIL)**				
AN9.1	Describe attachment, nerve supply & action of pectoralis major and pectoralis minor	K	KH	Y	Lecture, Practical	Written			

AN9.2	Breast: Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast	K	KH	Y	Practical, Lecture	Written/ Viva voce		General Surgery	
AN9.3	Describe development of breast	K	KH	N	Lecture	Written			

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certifyP**	**Vertical Integration**	**Horizontal Integration**
Topic: Axilla, Shoulder and Scapular region Number of competencies: (13)Number of procedures for certification: (NIL)									
AN10.1	Identify & describe boundaries and contents of axilla	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN10.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN10.3	Describe, identify and demonstrate formation, branches, relations, area of supply of branches, course and relations of terminal branches of brachial plexus	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify** **P**	**Vertical Integration**	**Horizontal Integration**
AN10.4	Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage	K	KH	Y	Practical, Lecture	Written/ Viva voce		General Surgery	
AN10.5	Explain variations in formation of brachial plexus	K	KH	Y	Practical, Lecture	Written/ Viva voce			

AN10.6	Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis	K	KH	N	Lecture	Written		General Surgery	
AN10.7	Explain anatomical basis of enlarged axillary lymph nodes	K	KH	N	Lecture	Written		General Surgery	
AN10.8	Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimusdorsi	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN10.9	Describe the arterial anastomosis around the scapula and mention the boundaries of triangle of auscultation	K	KH	N	Lecture	Written			

Topic: Axilla	**Shoulder and Scapular region**	**Topic: Axilla**	**Shoulder and Scapular region**	**Topic: Axilla**	**Shoulder and Scapular region**	**Topic: Axilla**	**Shoulder and Scapular region**	**Topic: Axilla**	**Shoulder and Scapular region**
AN10.10	Describe and identify the deltoid and rotator cuff muscles	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN10.11	Describe & demonstrate attachment of serratus anterior with its action	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN10.12	Describe and demonstrate shoulder joint for– type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		Orthopedics	
AN10.13	Explain anatomical basis of Injury to axillary nerve during intramuscular injections	K	KH	N	Lecture	Viva voce			

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify** **P**	**Vertical Integration**	**Horizontal Integration**
Topic: fossa Arm & Cubital Number of competencies: (6) Number of procedures for certification: (NIL)									

AN11.1	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN11.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN11.3	Describe the anatomical basis of Venipuncture of Cubital veins	K	KH	Y	Practical, Lecture	Written/ Viva voce		General Surgery	
AN11.4	Describe the anatomical basis of Saturday night paralysis	K	KH	Y	Practical, Lecture	Written/ Viva voce		Orthopedics	
AN11.5	Identify & describe boundaries and contents of cubital fossa	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify** **P**	**Vertical Integration**	**Horizontal Integration**

AN11.6	Describe the anastomosis around the elbow joint	K	KH	N	Lecture	Written			
Topic: Forearm & hand		**Number of competencies: (15)**			**Number of procedures for certification: (NIL)**				
AN12.1	Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN12.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of forearm	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN12.3	Identify & describe flexor retinaculum with its attachments	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify** **P**	**Vertical Integration**	**Horizontal Integration**
AN12.4	Explain anatomical basis of carpal tunnel syndrome	K	KH	Y	Lecture	Written/ Viva voce			

AN12.5	Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN12.6	Describe & demonstrate movements of thumb and muscles involved	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN12.7	Identify & describe course and branches of important blood vessels and nerves in hand	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN12.8	Describe anatomical basis of Claw hand	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	
AN12.9	Identify & describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify** **P**	**Vertical Integration**	**Horizontal Integration**

AN12.10	Explain infection of facial spaces of palm	K	KH	N	Lecture	Written		General Surgery	
AN12.11	Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN12.12	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN12.13	Describe the anatomical basis of Wrist drop	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	
AN12.14	Identify & describe compartments deep to extensor retinaculum	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN12.14	Identify & describe compartments deep to extensor retinaculum	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	

AN12.15	Identify & describe extensor expansion formation	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Topic: General Features, Joints, radiographs & surface marking Number of competencies: (8) Number of procedures for certification: (NIL)									
AN13.1	Describe and explain Fascia of upper limb and compartments, veins of upper limb and its lymphatic drainage	K	KH	Y	Lecture	Written/ Viva voce			
AN13.2	Describe dermatomes of upper limb	K	KH	N	Lecture	Written/ Viva voce			
AN13.3	Identify & describe the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply of elbow joint, proximal and distal radioulnar joints, wrist joint & first carpometacarpal joint	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN13.4	Describe Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metatarsophalangeal joint	K	KH	N	Lecture	Written			

AN13.5	Identify the bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand	K/S	SH	Y	Practical, Small group discussion, DOAP session	Viva voce/ assessment	skill		Radio diagnosis	
AN13.6	Identify & demonstrate important bony landmarks of upper limb: Jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, Inferior angle of the scapula	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ assessment	skill			
AN13.7	Identify & demonstrate surface projection of: Cephalic and basilic vein, Palpation of Brachial artery, Radial artery, Testing of muscles: Trapezius, pectoralis major, serrates anterior, latissimusdorsi, deltoid, biceps brachii, Brachioradialis	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ assessment	skill			
AN13.8	Describe development of upper limb	K	KH	N	Lecture	Written				

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
Features of individual bones (Lower Lim		**b) Number of co mpetencies: (4)**			**Number of procedures for certification: (NIL)**				
AN14.1	Identify the given bone, its side, important features & keep it in anatomical position	K/S	SH	Y	DOAP session	Viva voce			
AN14.2	Identify & describe joints formed by the given bone	K/S	SH	Y	Lecture, DOAP session	Viva voce			
AN14.3	Describe the importance of ossification of lower end of femur & upper end of tibia	K	KH	Y	Lecture	Viva voce/ Practical's		Forensic Medicine & Toxicology	
AN14.4	Identify and name various bones in the articulated foot with individual muscle attachment	K/S	SH	N	Practical, DOAP session, Small group teaching	Viva voce/ Practical's			
Topic: Front & Medial side of thigh Nu		**mber of n compete cies: (5) &**			**Number of procedures for certification: (NIL)**				
AN15.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN15.2	Describe and demonstrate major muscles with their attachment, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN15.4	Explain anatomical basis of Psoas abscess & Femoral hernia	K	KH	N	Lecture, DOAP session	Written/ Viva voce		General Surgery	
AN15.5	Describe and demonstrate adductor canal with its content	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Topic: Gluteal region & back of thigh		**Number of competencies: (6)**			**Number of procedures for certification: (NIL)**				
AN16.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN16.2	Describe anatomical basis of sciatic nerve injury during gluteal intramuscular injections	K	KH	Y	Lecture, DOAP session	Written/ Viva voce		General Surgery	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN16.3	Explain the anatomical basis of Trendelenburg sign	K	KH	Y	Lecture, DOAP session	Written/ Viva voce		General Surgery	
AN16.4	Describe and demonstrate the hamstrings group of muscles with their attachment, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN16.5	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN16.6	Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Topic: Hip Joint Number of competencies: (3) Number of procedures for certification: (NIL)									

AN17.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify** **P**	**Vertical Integration**	**Horizontal Integration**
AN17.2	Describe anatomical basis of complications of fracture neck of femur	K	KH	N	Lecture	Written/ Viva voce		Orthopedics	
AN17.3	Describe dislocation of hip joint and surgical hip replacement	K	KH	N	Lecture	Written/ Viva voce		Orthopedics	
Topic: Knee joint, Anterolateral compartment of leg & dorsum of foot Number of competencies: (7) & Number of procedures for certification: (NIL)									
AN18.1	Describe and demonstrate major muscles of anterolateral compartment of leg with their attachment, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN18.2	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior compartment of leg	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN18.3	Explain the anatomical basis of foot drop	K	KH	Y	Lecture, DOAP session	Written/ Viva voce		General Surgery	
AN18.4	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the knee joint	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN18.5	Explain the anatomical basis of locking and unlocking of the knee joint	K	KH	Y	Small group teaching	Written/ Viva voce			
AN18.6	Describe knee joint injuries with its applied anatomy	K	KH	N	Lecture	Written/ Viva voce		Orthopedics	
AN18.7	Explain anatomical basis of Osteoarthritis	K	KH	N	Lecture	Written/ Viva voce		Orthopedics	
Topic: Back of Leg & Sole Number of competencies: (7) Number of procedures for certification: (NIL)									

AN19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN19.3	Explain the concept of “Peripheral heart”	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	
AN19.4	Explain the anatomical basis of rupture of calcaneal tendon	K	KH	N	Lecture	Written/ Viva voce		Orthopedics	
AN19.5	Describe factors maintaining importance arches of the foot with its importance	K	KH	Y	Lecture	Written/ Viva voce			
AN19.6	Explain the anatomical basis of Flat foot & Club foot	K	KH	N	Lecture	Written/ Viva voce		Orthopedics	
AN19.7	Explain the anatomical basis of Metatarsalgia & Plantar fasciitis	K	KH	N	Lecture	Written/ Viva voce		Orthopedics	
Topic: General Features, Joints, radiographs & surface			**Number of competencies: (for certification10)**			**Number of procedures: (NIL)**			

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AN20.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of tibiofibular and ankle joint	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN20.2	Describe the subtalar and transverse tarsal joints	K	KH	N	Lecture, DOAP session	Written/ Viva voce			
AN20.3	Describe and demonstrate Fascia lata, Venous drainage, Lymphatic drainage, Retinacula & Dermatomes of lower limb	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN20.4	Explain anatomical basis of enlarged inguinal lymph nodes	K	KH	N	Lecture	Written/ Viva voce		General Surgery	
AN20.5	Explain anatomical basis of varicose veins and deep vein thrombosis	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	

AN20.6	Identify the bones and joints of lower limb seen in anteroposterior and lateral view radiographs of various regions of lower limb	K/S	SH	Y	Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment		Radio diagnosis	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN20.7	Identify & demonstrate important bony landmarks of lower limb: -Vertebral levels of highest point of iliac crest, posterior superior iliac spines, iliac tubercle, pubic tubercle, ischial tuberosity, adductor tubercle, -Tibial tuberosity, head of fibula, -Medial and lateral malleoli, Condyles of femur and tibia, sustentaculumtali, tuberosity of fifth metatarsal, tuberosity of the navicular	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment			

AN20.8	Identify & demonstrate palpation of femoral, popliteal, post tibial, anti tibial & dorsalispedis blood vessels in a simulated environment	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment		General Medicine	
AN20.9	Identify & demonstrate Palpation of vessels (femoral, popliteal, dorsalispedis, posttibial), Mid inguinal point, Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal& deep peroneal nerve, Great and small saphenous veins	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment		General Medicine, General Surgery	
AN20.10	Describe basic concept of development of lower limb	K	KH	N	Lecture	Viva voce			
Topic: Thoracic cage Number of competencies: (11) Number of procedures for certification: (NIL)									
AN21.1	Identify and describe the salient features of sternum, typical rib, 1st rib and typical thoracic vertebra	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			

AN21.2	Identify & describe the features of 2nd, 11th and 12th ribs, 1st, 11th and 12th thoracic vertebrae	K/S	SH	N	Lecture, DOAP session	Viva voce/ skill assessment			
AN21.3	Describe & demonstrate the boundaries of thoracic inlet, cavity and outlet	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN21.4	Describe & demonstrate extent, attachments, direction of fibers, nerve supply and actions of intercostal muscles	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN21.5	Describe & demonstrate origin, course, relations and branches of a typical intercostal nerve	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN21.6	Mention origin, course and branches/ tributaries of: 1) anterior & posterior intercostal vessels 2) internal thoracic vessels	K	KH	Y	Practical, Lecture	Written/ Viva voce			

AN21.7	Mention the origin, course, relations and branches of 1) atypical intercostal nerve 2) superior intercostal artery, subcostal artery	K	KH	N	Lecture	Written			
AN21.8	Describe & demonstrate type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN21.9	Describe & demonstrate mechanics and types of respiration	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			Physiology

AN21.10	Describe costochondral and interchondral joints	K	KH	N	Lecture	Written			
AN21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	K	KH	Y	Practical, Lecture	Written/ Viva voce			
Topic: Heart & Pericardium Number of competencies: (7) Number of procedures for certification: (NIL)									

AN22.1	Describe & demonstrate subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN22.2	Describe & demonstrate external and internal features of each chamber of heart	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			Physiology
AN22.3	Describe & demonstrate origin, course and branches of coronary arteries	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			Physiology
AN22.4	Describe anatomical basis of ischaemic heart disease	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN22.5	Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN22.6	Describe the fibrous skeleton of heart	K	KH	Y	Lecture	Written			

AN22.7	Mention the parts, position and arterial supply of the conducting system of heart	K	KH	Y	Lecture	Written		General Medicine	Physiology
Topic: Mediastinum Number of competencies: (7) Number of procedures for certification: (NIL)									
AN23.1	Describe & demonstrate the external appearance, relations, blood supply, nerve supply, lymphatic drainage and applied anatomy of esophagus	K/S	SH	Y	Practical, Lecture, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN23.2	Describe & demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy	K/S	SH	Y	Practical, Lecture, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN23.4	Mention the extent, branches and relations of arch of aorta & descending thoracic aorta	K	KH	Y	Practical, Lecture	Written/ Viva voce			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN23.5	Identify & Mention the location and extent of thoracic sympathetic chain	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN23.6	Describe the splanchnic nerves	K	KH	N	Lecture	Written			
AN23.7	Mention the extent, relations and applied anatomy of lymphatic duct	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	
Topic: Lungs & Trachea Number of competencies: (6) Number of procedures for certification: (NIL)									
AN24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	K	KH	Y	Practical, Lecture	Written/ Viva voce		General Medicine	Physiology
AN24.2	Identify side, external features and relations of structures which form root of lung & bronchial tree and their clinical correlate	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	Physiology

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN24.3	Describe a Broncho pulmonary segment	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN24.4	Identify phrenic nerve & describe its formation & distribution	K/S	SH	Y	Lecture, Practical	Written/ Viva voce			
AN24.5	Mention the blood supply, lymphatic drainage and nerve supply of lungs	K	KH	Y	Lecture	Written/ Viva voce			
AN24.6	Describe the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea	K	KH	N	Lecture	Written			
Topic: Thorax Number of competencies: (9) Number of procedures for certification: (01)									
AN25.1	Identify, draw and label a slide of trachea and lung	K/S	SH	Y	Lecture, Practical	Written/ skill assessment	1		
AN25.2	Describe development of pleura, lung & heart	K	KH	Y	Lecture	Written			
AN25.3	Describe fetal circulation and changes occurring at birth	K	KH	Y	Lecture	Written		General Medicine	Physiology

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Physiology
AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductusarteriosus and coarctation of aorta	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Physiology
AN25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus	K	KH	N	Lecture	Written/ Viva voce			
AN25.7	Identify structures seen on a plain x-ray chest (PA view)	K/S	SH	Y	Practical, DOAP session	Written/ Viva voce		Radio diagnosis, General Medicine	
AN25.8	Identify and describe in brief a barium swallow	K/S	SH	N	Practical, DOAP session	Written/ Viva voce		Radio diagnosis, General Medicine	

Number	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductusarteriosus and coarctation of aorta	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Physiology
AN25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus	K	KH	N	Lecture	Written/ Viva voce			
AN25.7	Identify structures seen on a plain x-ray chest (PA view)	K/S	SH	Y	Practical, DOAP session	Written/ Viva voce		Radio diagnosis, General Medicine	
AN25.8	Identify and describe in brief a barium swallow	K/S	SH	N	Practical, DOAP session	Written/ Viva voce		Radio diagnosis, General Medicine	
AN25.9	Demonstrate surface marking of lines of pleural reflection, lung borders and fissures, trachea, heart borders, apex beat & surface projection of valves of heart	K/S	SH	Y	Practical	Viva voce/ skill assessment		General Medicine, Pediatrics	Physiology

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

Topic: Skull osteologyNumber of competencies: (7) Number of procedures for certification: (NIL)									
AN26.1	Demonstrate anatomical position of skull, Identify and locate individual skull bones in skull	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			
AN26.2	Describe the features of normafrontalis, verticals, occipitals, laterals and basalts	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			
AN26.3	Describe cranial cavity, its subdivisions, foramina and structures passing through them	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			
AN26.4	Describe morphological features of mandible	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			
AN26.5	Describe features of typical and atypical cervical vertebrae (atlas and axis)	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			
AN26.6	Explain the concept of bones that ossify in membrane	K	KH	N	Lecture	Viva voce			
AN26.7	Describe the features of the 7th cervical vertebra	K/S	SH	N	DOAP session	Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration

Topic: Scalp Number of competencies: (2) Number of procedures for certification: (NIL)									
AN27.1	Describe the layers of scalp, its blood supply, its nerve supply and surgical importance	K	KH	Y	Practical, Lecture	Written/ Viva voce		General Surgery	
AN27.2	Describe emissary veins with its role in spread of infection from extra cranial route to intracranial venous sinuses	K	KH	Y	Lecture	Written			
Topic: Face & parotid region Number of competencies: (10) Number of procedures for certification: (NIL)									
AN28.1	Describe & demonstrate muscles of facial expression and their nerve supply	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN28.2	Describe sensory innervation of face	K	KH	Y	Practical, Lecture	Written/ Viva voce			
AN28.3	Describe & demonstrate origin /formation, course, branches /tributaries of facial vessels	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN28.4	Describe & demonstrate branches of facial nerve with distribution	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN28.5	Describe cervical lymph nodes and lymphatic drainage of head, face and neck	K	KH	Y	Practical, Lecture	Written/ Viva voce			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN28.6	Identify superficial muscles of face, their nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN28.6	Identify superficial muscles of face, their nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN28.7	Explain the anatomical basis of facial nerve palsy	K	KH	Y	Lecture	Written		General Medicine	
AN28.8	Explain surgical importance of deep facial vein	K	KH	Y	Lecture	Written		General Surgery	
AN28.9	Describe & demonstrate the parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN28.10	Explain the anatomical basis of Frey’s syndrome	K	KH	N	Lecture	Written		General Surgery	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration

Topic: Posterior triangle of neck Number of competencies: (4) Number of procedures for certification: (NIL)									
AN29.1	Describe & demonstrate attachments, nerve supply, relations and actions of sternocleidomastoid	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN29.2	Explain anatomical basis of Erb's & Klumpke's palsy	K	KH	Y	Lecture	Written		General Surgery	
AN29.3	Explain anatomical basis of wry neck	K	KH	N	Lecture	Written		General Surgery	
AN29.4	Describe & demonstrate attachments of 1) inferior belly of omohyoid, 2)scalenus anterior, 3) scalenusmedius& 4) levator scapulae	K/S	SH	N	Lecture, Practical	Written/ Viva voce			
Topic: Cranial cavity Number of competencies: (5) Number of procedures for certification: (NIL)									
AN30.1	Describe the cranial fossae & identify related structures	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN30.2	Describe & identify major foramina with structures passing through them	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN30.3	Describe & identify Dural folds & Dural venous sinuses	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN30.4	Describe clinical importance of Dural venous sinuses	K	KH	Y	Lecture	Written			
AN30.5	Explain effect of pituitary tumors on visual pathway	K	KH	N	Lecture	Written		Ophthalmology	
Topic: Orbit Number of competencies: (5) Number of procedures for certification: (NIL)									
AN31.1	Describe & identify extra ocular muscles of eyeball	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN31.2	Describe & demonstrate nerves and vessels in the orbit	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN31.3	Describe anatomical basis of Horner’s syndrome	K	KH	N	Lecture	Written		Ophthalmology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN31.4	Enumerate components of lacrimal apparatus	K	KH	Y	Lecture	Written			
AN31.5	Explain the anatomical basis of coulometer, trochlear and abducent nerve palsies along with strabismus	K	KH	Y	Lecture	Written		Ophthalmology	
Topic: Anterior Triangle Number of competencies: (2) Number of procedures for certification: (NIL)									
AN32.1	Describe boundaries and subdivisions of anterior triangle	K	KH	Y	Practical, Lecture	Written/ Viva voce			
AN32.2	Describe & demonstrate boundaries and contents of muscular, carotid, digastric and sub mental triangles	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Topic: Temporal and Infra temporal regions Number of competencies: (5) Number of procedures for certification: (NIL)									
AN33.1	Describe & demonstrate extent, boundaries and contents of temporal and infra temporal fossae	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN33.2	Describe & demonstrate attachments, direction of fibers, nerve supply and actions of muscles of mastication	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN33.3	Describe & demonstrate articulating surface, type & movements of temporomandibular joint	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN33.4	Explain the clinical significance of pterygoid venous plexus	K	KH	Y	Lecture	Written		General Surgery	
AN33.5	Describe the features of dislocation of temporomandibular joint	K	KH	N	Lecture	Written		General Surgery	
Topic: Submandibular region Number of competencies: (2) Number of procedures for certification: (NIL)									
AN34.1	Describe & demonstrate the morphology, relations and nerve supply of submandibular salivary gland & submandibular ganglion	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN34.2	Describe the basis of formation of submandibular stones	K	KH	N	Lecture	Written		General Surgery	
Topic: Deep structures in the neck Number of competencies: (10) Number of procedures for certification: (NIL)									
AN35.1	Describe the parts, extent, attachments, modifications of deep cervical fascia	K	KH	Y	Lecture	Written			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN35.3	Demonstrate & describe the origin, parts, course & branches subclavian artery	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN35.4	Describe & demonstrate origin, course, relations, tributaries and termination of internal jugular & brachiocephalic veins	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN35.5	Describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN35.6	Describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN35.7	Describe the course and branches of IX, X, XI & XII nerve in the neck	K	KH	Y	Lecture	Written			
AN35.8	Describe the anatomically relevant clinical features of Thyroid swellings	K	KH	N	Lecture	Written		General Surgery	
AN35.9	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib	K	KH	N	Lecture	Written		General Surgery	
AN35.10	Describe the fascial spaces of neck	K	KH	N	Lecture	Written			
Topic: Mouth, Pharynx & Palate Number of competencies: (5) Number of procedures for certification: (NIL)									
AN36.1	Describe the 1) morphology, relations, blood supply and applied anatomy of palatine tonsil 2) composition of soft palate	K	KH	Y	Lecture	Written		ENT	
AN36.2	Describe the components and functions of Waldeyer's lymphatic ring	K	KH	Y	Lecture	Written		ENT	
AN36.3	Describe the boundaries and clinical significance of pyriform fossa	K	KH	N	Lecture	Written		ENT	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN36.4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess	K	KH	N	Lecture	Written		ENT	
Topic: Cavity of Nose Number of competencies: (3) Number of procedures for certification: (NIL)									
AN37.1	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		ENT	
AN37.2	Describe location and functional anatomy of paranasal sinuses	K	KH	Y	Lecture	Written		ENT	
AN37.3	Describe anatomical basis of sinusitis & maxillary sinus tumours	K	KH	N	Lecture	Written		ENT	
Topic: Larynx Number of competencies: (3) Number of procedures for certification: (NIL)									
AN38.1	Describe the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		ENT	

AN38.2	Describe the anatomical aspects of laryngitis	K	KH	N	Lecture	Written		ENT	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN38.3	Describe anatomical basis of recurrent laryngeal nerve injury	K	KH	N	Lecture	Written		ENT	
Topic: Tongue Number of competencies: (2) Number of procedures for certification: (NIL)									
AN39.1	Describe & demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN39.2	Explain the anatomical basis of hypoglossal nerve palsy	K	KH	N	Lecture	Written		ENT	
Topic: Organs of hearing and equilibrium Number of competencies: (5) Number of procedures for certification: (NIL)									
AN40.1	Describe & identify the parts, blood supply and nerve supply of external ear	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		ENT	
AN40.2	Describe & demonstrate the boundaries, contents, relations	K/S	SH	Y	Practical, Lecture,	Written/ Viva voce/ skill assessment		ENT	

	and functional anatomy of middle ear and auditory tube				Small group discussion, DOAP session				
AN40.3	Describe the features of internal ear	K	KH	N	Lecture	Written		ENT	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN40.4	Explain anatomical basis of otitis externa and otitis media	K	KH	N	Lecture	Written		ENT	
AN40.5	Explain anatomical basis of myringotomy	K	KH	N	Lecture	Written		ENT	
Topic: Eyeball Number of competencies: (3)					**Number of procedures for certification: (NIL)**				
AN41.1	Describe & demonstrate parts and layers of eyeball	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		Ophthalmology	
AN41.2	Describe the anatomical aspects of cataract, glaucoma & central retinal artery occlusion	K	KH	N	Lecture	Written		Ophthalmology	
AN41.3	Describe the position, nerve supply and actions of intraocular muscles	K	KH	N	Lecture	Written		Ophthalmology	
Topic: Back Region Number of competencies: (3)					**Number of procedures for certification: (NIL)**				

AN42.1	Describe the contents of the vertebral canal	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN42.2	Describe & demonstrate the boundaries and contents of Suboccipital triangle	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN42.3	Describe the position, direction of fibers, relations, nerve supply, actions of semispinaliscapitis and splenius capitis	K	KH	N	Lecture	Written			
Topic: Head & neck Joints, Histology, Development, Radiography & Surface marking Number of competencies: (9) Number of procedures for certification: (NIL)									
AN43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN43.2	Identify, describe and draw the microanatomy of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			
AN43.3	Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclerocorneal junction, optic nerve, cochlea- organ of corti.	K/S	SH	N	Lecture, Practical	Written/ skill assessment			
AN43.4	Describe the development and developmental basis of congenital anomalies of face, palate, tongue, bronchial	K	KH	Y	Lecture	Written/ Viva voce			
	apparatus, pituitary gland, thyroid gland & eye								
AN43.5	Demonstrate- 1) Testing of muscles of facial expression, extra ocular muscles, muscles of mastication, 2) Palpation of carotid arteries, facial artery, superficial temporal artery, 3) Location of internal and external jugular veins, 4) Location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels	K/S	SH	Y	Practical	Viva voce/ skill assessment		General Surgery	

AN43.6	Demonstrate surface projection of- Thyroid gland, Parotid gland and duct, Pterion, Common carotid artery, Internal jugular vein, Subclavian vein, External jugular vein, Facial artery in the face & accessory nerve	K/S	SH	N	Practical	Viva voce/ skill assessment		General Surgery	
AN43.7	Identify the anatomical structures in 1) Plain x-ray skull, 2) AP view and lateral view 3) Plain x-ray cervical spine-AP and lateral view 4) Plain x- ray of paranasal sinuses	K/S	SH	Y	Practical	Viva voce/ skill assessment		Radio diagnosis	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN43.8	Describe the anatomical route used for carotid angiogram and vertebral angiogram	K/S	SH	N	Practical	Viva voce/ skill assessment		Radio diagnosis	
AN43.9	Identify anatomical structures in carotid angiogram and vertebral angiogram	K/S	SH	N	Practical	Viva voce/ skill assessment		Radio diagnosis	
Topic: Anterior abdominal wall Number of competencies: (7) Number of procedures for certification: (NIL)									

AN44.1	Describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, lineasemilunaris), regions & Quadrants of abdomen	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN44.2	Describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN44.3	Describe the formation of rectus sheath and its contents	K	KH	Y	Lecture	Written/ Viva voce			
AN44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle.	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN44.3	Describe the formation of rectus sheath and its contents	K	KH	Y	Lecture	Written/ Viva voce			
AN44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle.	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	

AN44.5	Explain the anatomical basis of inguinal hernia.	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	
AN44.6	Describe & demonstrate attachments of muscles of anterior abdominal wall	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN44.7	Enumerate common Abdominal incisions	K	KH	N	Lecture	Written		General Surgery	
Topic: Posterior abdominal wall Number of competencies: (3) Number of procedures for certification: (NIL)									
AN45.1	Describe Thoracolumbar fascia	K	KH	Y	Lecture	Written			
AN45.2	Describe & demonstrate Lumbar plexus for its root value, formation & branches	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN45.3	Mention the major subgroups of back muscles, nerve supply and action	K	KH	N	Lecture	Written			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
Topic: Male external genitalia Number of competencies: (5) Number of procedures for certification: (NIL)									

AN46.1	Describe & demonstrate coverings, internal structure, side determination, blood supply, nerve supply, lymphatic drainage & descent of testis with its applied anatomy	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN46.2	Describe parts of Epididymis	K	KH	Y	Lecture, Practical	Written/ Viva voce			
AN46.3	Describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)	K	KH	Y	Lecture, Practical	Written/ Viva voce			
AN46.4	Explain the anatomical basis of Varicocoele	K	KH	N	Lecture	Written		General Surgery	
AN46.5	Explain the anatomical basis of Phimosis & Circumcision	K	KH	N	Lecture	Written		General Surgery	
AN47.1	Describe & identify boundaries and recesses of Lesser & Greater sac	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN47.2	Name & identify various peritoneal folds & pouches with its explanation	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

Topic: Abdominal cavity Number of competencies: (14) Number of procedures for certification: (NIL)									
AN47.3	Explain anatomical basis of Ascites & Peritonitis	K	KH	N	Lecture	Written		General Surgery	
AN47.4	Explain anatomical basis of Subphrenic abscess	K	KH	N	Lecture	Written		General Surgery	
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN47.6	Explain the anatomical basis of Splenic notch, Accessory spleens, Kehr's sign, Different types of vagotomy, Liver biopsy (site of needle puncture), Referred pain in cholecystitis, Obstructive jaundice, Referred pain around umbilicus, Radiating pain of kidney to groin & Lymphatic spread in carcinoma stomach	K	KH	N	Lecture	Written		General Surgery	

Number	COMPETENCY The student should be able	Domain K/S/A/C	Level K/KH/	Core (Y/N)	Teaching-Learning	Assessment Methods	Number required to certify	Vertical Integration	Horizontal Integration

	to		SH/P		Methods		P		
AN47.7	Mention the clinical importance of Calot's triangle	K	KH	N	Lecture	Written		General Surgery	
AN47.8	Describe & identify the formation, course relations and tributaries of Portal vein, Inferior vena cava & Renal vein	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN47.9	Describe & identify the origin, course, important relations and branches of Abdominal aorta, Coeliac trunk, Superior mesenteric, Inferior mesenteric & Common iliac artery	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN47.10	Enumerate the sites of Porto systemic anastomosis	K	KH	Y	Lecture	Written		General Surgery	
AN47.11	Explain the anatomic basis of hematemesis& caput medusa in portal hypertension	K	KH	Y	Lecture,	Written/ Viva voce		General Surgery	
AN47.12	Describe important nerve plexuses of posterior abdominal wall	K	KH	N	Lecture	Written			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration

AN47.13	Describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN47.14	Describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia	K	KH	N	Lecture	Written		General Surgery	
Topic: Pelvic wall and viscera Number of competencies: (8) Number of procedures for certification: (NIL)									
AN48.1	Describe & identify the muscles of Pelvic diaphragm	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN48.2	Describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of) important male & female pelvic viscera	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN48.3	Describe & demonstrate the origin, course, important relations and branches of internal iliac artery	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN48.4	Describe the branches of sacral plexus	K	KH	Y	Lecture	Written			
AN48.5	Explain the anatomical basis of suprapubic cystectomy, Urinary obstruction in benign prostatic hypertrophy, Retroverted uterus, Prolapse uterus,	K	KH	N	Lecture	Written		General Surgery	
AN48.6	Describe the neurological basis of Automatic bladder	K	KH	N	Lecture	Written		General Surgery	
AN48.7	Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	K	KH	N	Lecture	Written		General Surgery	
AN48.8	Mention the structures palpable during vaginal & rectal examination	K	KH	N	Lecture	Written		Obstetrics &Gynecology General Surgery	
AN48.7	Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	K	KH	N	Lecture	Written		General Surgery	
AN48.8	Mention the structures palpable during vaginal & rectal examination	K	KH	N	Lecture	Written		Obstetrics &Gynecology General Surgery	
Topic: Perineum Number of competencies: (5) Number of procedures for certification: (NIL)									
AN49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		Obstetrics & Gynecology	

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN49.2	Describe & identify Perineal body	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		Obstetrics & Gynecology	
AN49.3	Describe & demonstrate Perineal membrane in male & female	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN49.4	Describe & demonstrate boundaries, content & applied anatomy of Ischiorectal fossa	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Surgery	
AN49.5	Explain the anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure	K	KH	N	Lecture	Written		Obstetrics & Gynecology	
Topic: Vertebral column Number of competencies: (4) Number of procedures for certification: (NIL)									
AN50.1	Describe the curvatures of the vertebral column	K	KH	Y	Lecture	Written/ Viva voce			
AN50.2	Describe & demonstrate the type, articular ends, ligaments and movements of Intervertebral joints, Sacroiliac joints & Pubic symphysis	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
AN50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	
AN50.4	Explain the anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida	K	KH	N	Lecture	Written		Orthopedics	
Topic: Sectional Anatomy Number of competencies: (2) Number of procedures for certification: (NIL)									
AN51.1	Describe & identify the crosssection at the level of T8, T10 and L1 (trans pyloric plane)	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		Radio diagnosis	
AN51.2	Describe & identify the midsagittal section of male and female pelvis	K	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		Radio diagnosis	
AN52.1	Describe & identify the micro anatomical features of Gastrointestinal system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum,	K/S	SH	**Y**	Lecture, Practical	Written/ skill assessment			

	Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland								
AN52.2	Describe & identify the micro anatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis, as deferens, Prostate & penis Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			
AN52.3	Describe & identify the micro anatomical features of Cardio esophageal junction, Corpus luteum	K/S	SH	N	Lecture, Practical	Written/ skill assessment			
AN52.4	Describe the development of anterior abdominal wall	K	KH	N	Lecture	Written/ Viva voce			
AN52.5	Describe the development and congenital anomalies of Diaphragm	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN52.6	Describe the development and congenital anomalies of: Foregut, Midgut & Hindgut	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	
AN52.7	Describe the development of Urinary system	K	KH	Y	Lecture	Written/ Viva voce		General Surgery	
AN52.8	Describe the development of male & female reproductive system	K	KH	Y	Lecture	Written/ Viva voce		Obstetrics & Gynecology	
Topic: Osteology Number of competencies: (4) Number of procedures for certification: (NIL)									
AN53.1	Identify & hold the bone in the anatomical position, Describe the salient features, articulations & demonstrate the attachments of muscle groups	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment		General Surgery, Obstetrics & Gynecology	
AN53.2	Demonstrate the anatomical position of bony pelvis & show boundaries of pelvic inlet, pelvic cavity, pelvic outlet	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment		Obstetrics & Gynecology	
AN53.3	Define true pelvis and false pelvis and demonstrate sex determination in male & female bony pelvis	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment		Obstetrics & Gynecology	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN53.4	Explain and demonstrate clinical importance of bones of abdominopelvic region (sacralization of lumbar vertebra, Lumbarization of 1st sacral vertebra, types of bony pelvis & Coccyx)	K/S	SH	N	Lecture, DOAP session	Viva voce/ skill assessment			
Topic: Radio diagnosis Number of competencies: (3) Number of procedures for certification: (NIL)									
AN54.1	Describe & identify features of plain X ray abdomen	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment		Radio diagnosis	
AN54.2	Describe & identify the special radiographs of abdominopelvic region (contrast X ray Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography & Hysterosalpingography)	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment		Radio diagnosis	
AN54.3	Describe role of ERCP, CT abdomen, MRI, Arteriography in radio diagnosis of abdomen	K	KH	N	Lecture	Viva voce		Radio diagnosis	

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
Topic: Surface marking Number of competencies: (2) Number of procedures for certification: (NIL)									

AN55.1	Demonstrate the surface marking of; Regions and planes of abdomen, Superficial inguinal ring, Deep inguinal ring , Mc Burney's point, Renal Angle & Murphy's point	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment		General Surgery	
AN55.2	Demonstrate the surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys & Root of mesentery	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment		General Surgery	
Topic: Meninges & CSF Number of competencies: (2) Number of procedures for certification: (NIL)									
AN56.1	Describe & identify various layers of meninges with its extent & modifications	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	
AN56.2	Describe circulation of CSF with its applied anatomy	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN57.1	Identify external features of spinal cord	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN57.2	Describe extent of spinal cord in child & adult with its clinical implication	K	KH	Y	Lecture	Written/ Viva voce			
AN57.3	Draw & label transverse section of spinal cord at mid-cervical & mid- thoracic level	K	KH	Y	Lecture	Written/ Viva voce			
AN57.4	Enumerate ascending & descending tracts at mid thoracic level of spinal cord	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN57.5	Describe anatomical basis of syringomyelia	K	KH	N	Lecture	Written		General Medicine	Physiology
Topic: Medulla Oblongata Number of competencies: (4) Number of procedures for certification: (NIL)									
AN58.1	Identify external features of medulla oblongata	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/ skill assessment			
AN58.2	Describe transverse section of medulla oblongata at the level of 1) pyramidal decussation, 2) sensory decussation 3) ION	K	KH	Y	Lecture	Written/ Viva voce			
AN58.3	Enumerate cranial nerve nuclei in medulla oblongata with their functional group	K	KH	Y	Lecture	Written/ Viva voce			Physiology

Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/**	**Core (Y/N)**	**Teaching-Learning**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

			SH/P		Methods				
AN58.4	Describe anatomical basis & effects of medial & lateral medullary syndrome	K	KH	N	Lecture	Written		General Medicine	Physiology
Topic: Pons Number of competencies: (3) Number of procedures for certification: (NIL)									
AN59.1	Identify external features of pons	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/ skill assessment			Physiology
AN59.2	Draw & label transverse section of pons at the upper and lower level	K	KH	Y	Lecture	Written/ Viva voce			
AN59.3	Enumerate cranial nerve nuclei in pons with their functional group	K	KH	Y	Lecture	Written/ Viva voce			
Topic: Cerebellum Number of competencies: (3) Number of procedures for certification: (NIL)									
AN60.1	Describe & demonstrate external & internal features of cerebellum	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN60.2	Describe connections of cerebellar cortex and intracerebellar nuclei	K	KH	Y	Lecture	Written/ Viva voce			
AN60.3	Describe anatomical basis of cerebellar dysfunction	K	KH	N	Lecture	Written		General Medicine	Physiology

Topic: Midbrain Number of competencies: (3) Number of procedures for certification: (NIL)									
AN61.1	Identify external & internal features of midbrain	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN61.2	Describe internal features of midbrain at the level of superior & inferior colliculus	K	KH	Y	Lecture	Written/ Viva voce			
AN61.3	Describe anatomical basis & effects of Benedict's and Weber's syndrome	K	KH	N	Lecture	Written		General Medicine	Physiology
Topic: Cranial nerve nuclei & Cerebral hemispheres Number of competencies: (6) Number of procedures for certification: (NIL)									
AN62.1	Enumerate cranial nerve nuclei with its functional component	K	KH	Y	Lecture	Written/ Viva voce			
AN62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	Physiology
AN62.3	Describe the white matter of cerebrum	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN62.4	Enumerate parts & major connections of basal ganglia & limbic lobe	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN62.5	Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus,	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology

	hypothalamus, epithalamus, metathalamus and subthalamus								
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	Physiology
Topic: Ventricular System Number of competencies: (2) Number of procedures for certification: (NIL)									
AN63.1	Describe & demonstrate parts, boundaries & features of 3rd 4th & lateral ventricle	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			Physiology
AN63.2	Describe anatomical basis of congenital hydrocephalus	K	KH	N	Lecture	Written		Pediatrics	Physiology
Topic: Histology & Embryology Number of competencies: (3) Number of procedures for certification: (NIL)									
AN64.1	Describe & identify the micro anatomical features of Spinal cord, Cerebellum & Cerebrum	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			

AN64.2	Describe the development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum	K	KH	Y	Lecture	Written/ Viva voce			

AN64.3	Describe various types of open neural tube defects with its embryological basis	K	KH	N	Lecture	Written/ Viva voce		Obstetrics & Gynecology, Pediatrics	
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
Topic: Epithelium histology Number of competencies: (2) Number of competencies for certification: (01)									
AN65.1	Identify epithelium under the microscope & describe the various types that correlate to its function	K/S	P	Y	Lecture, Practical	Written/ skill assessment	1		
AN65.2	Describe the ultrastructure of epithelium	K	KH	N	Lecture, Practical	Written			
Topic: Connective tissue histology Number of competencies: (2) Number of procedures for certification: (NIL)									
AN66.1	Describe & identify various types of connective tissue with functional correlation	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			Physiology
AN66.2	Describe the ultrastructure of connective tissue	K	KH	N	Lecture, Practical	Written		Pathology	

Topic: Muscle histology Number of competencies: (3) Number of procedures for certification: (NIL)									
AN67.1	Describe & identify various types of muscle under the microscope	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			
AN67.2	Classify muscle and describe the structure-function correlation of the Same	K	KH	Y	Lecture, Practical	Written			Physiology
AN67.3	Describe the ultrastructure of muscular tissue	K	KH	N	Lecture, Practical	Written			
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
Topic: Nervous tissue histology Number of competencies: (3) Number of procedures for certification: (NIL)									
AN68.1	Describe & Identify multipolar & unipolar neuron, ganglia, peripheral nerve	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			
AN68.2	Describe the structure-function correlation of neuron	K	KH	Y	Lecture, Practical	Written			Physiology
AN68.3	Describe the ultrastructure of nervous tissue	K	KH	N	Lecture, Practical	Written			
Topic: Blood Vessels Number of competencies: (3) Number of procedures for certification: (NIL)									

AN69.1	Identify elastic & muscular blood vessels, capillaries under the microscope	K/S	SH	Y	Lecture, Practical	Skill assessment			
AN69.2	Describe the various types and structure-function correlation of blood vessel	K	KH	Y	Lecture, Practical	Written			Physiology
AN69.3	Describe the ultrastructure of blood vessels	K	KH	Y	Lecture, Practical	Written			
Topic: Glands & Lymphoid tissue Number of competencies: (2) Number of procedures for certification: (NIL)									

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	
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
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	
Topic: Bone & Cartilage Number of competencies: (2) Number of procedures for certification: (NIL)									

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	K/S	SH	Y	Lecture, Practical	Written/ skill assessment		Pathology	
Topic: Integumentary System Number of competencies: (1) Number of procedures for certification: (NIL)									
AN72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			

Topic: Chromosomes Number of competencies: (3) Number of procedures for certification: (NIL)									
AN73.1	Describe the structure of chromosomes with classification	K	KH	Y	Lecture	Written			
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN73.2	Describe technique of karyotyping with its applications	K	KH	Y	Lecture	Written			
AN73.3	Describe the Lyon's hypothesis	K	KH	Y	Lecture	Written			

Topic: Patterns of Inheritance Number of competencies: (4) Number of procedures for certification: (NIL)									
AN74.1	Describe the various modes of inheritance with examples	K	KH	Y	Lecture	Written		General Medicine, Pediatrics	
AN74.2	Draw pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance	K	KH	Y	Lecture	Written		General Medicine, Pediatrics	
AN74.3	Describe multifactorial inheritance with examples	K	KH	Y	Lecture	Written		General Medicine	
AN74.4	Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Hemophilia, Duchene's muscular dystrophy & Sickle cell anemia	K	KH	N	Lecture	Written		General Medicine, Pediatrics	
Topic: Principle of Genetics, Chromosomal Aberrations & Clinical Genetics Number of competencies: (5) Number of procedures for certification: (NIL)									
AN75.1	Describe the structural and numerical chromosomal aberrations	K	KH	Y	Lecture	Written		Pediatrics	
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**

AN75.2	Explain the terms mosaics and chimeras with example	K	KH	N	Lecture	Written		Pediatrics	
AN75.3	Describe the genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome	K	KH	N	Lecture	Written		Pediatrics	
AN75.4	Describe genetic basis of variation: polymorphism and mutation	K	KH	Y	Lecture	Written		Pediatrics	
AN75.5	Describe the principles of genetic counseling	K	KH	Y	Lecture	Written		Pediatrics, Obstetrics & Gynecology	
Topic: Introduction to embryology Number of competencies: (2) Number of procedures for certification: (NIL)									
AN76.1	Describe the stages of human life	K	KH	Y	Lecture	Written			
AN76.2	Explain the terms- phylogeny, ontogeny, trimester, viability	K	KH	Y	Lecture	written			
Topic: Gametogenesis and fertilization Number of competencies: (6) Number of procedures for certification: (NIL)									
AN77.1	Describe the uterine changes occurring during the menstrual cycle	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
AN77.2	Describe the synchrony between the ovarian and menstrual cycles	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
Number	**COMPETENCY**	**Domain**	**Level**	**Core (Y/N)**	**Teaching-**	**Assessment Methods**	**Number required**	**Vertical**	**Horizontal**

	The student should be able to	K/S/A/C	K/KH/ SH/P		Learning Methods		to certify P	Integration	Integration
AN77.3	Describe spermatogenesis and oogenesis along with diagrams	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
AN77.4	Describe the stages and consequences of fertilization	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
AN77.5	Enumerate and describe the anatomical principles underlying contraception	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
AN77.6	Describe teratogenic influences; fertility and sterility, surrogate motherhood, social significance of “sex-ratio”.	K	KH	N	Lecture	Written		Obstetrics & Gynaecology	
Topic: Second week of development Number of competencies: (5) Number of procedures for certification: (NIL)									
AN78.1	Describe cleavage and formation of blastocyst	K	KH	Y	Lecture	Written			
AN78.2	Describe the development of trophoblastic	K	KH	Y	Lecture	Written			
AN78.3	Describe the process of implantation & common abnormal sites of implantation	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
AN78.4	Describe the formation of extraembryonic mesoderm and coelom, bilaminar disc and precordial plate	K	KH	Y	Lecture	Written			

AN78.5	Describe in brief abortion; decidual reaction, pregnancy test	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
Topic: 3rd to 8th week of development Number of competencies: (6) Number of procedures for certification: (NIL)									
AN79.1	Describe the formation & fate of the primitive streak	K	KH	Y	Lecture	Written			
AN79.2	Describe formation & fate of notochord	K	KH	Y	Lecture	Written			
AN79.3	Describe the process of neurulation	K	KH	Y	Lecture	Written			
AN79.4	Describe the development of somite’s and intra-embryonic coelom	K	KH	Y	Lecture	Written		Obstetrics & Gynaecology	
AN79.5	Explain embryological basis of congenital malformations, nucleus pulpous, sacroco cygealteratomas, neural tube defects	K	KH	N	Lecture	Written		Obstetrics & Gynaecology	
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alphafetoprotein	K	KH	N	Lecture	Written		Obstetrics & Gynaecology	
Topic: Fetal membranes Number of competencies: (7) Number of procedures for certification: (NIL)									

AN80.1	Describe formation, functions & fate of-chorion: amnion; yolk sac; allantois & decidua	K	KH	Y	Lecture	Written			

AN80.2	Describe formation & structure of umbilical cord	K	KH	Y	Lecture	Written			
Number	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Teaching-Learning Methods**	**Assessment Methods**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN80.3	Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier	K	KH	Y	Lecture	Written		Obstetrics &Gynaecology	
AN80.4	Describe embryological basis of twinning in monozygotic & dizygotic twins	K	KH	Y	Lecture	Written		Obstetrics &Gynaecology	
AN80.5	Describe role of placental hormones in uterine growth & parturition	K	KH	Y	Lecture	Written		Obstetrics &Gynaecology	
AN80.6	Explain embryological basis of estimation of fetal age.	K	KH	N	Lecture	Written		Obstetrics &Gynaecology	
AN80.7	Describe various types of umbilical cord attachments	K	KH	N	Lecture	Written		Obstetrics &Gynaecology	
Topic: Prenatal Diagnosis Number of competencies: (3) Number of procedures for certification: (NIL)									
AN81.1	Describe various methods of prenatal diagnosis	K	KH	Y	Lecture	Written		Obstetrics &Gynaecology	
AN81.2	Describe indications, process	K	KH	Y	Lecture	Written		Obstetrics	

	and disadvantages of amniocentesis							&Gynaecology	
AN81.3	Describe indications, process and disadvantages of chorion villus biopsy	K	KH	Y	Lecture	Written		Obstetrics &Gynaecology	
Topic: Ethics in Anatomy Number of competencies: (1) Number of procedures for certification: (NIL)									
AN 82.1	Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue	S	SH	Y	Group Activity	NIL		AETCOM	
	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, and Perform. **Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation**								

Books recommended:

1) Textbooks of Anatomy

No	Name of Books	Author
1	Textbook of Anatomy –Vol. I, II, III	Vishram Singh
2	General Anatomy	Vishram Singh /B.D.Chaurasia
3	Human Anatomy Vol. I, II, III	B.D.Chaurasia
4	A Text book of Anatomy Vol. I, II, III	Inderbir Singh
5	Cunningham's Manual of Practical Anatomy, Vol. I,II,II	G.J. Romances
6	Human Embryology for Medical students	Vishram Singh /Inderbir Singh
7	A Text book of Neuro Anatomy	Vishram Singh /Inderbir Singh
8	Textbook of Histology	GP Pal
9	Human Histology	Inderbir Singh
10	Essentials of human Genetics	GP Pal /Gangane
2) Reference Books		
1	Gary's Anatomy	Warwics
2	Essentials of human Anatomy Vol. I, II, III	A.K.Datta
3	Ile Lee Magreor	D.J. Duplessis
4	A Synopsis of Surgical Anatomy	Lee Magregor
5	Grants method of Anatomy	John V. Basmajin
6	Anatomy – Regional & Applied	Dr.R.J.Last

7	Clinical Anatomy for Medical students	Richard S. Snell
8	An Approach to Anatomy Vol.I, II, III, IV	Kadasane D.K.
9	Clinical Embryology	Vishram Singh

KRISHNA INSTITUTE OF MEDICAL SCIENCES "DEEMED TO BE UNIVERSITY" ,KARAD **DEPARTMENT OF ANATOMY**

1st MBBS Format of Examination Pattern

Internal Assessment ... I , II, Preliminary , University.

THEORY

Section - A

Q 1. MCQ ..... 1 * 20 = 20 Marks

4MCQs - Clinical Anatomy

Section - B

Q 2.SAQ. Any FOUR out of FIVE .....4 x 5 = 20 Marks

2 – Clinical Application Based

1 – AETCOM Module Based (Any one exam **I , II Preliminary not in University**)

Q 3 .LAQ - Write TWO out of THREE - ....2 x 10=20 Marks

Section – C

Q 4.SAQ - Any FOUR out of FIVE ..... 4 x 5 = 20 Marks

2 – Clinical Application Based

Q 5 .LAQ -Write TWO out of THREE - 2 x 10=20 Marks

KRISHNA INSTITUTE OF MEDICAL SCIENCES "DEEMED TO BE UNIVERSITY" ,KARAD

DEPARTMENT OF ANATOMY

1st MBBS Format of Practical Examination Pattern

Internal Assessment Examinations I & II

Anatomy Practical										
Seat No.	Soft Part	Micro Anatomy (5 Spots)	Micro Anatomy slide for Discussion (1 slide)	Hard Part (Bones)	Embryology Models	Clinical Anatomy Including Genetics charts (2 spots)	Journal/ Logbook	Radiology	Living Anatomy	Practical Total
	A	B	C	D	E	F	G	H	I	J
Max. Marks	10	05	05	05	05	05	05	05	05	50

KRISHNA INSTITUTE OF MEDICAL SCIENCES "DEEMED TO BE UNIVERSITY" ,KARAD

DEPARTMENT OF ANATOMY

1st MBBS Format of Practical Examination Pattern

(Preliminary Examination)

Anatomy												
Practical headings												Total
Seat No.	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)	Journal /logbook		Appendicular Skeleton	X - ray	Surface Living Anatomy		PR/Oral Total
	A	B	C	D	E	F	G		I	J	K		M
Max. Marks	25	10	05	10	10	10	10		10	05	05		100

KRISHNA INSTITUTE OF MEDICAL SCIENCES "DEEMED TO BE UNIVERSITY" ,KARAD

DEPARTMENT OF ANATOMY

1st MBBS Format of Practical Examination Pattern

(University Examination)

Anatomy											
Practical											Total
Seat No.	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)		Appendicular Skeleton	Radiology	Surface Living Anatomy		Total
	A	B	C	D	E	F		H	I	J		L
Max. Marks	30	10	10	10	10	10		10	05	05		100

Ist M.B.B.S.

Calculation of marks in Internal Assessment Examination system

DEPARTMENT OF ANATOMY

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula	Eligibility to appear for final University examination (after conversion out of 40)	Minimum marks to be obtained to declare the final University examination result (out of 80 combined in theory and practical)
Theory	100	100	200	400	10 : 1 = 40	16/40	40/80
Practical	50	50	100	200	5:1 = 40	16/40	

Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.01. To 15.49	15
15.50 to 15.99	16

KRISHNA INSTITUTE OF MEDICAL SCIENCES

"DEEMED TO BE UNIVERSITY",KARAD

Department of Anatomy

	Year	Course Name	Syllabus prior revision	Syllabus post revision	Annexure Extract of BOS minutes
Change in BOS Anatomy	2021-22	M.B.B.S. Anatomy	MCI Advocated CBME Programme was Implemented	Theory – Topics such as Gross anatomy of stomach Duodenum Pancreas Kidney Prostate Uterus should be taken as Lecture Clinical Approach For Students- 1.In Radiology Department 2. How To Give Injection Can Be Taught IM or IV. 3.Sonography 4.Tracheostomy – To ENT Department 5. Angiography 6. Clinical Oriented Lecture	A meeting of members of B.O.S. was held in Dept. of Anatomy, On21– 2 – 2022at 11.00 am. Under the Chairmanship of Dr M A Doshi Prof. & Head,Anatomy K.I.M.S. DTBU, KARAD

Changes – In CBME , Gross anatomy of abdominal organ is not included in the form of lecture,to understand the clinical implication

it is to be understand first. So we added that. Also as a part of horizontal integration student are send to clinical

Department as , Radiology, ENT, Cardiology .

KIMS KARAD

KRISHNA INSTITUTE OF MEDICAL SCIENCES"DEEMED TO BE UNIVERSITY", KARAD

Department of Physiology

Curriculum implemented by statutory body (MCI/NMC) for MBBS Programme and Physiology course

Programme Name:-M.B.B.S. **Course**

Name: - Physiology

Code Number: -

1101 Course Code: -

1101-12

I) GOAL

The broad goal of the teaching of undergraduate students in physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and diseases.

II) EDUCATIONAL OBJECTIVES:

1) At the end of the course, the student will be able to: describe the normal functions of all the organ Systems, their regulatory mechanisms and interactions of the various systems for well-coordinated total body function.
2) Understand the relative contribution of each organ system in the maintenance of the milieu interior (Homeostasis).
3) Explain the physiological aspects of normal growth and development.
   Analyse the physiological responses and adaptation to environmental stresses.
4) Comprehend the physiological principles underlying pathogenesis and treatment of disease.
5) Correlate knowledge of physiology of human reproductive system in relation to National Family Welfare Program.

II) SKILL :

At the end of the course the student shall be able to:

1) Conduct experiments designed for study of physiological phenomena.
2) Interpret experimental/investigative data.
3) Distinguish between normal & abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

MBBS Course Outcome

At the end of 1st MBBS course in Physiology, the student should know:

1. Physical and chemical factors that are responsible for the origin, development and progression of life.

2. Basic principles of homeostatic control of human body as a whole.

3. Physiological mechanisms underlying disease status.

4. Basic principles of scientific research.

5. Mechanisms of working and regulation of various body systems like central nervous system, Cardiovascular system, respiratory system, musculoskeletal system, reproductive system etc.

At the end of course first year medical student should be able to

1. Perform clinical examinations of various human systems like central nervous system, cardiovascular System, respiratory system etc. on healthy subjects.
2. Collect blood sample and perform various blood investigations like total red blood cell count, total white Blood cell count, haemoglobin percentage etc.

Program specific Outcomes Faculty of Medical Sciences

At the end of undergraduate course (MBBS), the student should:

1. Be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the commonly encountered health problems

2. Be able to use his/her clinical skills based on history, physical examination and relevant investigations.

3. Be able to understand rationale for different therapeutic modalities, be familiar with the administration of the "essential drugs" and their common side effects.

4. Develop humane attitude towards the patients in discharging one's professional responsibilities.

5. Be a lifelong learner and pursue research in any chosen area of medicine.

6 .Know the basic factors which are essential for the implementation of the National Health Programs like: (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.

7. Acquire basic management skills in the area of health care delivery, General and hospital management.

8. Be able to identify community health problems and learn to work to resolve these by, instituting corrective measures.

9. Be able to work as a leading partner in health care teams and acquire proficiency in communication skills

10. 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.

In conclusion, A Medical graduate should be a good Clinician, Communicator and Leader of healthcare team, a Lifelong learner and a Professional.

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integratio n
PHYSIOLOGY									
Topic: General Physiology		**Number of competencies: (09)**						**Number of procedures that require certification : (NIL)**	
PY1.1	Describe the structure and functions of a mammalian cell	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY1.2	Describe and discuss the principles of homeostasis	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY1.3	Describe intercellular communication	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY1.4	Describe apoptosis – programmed cell death	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Pathology	
PY1.5	Describe and discuss transport mechanisms across cell membranes	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY1.6	Describe the fluid compartments of the body, its ionic composition & measurements	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY1.7	Describe the concept of pH & Buffer systems in the body	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY1.8	Describe and discuss the molecular basis of resting membrane potential and action potential in excitable tissue	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/ SH/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integratio n
PY1.9	Demonstrate the ability to describe and discuss the methods used to demonstrate the functions of the cells and its products, its communications and their applications in Clinical care and research.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
Topic: Hematology Number of competencies: (13) Number of procedures that require certification: (NIL)									
PY2.1	Describe the composition and functions of blood components	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY2.2	Discuss the origin, forms, variations and functions of plasma proteins	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY2.3	Describe and discuss the synthesis and functions of Hemoglobin and explain its breakdown. Describe variants of hemoglobin	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY2.4	Describe RBC formation (erythropoiesis & its regulation) and its functions	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/SH/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P	Vertical Integration	Horizontal Integration
PY2.5	Describe different types of anemia's & Jaundice	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Pathology	Biochemistry
PY2.6	Describe WBC formation (granulopoiesis) and its regulation	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY2.7	Describe the formation of platelets, functions and variations.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
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	
PY2.10	Define and classify different types of immunity. Describe the development of immunity and its regulation	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY2.11	Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups, BT/CT	S	SH	Y	DOAP sessions	Practical/OSPE/Viva voce		Pathology	
PY2.12	Describe test for ESR, Osmotic fragility, Hematocrit. Note the findings and interpret the	K	KH	Y	Demonstration	Written /Viva voce		Pathology	

	test results etc.								
PY2.13	Describe steps for reticulocyte and platelet count	K	KH	Y	Demonstration sessions	Written /Viva voce		Pathology	
Topic: Nerve and Muscle Physiology Number of competencies:(18) Number of procedures that require certification:(NIL)									
PY3.1	Describe the structure and functions of a neuron and neuroglia; Discuss Nerve Growth Factor & other growth factors/cytokines	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY3.2	Describe the types, functions & properties of nerve fibers	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY3.3	Describe the degeneration and regeneration in peripheral nerves	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	
PY3.4	Describe the structure of neuro-muscular junction and transmission of impulses	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Anesthesiology	
PY3.5	Discuss the action of neuro-muscular blocking agents	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Anesthesiology, Pharmacology	
PY3.6	Describe the Pathophysiology of Myasthenia gravis	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Pathology	
PY3.7	Describe the different types of muscle fibers and their structure	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**

PY3.8	Describe action potential and its properties in different muscle types (skeletal & smooth)	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY3.9	Describe the molecular basis of muscle contraction in skeletal and in smooth muscles	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY3.10	Describe the mode of muscle contraction (isometric and isotonic)	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY3.11	Explain energy source and muscle metabolism	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY3.12	Explain the gradation of muscular activity	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	
PY3.13	Describe muscular dystrophy: myopathies	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	Human Anatomy
PY3.14	Perform Ergography	S	SH	Y	DOAP sessions	Practical/OSPE/Viva voce			
PY3.15	Demonstrate effect of mild, moderate and severe exercise and record changes in cardio respiratory parameters	S	SH	Y	DOAP sessions	Practical/OSPE/Viva voce			
PY3.16	Demonstrate Harvard Step test and describe the impact on induced physiologic parameters in a	S	SH	Y	DOAP sessions	Practical/OSPE/Viva voce			

	simulated environment								
PY3.17	Describe Strength-duration curve	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY3.18	Observe with Computer assisted learning (i) amphibian nerve - muscle experiments (ii) amphibian cardiac experiments	S	KH	Y	Demonstration, Computer assisted learning methods	Practical / Viva voce			
Topic: Gastro-intestinal Physiology Number of competencies:(10) Number of procedures that require certification:(NIL)									
PY4.1	Describe the structure and functions of digestive system	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY4.2	Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY4.3	Describe GIT movements, regulation and functions. Describe defecation reflex. Explain role of dietary fiber.	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/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY4.4	Describe the physiology of digestion and absorption of nutrients	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry

PY4.5	Describe the source of GIT hormones, their regulation and functions	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY4.6	Describe the Gut-Brain Axis	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY4.7	Describe & discuss the structure and functions of liver and gall bladder	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY4.8	Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests	K	KH	Y	Lecture, Small group discussion, Demonstration Esophageal Manometry & endoscopy	Written/Viva voce			Biochemistry
PY4.9	Discuss the physiology aspects of: peptic ulcer, gastro- esophageal reflux disease, vomiting, diarrhea, constipation, A dynamic ileus, Hirschsprung's disease	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	Biochemistry
PY4.10	Demonstrate the correct clinical examination of the abdomen in a normal volunteer or simulated environment	S	SH	Y	DOAP session	Skill assessment/ Viva voce/OSCE			
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
Topic: Cardiovascular Physiology(CVS) Number of competencies:(16) Number of procedures that require certification:(03)									

PY5.1	Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY5.3	Discuss the events occurring during the cardiac cycle	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY5.4	Describe generation, conduction of cardiac impulse	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY5.5	Describe the physiology of electro cardiogram (E.C.G)its applications and the cardiac axis	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	
PY5.6	Describe abnormal ECG, arrhythmias, heart block and myocardial Infarction	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	Human Anatomy
PY5.7	Describe and discuss hemodynamic of circulatory system	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/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY5.8	Describe and discuss local and systemic cardiovascular regulatory	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			

	mechanisms								
PY5.9	Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	
PY5.11	Describe the patho-physiology of shock, syncope and heart failure	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment	S	SH	Y	DOAP sessions	Practical/OSPE/ Viva voce	1 each x 3		
PY5.13	Record and interpret normal ECG in a volunteer or simulated environment	S	SH	Y	DOAP sessions	Practical/OSPE/ Viva voce		General Medicine	
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY5.14	Observe cardiovascular autonomic function tests in a volunteer or simulated environment	S	SH	N	DOAP sessions	Skill assessment/ Viva voce			

PY5.15	Demonstrate the correct clinical examination of the cardiovascular system in a normal volunteer or simulated environment	S	SH	Y	DOAP sessions	Practical/OSPE/ Viva voce			
PY5.16	Record Arterial pulse tracing using finger plethysmography in a volunteer or simulated environment	S	SH	N	DOAP sessions, Computer assisted learning methods	Practical/OSPE/ Viva voce		General Medicine	
Topic: Respiratory Physiology		**Number of competencies:(10)**				**Number of procedures that require certification:(01)**			
PY6.1	Describe the functional anatomy of respiratory tract	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs	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/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY6.3	Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			

PY6.4	Describe and discuss the physiology of high altitude and deep sea diving	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY6.5	Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY6.6	Describe and discuss the Pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY6.7	Describe and discuss lung function tests & their clinical significance	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY6.8	Demonstrate the correct technique to perform & interpret Spirometry	S	SH	Y	DOAP sessions	Skill assessment/ Viva voce		Respiratory Medicine	
PY6.9	Demonstrate the correct clinical examination of the respiratory system in a normal volunteer or simulated environment	S	P	Y	DOAP sessions	Skill assessment/ Viva voce/OSCE	1		
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY6.10	Demonstrate the correct technique to perform measurement of peak expiratory flow rate in a	S	SH	Y	DOAP sessions	Practical/OSPE/ Viva voce			

	normal volunteer or simulated environment								
Topic: Renal Physiology Number of competencies: (09) Number of procedures that require certification: (NIL)									
PY7.1	Describe structure and function of kidney	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY7.2	Describe the structure and functions of juxta glomerular apparatus and role of renin-angiotensin system	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY7.3	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion; concentration and diluting mechanism	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY7.4	Describe & discuss the significance & implication of Renal clearance	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY7.5	Describe the renal regulation of fluid and electrolytes & acid-base balance	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/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY7.6	Describe the innervations of urinary bladder, physiology of micturition and its abnormalities	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY7.7	Describe artificial kidney, dialysis and renal	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		General Medicine	

	transplantation								
PY7.8	Describe & discuss Renal Function Tests	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY7.9	Describe customary and discuss the normal cystometrogram	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
Topic: Endocrine Physiology Number of competencies:(06) Number of procedures that require certification :(NIL)									
PY8.1	Describe the physiology of bone and calcium metabolism	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY8.2	Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas and hypothalamus	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY8.3	Describe the physiology of Thymus & Pineal Gland	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY8.4	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Biochemistry
PY8.5	Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			

PY8.6	Describe & differentiate the mechanism of action of steroid, protein and amine hormones	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
Topic: Reproductive Physiology Number of competencies:(12) Number of procedures that require certification:(NIL)									
PY9.1	Describe and discuss sex determination; sex differentiation and their abnormities and outline psychiatry and practical implication of sex determination.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY9.2	Describe and discuss puberty: onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.	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/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY9.3	Describe male reproductive system: functions of testis and control of spermatogenesis & factors modifying it and outline its association with psychiatric illness	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY9.4	Describe female	K	KH	Y	Lecture, Small group	Written/Viva voce			

	reproductive system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes				discussion				
PY9.5	Describe and discuss the physiological effects of sex hormones	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY9.6	Enumerate the contraceptive methods for male and female. Discuss their advantages & disadvantages	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Obstetrics & Gynecology, Community Medicine	
PY9.7	Describe and discuss the effects of removal of gonads on physiological functions	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Obstetrics & Gynecology	
PY9.9	Interpret a normal semen analysis report including (a) sperm count, (b) sperm morphology and (c) sperm motility, as per WHO guidelines and discuss the results	K	KH	Y	Lecture, Small group discussion	OSPE/Viva voce			
PY9.10	Discuss the physiological basis of various pregnancy tests	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Obstetrics & Gynecology	
PY9.11	Discuss the hormonal	K	KH	Y	Lecture, Small group	Written/Viva voce		Obstetrics &	

	changes and their effects during perimenopause and menopause				discussion			Gynecology	
PY9.12	Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Obstetrics & Gynecology	
Topic: Neurophysiology Number of competencies:(20) Number of procedures that require certification:(09)									
PY10.1	Describe and discuss the organization of nervous system	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY10.2	Describe and discuss the functions and properties of synapse, reflex, receptors	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY10.3	Describe and discuss somatic sensations & sensory tracts	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY10.5	Describe and discuss structure and functions of reticular activating system,	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy

	autonomic nervous system								
PY10.6	Describe and discuss Spinal cord, its functions, lesion & sensory disturbances	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Human Anatomy
PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Psychiatry	Human Anatomy
PY10.8	Describe and discuss be havioural and EEG characteristics during sleep and mechanism responsible for its production	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Psychiatry	
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY10.9	Describe and discuss the physiological basis of memory, learning and speech	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Psychiatry	
PY10.10	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY10.11	Demonstrate the correct clinical examination of the	S	P	Y	DOAP sessions	Skill assessment/ Viva voce/OSCE	1each (total5)		Human Anatomy

	nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment								
PY10.12	Identify normal EEG forms	S	S	Y	Small group teaching	OSPE/Viva voce		Psychiatry	
PY10.13	Describe and discuss perception of smell and taste sensation	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		ENT	
PY10.14	Describe and discuss patho-physiology of altered smell and taste sensation	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		ENT	
PY10.15	Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		ENT	
PY10.16	Describe and discuss Pathophysiology of deafness. Describe hearing tests	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		ENT	
PY10.17	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Ophthalmology	

PY10.18	Describe and discuss the physiological basis of lesion in visual pathway	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Ophthalmology	
PY10.19	Describe and discuss auditory & visual evoke potentials	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Ophthalmology	
PY10.20	Demonstrate (i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer/ simulated environment	S	P	Y	DOAP sessions	Skill assessment/ Viva voce	1each (total4)	ENT, Ophthalmology	
Topic: Integrated Physiology Number of competencies:(14) Number of procedures that require certification:(NIL)									
PY11.1	Describe and discuss mechanism of temperature regulation	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY11.2	Describe and discuss adaptation to altered temperature (heat and cold)	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY11.3	Describe and discuss mechanism of fever, cold injuries and heat stroke	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY11.4	Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY11.5	Describe and discuss physiological consequences	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			

	of sedentary lifestyle								
PY11.6	Describe physiology of Infancy	K	KH	N	Lecture, Small group discussion	Written/Viva voce		Pediatrics	
PY11.7	Describe and discuss physiology of aging; free radicals and antioxidants	K	KH	N	Lecture, Small group discussion	Written/Viva voce			
PY11.8	Discuss & compare cardio-respiratory changes in exercise (isometric and isotonic) with that in the resting state and under different environmental conditions (heat and cold)	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY11.9	Interpret growth charts	K	KH	N	Small group teaching	Practical/OSPE/ Viva voce		Pediatrics	
PY11.10	Interpret anthropometric assessment of infants	K	KH	N	Small group teaching	Practical/OSPE/ Viva voce		Pediatrics	
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
PY11.11	Discuss the concept, criteria for diagnosis of Brain death and its implications	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			
PY11.12	Discuss the physiological effects of meditation	K	KH	N	Lecture, Small group discussion	Written/Viva voce			
PY11.13	Obtain history and perform general examination in the volunteer / simulated environment	S	SH	Y	DOAP sessions	Skill assessment/ Viva voce			
PY11.14	Demonstrate Basic Life Support in a simulated	S	SH	Y	DOAP sessions	OSCE		General	

	environment							Medicine, Anesthesiology	
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, and Perform.** **Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation**									
Integration									
Human Anatomy									
AN3.1	Classify muscle tissue according to structure & action	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN5.1	Differentiate between blood vascular and lymphatic system	K	KH	Y	Lecture	Written/ Viva voce			Physiology
Number	**COMPETENCY** **The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integration**
AN5.2	Differentiate between pulmonary and systemic circulation	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN5.6	Describe the concept of anastomoses and collateral circulation with significance of end-arteries	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN5.7	Explain function of meta-arterioles, precapillary sphincters, arterio- venous anastomoses	K	KH	N	Lecture	Written			Physiology
AN5.8	Define thrombosis, infarction & aneurysm	K	KH	N	Lecture	Written		Pathology	Physiology

AN7.2	List components of nervous tissue and their functions	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN7.3	Describe parts of a neuron and classify them based on number of neuritis, size & function	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN7.5	Describe principles of sensory and motor innervations of muscles	K	KH	N	Lecture	Written		General Medicine	Physiology
AN7.7	Describe various types of synapse	K	KH	N	Lecture	Written			Physiology
AN21.9	Describe & demonstrate mechanics and types of respiration	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/Viva voce/ skill assessment			Physiology
AN22.2	Describe & demonstrate external and internal features of each chamber of heart	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/Viva voce/ skill assessment			Physiology
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
AN21.9	Describe & demonstrate mechanics and types of respiration	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/Viva voce/ skill assessment			Physiology
AN22.2	Describe & demonstrate external and internal features of each chamber of heart	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/Viva voce/ skill assessment			Physiology
AN22.3	Describe & demonstrate origin, course and branches of coronary arteries	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/Viva voce/ skill assessment			Physiology
AN22.4	Describe anatomical basis of is chemical heart disease	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN22.7	Mention the parts, position	K	KH	Y	Lecture	Written		General Medicine	Physiology

	and arterial supply of the conducting system of heart								
AN24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	K	KH	Y	Practical, Lecture	Written/ Viva voce		General Medicine	Physiology
AN24.2	Identify side, external features and relations of structures which form root of lung & bronchial tree and their clinical correlate	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	Physiology
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
AN24.3	Describe a Broncho-pulmonary segment	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN25.3	Describe fetal circulation and changes occurring at birth	K	KH	Y	Lecture	Written		General Medicine	Physiology
AN25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Physiology
AN25.5	Describe developmental basis of congenital anomalies, transposition	K	KH	Y	Lecture	Written/ Viva voce		General Medicine, Pediatrics	Physiology

	of great vessels, dextrocardia, patent ductusarteriosus and coarctation of aorta								
AN25.9	Demonstrate surface marking of lines of pleural reflection, Lung borders and fissures, Trachea, Heart borders, Apex beat & Surface projection of valves of heart	K/S	SH	Y	Practical	Viva voce/ skill assessmet		General Medicine, Pediatrics	Physiology
AN56.2	Describe circulation of CSF with its applied anatomy	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
AN57.4	Enumerate ascending & descending tracts at mid thoracic level of spinal cord	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN57.5	Describe anatomical basis of syringomyelia	K	KH	N	Lecture	Written		General Medicine	Physiology
AN58.3	Enumerate cranial nerve nuclei in medulla oblongata with their functional group	K	KH	Y	Lecture	Written/ Viva voce			Physiology
AN58.4	Describe anatomical basis & effects of medial & lateral medullary syndrome	K	KH	N	Lecture	Written		General Medicine	Physiology
AN59.1	Identify external features of pons	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/ skill assessment			Physiology
AN60.3	Describe anatomical basis of cerebellar dysfunction	K	KH	N	Lecture	Written		General Medicine	Physiology

AN61.3	Describe anatomical basis & effects of Benedict's and Weber's syndrome	K	KH	N	Lecture	Written		General Medicine	Physiology
AN62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	Physiology **1**
AN62.3	Describe the white matter of cerebrum	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN62.4	Enumerate parts & major connections of basal ganglia & limbic lobe	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
AN62.5	Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus	K	KH	Y	Lecture	Written/ Viva voce		General Medicine	Physiology
AN62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	Physiology
AN63.1	Describe & demonstrate parts, boundaries & features of 3rd , 4th & lateral ventricle	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			Physiology
AN63.2	Describe anatomical basis	K	KH	N	Lecture	Written		Pediatrics	Physiology

	of congenital hydrocephalus								
AN66.1	Describe & identify various types of connective tissue with functional correlation	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			Physiology
AN67.2	Classify muscle and describe the structure-function correlation of the same	K	KH	Y	Lecture, Practical	Written			Physiology
AN68.2	Describe the structure-function correlation of neuron	K	KH	Y	Lecture, Practical	Written			Physiology
Number	**COMPETENCY The student should be able to:**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Suggested Teaching Learning method**	**Suggested Assessment method**	**Number required to certify P**	**Vertical Integration**	**Horizontal Integratio n**
AN69.2	Describe the various types and structure-function correlation of blood vessel	K	KH	Y	Lecture, Practical	Written			Physiology
Biochemistry									
BI1.1	Describe the molecular and functional organization of a cell and its sub-cellular components.	K	KH	Y	Lecture, Small group discussions	Written assessment and Viva voce			Physiology
BI3.7	Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism (e.g. fluoride, arsenate)	K	KH	Y	Lecture, Small group discussion	Written/Viva voce			Physiology
BI5.2	Describe and discuss functions of proteins and structure-function	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, General Medicine	Physiology

	relationships in relevant areas e.g. hemoglobin and selected hemoglobin opathies								
BI6.3	Describe the common disorders associated with nucleotide metabolism.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce			Physiology
BI6.7	Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Physiology
BI6.9	Describe the functions of various minerals in the body, their metabolism and homeostasis.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine	Physiology
BI6.11	Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, General Medicine	Physiology
BI6.12	Describe the major types of hemoglobin and its derivatives found in the body and their physiological/ pathological relevance.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, General Medicine	Physiology
BI6.13	Describe the functions of the kidney, liver, thyroid	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology, General	Physiology, Human Anatomy

	and adrenal glands.							Medicine	
BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands).	K	KH	Y	Lecture, Small group discussion	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 discussion	Written/ Viva voce		Pathology, General Medicine	Physiology, Human Anatomy
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 discussion	Written/ Viva voce		General Medicine, Pathology	Physiology
BI11.4	Perform urine analysis to estimate and determine normal and abnormal constituents	S	P	Y	DOAP session	Skill assessment	1	General Medicine	Physiology

Krishna Institute of Medical Sciences, Karad

1st M.B.B.S 2019-20 Regular Batch

Format of Question Paper

Paper: I/II Total Marks: 100

Total Time: 3Hrs

SECTION “A” (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) (4 MCQ should Be CASE based) (20x1=20)

SECTION “B” &”C”

SECTION”B” (40 Marks)

Q.2 Short Answer Questions (Any Four out of Five & two SAQs will be (Clinical Application Based) (4x5=20)

Long Answer Questions (Any Two out of Three) (2x10=20)

SECTION”C” (40 Marks)

Short Answer Questions (Any Four out of Five) (I should be on AETCOM Module, two SAQs will be Clinical Application Based) (4x5=20)

Long Answer Questions (Any Two out of Three) (2x10=20)

Reference book

Text books

1) Guyton and Hall – Text book of Medical Physiology A south Asian Second Edition.

2) C.C. Chatterjee's Human Physiology- 13th Edition

3) A. K. Jain – Text book of Physiology Volume I and II
   8th Edition

4) G.K.Pal -Comprehensive Text Book of Medical Physiology Volume I and II – 2nd Edition

5) Vijaya D. Joshi -Prep Manual for Undergraduates – PHYSIOLOGY

Reference books:-

1. Ganong – Review of Medical Physiology

Practical Physiology

1. A. K. Jain- Text book of Practical Physiology
2. A Text book of practical Physiology – C. L. Ghai
3. A Text book of practical Physiology – G. K. Pal

Books recommended:

1) Textbooks of Physiology

Guyton – Textbook of Physiology
Ganong – Review of Medical Physiology
S. Wright - Applied Physiology

2) Reference Books:

Best and Taylor- Physiological basis of medical practice.
Berne & levy – principles of Physiology
Dr. V. G. Ranade – Laboratory Manual and Journal of Physiology Practical's.
Ghai's VP Varshney, Mona Bedi- Textbook of Physiology – 9th Edition 2019.
G.K. Pal- Comprehensive Text Book of Medical Physiology

KRISHNA INSTITUTE OF MEDICAL SCIENCES, KARAD

Department of Biochemistry

Curriculum for undergraduates Course (M.B.B.S)

Programme Name: M.B.B.S

Code Number: 1101

Course Name: Biochemistry

Course Code 1101-13

Goal

The main goal of teaching Biochemistry to undergraduates is to have a sound knowledge of various biomolecules present in living cells and organisms. To orient them towards molecular level of all the chemical reactions associated with living cells and apply this knowledge in maintenance of health and effective treatment of diseases.

Educational Objectives

At the end of the course the student should

1) Be able to describe the structural and functional organization of cell and its subcellular components.
2) Understand the chemistry and biological significance of various biomolecules like carbohydrates, proteins, lipids and haemoglobins.
3) Have a sound knowledge of enzymes in respect to mechanism of action, classification and their use in medicine.
4) Have clear concept about digestion, absorption, inter conversion and assimilation of various nutrients in our diet.
5) Know metabolisms of major biomolecules with their integration and regulations.
6) Be able to comprehend genes, their expression, the principles and the application of genetic engineering.
7) Be able to explain inborn errors of various metabolisms.
8) Know the mechanism of body defence, detoxification and homeostasis of body fluids and ph.

9) Have thorough understanding about nutrition in respect with vitamins, minerals, malnutrition and obesity.

10) Be able to outline biochemical basis of cancer, free radicals, radioisotopes and Environmental Health.

11) Get familiar with conventional biochemical investigations and their interpretations.

Skills

At the end of the course the student should

1) Able to handle routine/special biochemical instruments/techniques, which are used in confirming the clinical diagnosis.

2) Know to analyse the biochemical data with proper interpretation.

3) Be able to demonstrate commonly done biochemical screening tests.

4) Be able to opine on clinical case with reference to biochemical investigations.

Integration

The knowledge acquired in biochemistry during the course should help the student to integrate it with other sciences for better understanding of molecular events taking place in human body during health and disease.

COMPETENCY BASED UG CURRICULUM

Basic Biochemistry

Number	Competency
	Cell
BI1.1	**Describe the molecular and functional organization of a cell & its subcellular components.** Eukaryotic, prokaryotic Membrane structure & functions. Structure & functions of nucleus, endoplasmic reticulum, Golgi complex, mitochondria, lysosomes, peroxisomes, cytoskeleton & apoptosis.
	Enzymes
BI2.1	**Explain fundamental concepts of enzymes, isoenzymes, alloenzymes, coenzyme &cofactors. Enumerate the main classes of IUBMB nomenclature.** Introduction, definition & various classifications (IUBMB) Properties of enzymes in brief Enzyme specificity.
BI2.2	**Observe the estimation of SGOT,SGPT** SGOT (AST), SGPT (ALT) Demonstration
BI2.3	**Describe and explain basic principles of enzyme activity** Mechanism of enzyme action including fisher's & Koshland's models Factors affecting enzyme activity, Km value, proenzymes, antienzymes (coenzymes -N).
BI2.4	**Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes** Various types of enzyme inhibitions with examples & role of inhibitors as poisons and drugs.
BI2.5	**Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions** clinical relevance of enzymes & isoenzymes in diagnosis and prognosis in various diseases

	BI2.6	**Discuss use of enzymes in laboratory investigations(enzyme based assays)** Analytical use of enzymes as reagents and as a therapeutic agent
	BI2.7	**Interpret laboratory results of enzymes & describe the clinical utility of various enzymes as markers of pathological conditions.** Use of enzymes in diagnosis and prognosis, Case studies on diagnostic enzymology.
		Chemistry and metabolism of carbohydrates
	BI3.1	**Discuss and differentiate monosaccharaides, disaccharides and polysaccharides giving examples of main carbohydrates as energy fuel, structural element and storage in the human body.** Monosaccharaides, disaccharides & polysaccharides-definition, structure, sources, classification and their significance. Mucopolysaccharides-structure and significance Properties of monosaccharides-oxidation, reduction, amination, esterification, action of acids, action of alkalies, acetylation, Glycosides and their importance.
	BI3.2	**Describe the processes involved in digestion and assimilation of carbohydrates and storage** Digestion & absorption of carbohydrates, Lactose intolerance.
	BI3.3	**Describe the processes, digestion and assimilation of carbohydrates from food** Digestion &absorption of carbohydrates, Lactose intolerance.
	BI3.4	**Define and differentiate the pathways of carbohydrate metabolism, (glycolysis, gluconeogenesis, glycogen metabolism, HMP shunt)** Pathways with regulation, energetics, inhibitors, significance & clinical significance, 2,3BPG cycle, Cori's cycle, lactic acidosis, Pasture's/Crabtree effect , Cahill's cycle Malate aspartate shuttle, glycerol-phosphate shuttle.
	BI3.5	**Describe and discuss the regulation, functions, and integration of carbohydrate along with associated diseases/disorders.** Regulation of all metabolic pathways, biomedical importance of carbohydrates, Glycogen storage diseases, inborn errors of galactose, fructose, pentoses

		& Mucoplysaccharidosis
	BI3.6	**Describe and discuss the concept of TCA cycle as Amphibolic pathway and its regulation.** TCA cycle, its regulation & energetics, inhibitors & significance, anaplerotic reactions.
	BI3.7	**Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism.(e.g. fluoride, arsenite)** Inhibitors of different pathways and their significance.
	BI3.8	**Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates.** Hyperglycemia, hypoglycemia, glycosuria, galactosemia
	BI3.9	**Discuss the mechanism and significance of blood glucose regulation in health and disease.** Homeostasis of blood glucose.
	BI3.10	**Interpret the results of blood glucose levels and other laboratory investigations related to disorders of carbohydrate metabolism.** GTT, interpretation of GTCs, glycosylated hemoglobin & case studies.
		Chemistry and metabolism of lipids
	BI4.1	**Describe and discuss main classes of lipids (essential, non-essential fatty acids, cholesterol and hormonal steroids, triglycerides, major phospholipids and sphingolipids) relevant to human system and their major functions** Definition, structure classification and functions of various lipids. Nomenclature and numbering i. Fatty acids (essential & nonessential fatty acids). ii. TAG iii. phospholipids iv. glycolipids v. lipoproteins.

		vi cholesterol. Eicosanoids their classification and functions
BI4.2		**Describe the process involved in digestion and absorption of dietary lipids and also the key features of their metabolism** Digestion and absorption of lipids. Metabolism of fatty acids – beta -oxidation, its energetics, regulation & disorders. Metabolism of ketone bodies, its significance, regulation and disorders. Fatty acid biosynthesis and regulation, metabolism of TAG, and its significance. Role of white &brown tissue, disorders of lipid transport and storage (fatty liver)
BI4.3		**Explain the regulation of lipoprotein metabolism & associated disorders.** Metabolism and regulation of chylomicrons, VLDL, LDL & HDL Hypo & Hyperlipoproteinemias.
BI4.4		**Describe the structure and functions of lipoproteins, their functions, interpretations & relations with atherosclerosis** Structure and functions of Chylomicrons, VLDL, LDL and disorders. Synthesis of cholesterol, its regulation, metabolic fate and excretion and its role in atherosclerosis.
BI4.5		**Interpret laboratory results of analytes associated with metabolism of lipids** Lipid profile with reference intervals. Interpretation of lipid profile tests in different disorders like Hypo/Hyperlipoproteinemias, diabetes mellitus, nephrotic syndrome, hypothyroidism, etc.
BI4.6		**Describe the therapeutic uses of prostaglandins and inhibitors of eicosanoid synthesis.** Definition, classification and functions of eicosanoids. Key features of various classes of eicosanoids in brief Inhibitors of eicosanoid synthesis. Therapeutic use of prostaglandins.
BI4.7		**Interpret laboratory results of analytes associated with metabolism of lipids**

		Proteins chemistry & metabolism
	BI5.1	**Describe and discuss structural organization of proteins** Structural organization of proteins, protein folding, denaturation, protein structure function relationship,(outline of determination of protein structure).
	BI5.2	**Describe and discuss functions of proteins and structure function relationships in relevant area e.g. hemoglobin and selected hemoglobinopathies** Overview definition, , different ways of classification of proteins, amino acids, Biologically important peptides. Imp. Properties of proteins, amino acids. Denaturation & Isoelectric pH.
	BI5.3	**Describe the digestion and absorption of dietary proteins** digestion and absorption of proteins with transporters & disorders
	BI5.4	**Describe common disorders associated with protein metabolism** Metabolism of glycine, phenylalanine, tyrosine, tryptophan, Inborn errors of these amino acids. Sulphur containing amino acids. Transamination Deamination Decarboxylation Transmethylation Urea Cycle with its disorders
	BI5.5	**Interpret laboratory results of analytes associated with metabolism of proteins** Interpretation of laboratory results of associated with proteins, serum total proteins, A:G ratio, proteinuria , case studies
	BI6.1	**Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting state** Carbohydrate, protein & lipid integration at cellular level and at tissue or organ level with its significance. Metabolic processes and role of specific organs in fed & fasting

		(starvation) states
	BI6.2	**Describe and discuss the metabolic processes in which nucleotides are involved** Biologically imp. Free nucleotides and nucleosides and their functions Digestion & absorption of nucleic acids, metabolism of purines, sources of C &N in purine ring, De novo purine synthesis in brief and its regulation ,conversion of ribonucleotide to deoxyribonucleotide Salvage pathway, inhibitors of purine synthesis, purine catabolism, Pyrimidine synthesis & regulation.
	BI6.3	**Describe the common disorders associated with <u>nucleotide metabolism</u>** Hyperuricaemia, gout, Lesch-Nyhan syndrome, pyrimidine catabolism, orotic aciduria, xanthinurea
	BI6.4	**Discuss the laboratory results of analytes associated with gout & Lesch-Nyhan syndrome** Investigations for hypo/Hyperuricaemia, primary gout secondary gout & Lesch-Nyhan syndrome. Case studies
	BI6.5	**Describe the biochemical role of <u>vitamins</u> in the body and explain the manifestations of their deficiency** Introduction, definition, classification of vitamins. (chemistry & absorption in brief) function, RDA, sources, deficiency manifestations & hypervitaminosis of Vitamin A,D,E,K ,C and B complex
	BI6.6	**Describe the biochemical processes involved in <u>generation of energy</u> in cells.** Oxidative phosphorylation, substrate level phosphorylation, ETC & generation of ATP, inhibitors and uncoupler of oxidative phosphorylation, chemiosmotic theory in brief. Enzymes involved in biological oxidation
	BI6.7	**Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these** Functions & distribution of water and electrolyte. Its regulation, balance and imbalance. Acid base balance, regulation and imbalance, anion gap.

	Electrolyte metabolism, disorders.
BI6.8	**Discuss and interpret results of Arterial Blood Gas (ABG) analysis in various disorders.** ABG along with case studies of acidosis and alkalosis in various conditions.
BI6.9	**Describe the various functions of the minerals in the body their metabolism and homeostasis** Classification of minerals, Sources, RDA, absorption, distribution ,transport, excretion of calcium, homeostasis of serum calcium & Iron, P, Mg, Na K, Cl, Cu, Zn, Se, I, F
BI6.10	**Enumerate and describe the disorders associated with mineral metabolism** Deficiency and toxicity of macro & micro minerals Ca, P, Mg, Na, K, Cl, Fe, Cu, Zn, Se, I, F
BI6.11	**Describe the various functions of the heam in the body and describe the processes involved in its metabolism and describe porphyrin metabolism** Structure, functions and metabolism of hemoglobin, porphyria
BI6.12	**Describe the major types of hemoglobin and its derivatives found in the body and their physiological/pathological relevance** Normal hemoglobins, abnormal hemoglobins and hemoglobin derivatives
BI6.13	**Describe the functions of the kidney, liver, thyroid and adrenal glands** Functions of liver, kidneys, thyroid and adrenal glands
BI6.14	**Describe the tests that are commonly done in clinical practice to assess the functions of these glands (kidney, liver, thyroid and adrenal glands)** Liver function tests Kidney function tests

		Thyroid function tests Adrenal function tests
	BI6.15	**Describe the abnormalities of kidney, liver, thyroid and adrenal glands** Liver dysfunction Renal disorders Thyroid dysfunction Adrenal disorders Case studies of function tests
		Genetics
	BI7.1	**Describe the structure and functions of DNA and RNA and the cell cycle** Bases, nucleosides, nucleotides, nucleic acids (DNA, RNA) Their structure, types & fucntions, cell cycle.
	BI7.2	**Describe the processes involved in replication and repair of DNA and the** **Transcription & translation mechanisms.** Central dogma, genetic code, replication - (prokaryotic, eukaryotic) DNA damage & repair, inhibitors Transcription – (prokaryotic, eukaryotic) inhibitors post-transcriptional modifications Translation – Inhibitors, post-translational modifications
	BI7.3	**Describe gene mutations and basic mechanism of regulation of gene expression.** Mutations with examples. Gene expression & its regulation. Lac Operon
	BI7.4	**Describe applications of molecular technologies like recombinant DNA technology, PCR in the diagnosis and treatment of diseases with genetic basis** Applications of genetic engineering ,gene therapy, PCR etc.
	BI	**Describe the role of <u>xenobiotics</u> in disease**

	7.5	Metabolism of xenobiotics (Detoxification)
	BI7.6	**Describe the <u>antioxidant defense systems</u> in the body** Free radicals and antioxidants
	BI7.7	**Describe the role of <u>oxidative stress</u> in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis** Cancer, Diabetes Mellitus, Atherosclerosis
	BI8.1	**Discuss the importance of various <u>dietary components</u> and explain importance of dietary fiber** BMR, SDA, Biological importance of carbohydrate, proteins, lipids in the diet. Balanced diet, dietary fibers, types, importance & adverse effects.
	BI8.2	**Describe the types and causes of <u>protein energy malnutrition</u> and its effects.** Kwashiorkor & Marasmus
	BI8.3	**Provide <u>dietary advice</u> for optimal health in childhood and adult, in disease conditions like diabetes mellitus, coronary artery disease and in pregnancy** Planning of diet as per BMR and clinical status
	BI8.4	**Describe the causes (including dietary habits), effects and health risks associated with being <u>overweight/obesity</u>** Over nutrition
	BI8.5	**Summarize the <u>nutritional importance</u> of commonly used items of food including fruits and vegetables(macromolecules & its importance)** Dietary importance of carbohydrates, proteins, lipids, minerals, vitamins & fibers.
		ECM
	BI	**List the functions and components of <u>extracellular matrix (ECM)</u>**

	9.1	Definition, types, structure & functions of ECM (glycoproteins, proteoglycans, collagen & elastin)
	BI 9.2	**Describe the involvement of ECM components in health and disease.** Disorders of components of ECM (Mucoplysaccharidosis, scurvy, Marfan's syndrome etc.)
	BI 9.3	**Describe protein targeting & sorting along with its associated with its disorders** Case studies
		Cancer & immunity
	BI 10.1	**Describe the cancer initiation, promotion, oncogenes & oncogene activation. Also focus on p53 & apoptosis.** Etiology of cancer, types of cancers oncogenes, molecular basis of carcinogenesis.
	BI 10.2	**Describe various biochemical tumor markers and the biochemical basis of cancer therapy** apoptosis, interpretation of reports of tumor markers
	BI 10.3	**Describe the cellular and humoral components of the immune system & describe the types and structure of antibody** Overview of immune system, immunoglobulins. Types, formation, structure.
	BI 10.4	**Describe and discuss innate and adaptive immune responses, self-non-self-recognition and the central role of T-helper cells in immune responses.** Actions of antibodies
	BI 10.	**Describe antigens and concepts involved in vaccine development** Vaccine preparation

5		
		Biochemical laboratory tests. (practicals)
BI11.1		**Describe commonly used laboratory apparatus and equipment, good safe laboratory practice and waste disposal.** Glass wares, reagents ,BMW & CCL
BI11.2		**Describe the preparation of buffers and estimation of pH.** Demo. on pH determination
BI11.3		**Describe the chemical components of normal urine.** Normal urine analysis: physical & chemical
BI11.4		**Perform urine analysis to estimate and determine normal and abnormal components** Abnormal urine analysis: full urine report and its interpretation
BI11.5		**Describe the screening of urine for inborn errors & describe the use of paper chromatography** LCD on chromatography
BI11.6		**Describe the principles of colorimetry** LCD on colorimetry
BI11		**Demonstrate the estimation of serum creatinine and creatinine clearance.** determination of serum creatinine &urine creatinine and its interpretation

.7	
BI11.8	**Demonstrate estimation of serum proteins, albumin and A:G ratio** Determination of serum total proteins, albumin, globulins & A:G ratio and its interpretation
BI11.9	**Demonstrate the estimation of serum total cholesterol and HDL cholesterol** Determination of serum total cholesterol and HDL cholesterol and its interpretation
BI11.10	**Demonstrate the estimation of triglycerides** Determination of serum triglycerides and its interpretation
BI11.11	**Demonstrate the estimation of calcium and phosphorous** Determination of serum calcium and its interpretation Serum phosphorus demonstration
BI11.12	**Demonstrate the estimation of serum bilirubin** Demonstration on serum total, direct, indirect bilirubin with differential diagnosis of jaundice
BI11.13	**Demonstrate the estimation of SGOT/SGPT** Demonstration of SGPT/ALT, SGOT/AST bilirubin with differential diagnosis of jaundice
BI1	**Demonstrate the estimation of alkaline phosphatase** Determination of serum alkaline phosphatase and its interpretation

1.14	
BI11.15	**Describe & discuss the composition of CSF** CSF analysis(protein &sugar estimation)
BI11.16	**Observe use of commonly used equipment/techniques in biochemistry laboratory including** • **pH meter** • **Paper chromatography of amino acid** • **Protein electrophoresis** • **TLC,PAGE** • **ABG analyzer** • **ELISA** • **Immunodiffusion** • **Auto analyzer** • **Quality control** • **DNA isolation from blood/tissue** Interpretation of special techniques
BI11.17	**Explain the basis and rationale of biochemical tests done in the following conditions:** • **Diabetes mellitus** • **Dyslipidemia** • **Myocardial infaraction** • **Renal failure, gout** • **Proteinuria** • **Nephrotic syndrome** • **Edema** • **Jaundice** • **Liver disease, pancreatitis, disorders of acid base balance, thyroid disorders** Case studies/Interpretation of laboratory techniques
BI11.18	**Discuss the principles of spectrophotometry** LCD on spectrophotometry
BI	**Outline the basic principles involved in functioning of instruements commonly used in a biochemistry laboratory and their applications**

	11.19	Introduction on equipments
	BI11.20	**Identify abnormal constituents of urine, interpret the findings and correlate these with pathological states** Interpretation of urine reports
	BI11.21	**Demonstrate the estimation of glucose, creatinine, urea and total protein in serum.** Blood glucose estimation Blood urea estimation
	BI11.22	**Calculate albumin: globulin ratio and creatinine clearance** Done in respective practicals
	BI11.23	**Calculate energy content of different food items, identify food items with high and low glycemic index and explain importance of these in the diet** Bomb's calorimeter in nutrition lecture
	BI11.24	**Enumerate advantages and or disadvantages of use of unsaturated, saturated and trans fats in food.** Biological importance of lipids in nutrition lecture

Calculation of Marks in Internal Assessment Examination system

DEPARTMENTOF BIOCHEMISTRY

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula	Eligibility to appear for final University examination (after conversion out of 40)	Minimum marks to be obtained to declare the final University examination result(out of 80 combined in theory and practical)
Theory	100	100	200	400	10 : 1 = 40	16/40	40/80
Practical	50	50	100	200	5:1 = 40	16/40	

Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.01.To 15.49	15
15.50to15.99	16

Krishna Institute of Medical Sciences, Karad

1st M.B.B.S

Format of Question Paper

University examination pattern

Paper: I/II **Total Marks: 100**

Total Time: 3 Hrs.

SECTION "A" (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each)
   (4 MCQ should be CASE based) (20x1=20)

SECTION "B" &"C"

SECTION"B" (40 Marks)

Q.2 Short Answer Questions (Any Four out of Five & two SAQs will be
(Clinical Application Based) (4x5=20)

Q.3. Long Answer Questions (Any Two out of Three) (2x10=20)

SECTION"C" (40 Marks)

Q.4. Short Answer Questions (Any Four out of Five) (4x5=20)

(I should be on AETCOM module two SAQs will be (Clinical Application Based)

Q.5. Long Answer Questions (Any Two out of Three) (2x10=20)

BOOKS Recommended

I) **TEXT BOOKS:** 1) Dr. U. Satyanarayana – Textbook of Biochemistry.

2) Dr. Vasudevan – Textbook of Biochemistry.

3) Dr. Pankaja Naik – Textbook of Biochemistry.

4) M.D. Rafi. --Textbook of Biochemistry.

5) Dinesh Puri-Textbook of Medical Biochemistry.

II) **MCQ BOOKS**: 1) U. Satyanarana – MCQ book.

2) MCQs by Dr. Vasudevan.

3) MCQs by Dr. Harper's

4) MCQs by Rajgopal & Toora.

5) MCQs by R. C. Gupta.

III) **Reference Books:** 1) Harper's Biochemistry.

2) Lehninger— Principles of Biochemistry

3) Orten – Human Biochemistry

4) Bhagwan Medical Biochemistry.

PRACTICAL BIOCHEMISTRY

Dr. S.K. Gupta - Manual of Practical Biochemistry For MBBS

Ist M.B.B.S.

Calculation of marks in Internal Assessment Examination system

DEPARTMENT OF PHYSIOLOGY

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula	Eligibility to appear for final University examination (after conversion out of 40)	Minimum marks to be obtained to declare the final University examination result (out of 80 combined in theory and practical)
Theory	100	100	200	400	10 : 1 = 40	16/40	40/80
Practical	50	50	100	200	5:1 = 40	16/40	

Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.01. To 15.49	15
15.50 to 15.99	16