OBJECTIVES FOR ANATOMY COMPETENCIES

HUMAN ANATOMY - CBME

Number	OBJECTIVES FOR THE RESPECTIVE COMPETENCY (At the end of the session 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
1.TOPIC == ANATOMICAL TERMINOLOGY-									
AN1.1,a	At the end of the session the student should be able to Define normal anatomical position, various planes, relation, comparison, laterality & movement in our body	k	k	Y	LECTURE	VIVA			
b	At the end of the session the student should be able to EXPLAIN different movements in a cadaveric parts and their relation to each other.	K	kh	Y	DOAP	VIVA			
AN1.2	At the end of the session the student should be able to Describe composition of bone and bone marrow	K	K	Y	LECTURE	WRITTEN			
2.Topic: General features of bones & Joints									
AN2.1	At the end of the session the student should be able to Define parts of long bone	K	KH	Y	SMALL GROUP	VIVA			
	At the end of the session the student should be able to Explain Blood supply and nerve supply of a long bone	K	K	Y	SMALL GROUP	VIVA			
AN2.2	At the end of the session the student should be able to Enumerate laws of ossification	K	K	Y	LECTURE	VIVA			
AN2.3	At the end of the session the student should be able to Enumerate special features of a sesamoid bone	K	K	Y	LECTURE	VIVA			
AN2.4	At the end of the session the student should be able to Describe various types of cartilage with its structure & distribution in body.	K	K	Y	LECTURE	WRITTEN			
AN2.5	At the end of the session the student should be able to Classify various joints according to structure and range of movement .	K	KH	Y	LECTURE	WRITTEN			
	At the end of the session the student should be able to Differentiate synovial and cartilagenous joints	K	KH	Y	SMALL GROUP	VIVA			

	At the end of the session the student should be able to Give examples for each varity of joint	k	k	y	SMALL GROUP	VIVA			
AN2.6	At the end of the session the student should be able to Explain the concept of nerve supply of joints & Hilton's law	K	K		SMALL GROUP	VIVA			
3.Topic: General features of Muscle									
AN3.1	At the end of the session the student should be able to Classify muscle tissue according to structure & action	K	K	Y	LECTURE	WRITTEN			
AN3.2	At the end of the session the student should be able to Enumerate parts of skeletal muscle and differentiate between tendon and aponeurosis	K	K	Y	PRACTICLE	VIVA			
AN3.3	At the end of the session the student should be able to Explain Shunt and spurt muscle	K	K	Y	LECTURE	VIVA			
4 .Topic: General features of skin and fascia									
AN4.1	a.At the end of the session the student should be able to Differentiate between thick skin and thin skin	K	K	Y	SMALL GROUP	VIVA			
	b.At the end of the session the student should be able to List out the layers of dermis and epidermis	K	K	Y	LECTURE	VIVA			
AN4.2	At the end of the session the student should be able to Describe structure & function of skin with its appendages	K	K	Y	PRACTICAL	WRITTEN			
AN4.3	At the end of the session the student should be able to Describe superficial fascia along with fat distribution in body	K	KH	Y	DOAP	VIVA			
AN4.4	At the end of the session the student should be able to Describe modifications of deep fascia with its functions	K	KH	Y	DOAP	VIVA			
AN4.5	At the end of the session the student should be able to Explain principles of skin incision	K	KH	N	SMALL GROUP	VIVA			
5.Topic: General features of the cardiovascular system									
AN5.1	At the end of the session the student should be able to Differentiate between blood vascular and lymphatic system	K	K	Y	LECTURE	WRITTEN			
AN5.2	At the end of the session the student should be able to Differentiate between pulmonary and systemic circulation	K	K	Y	LECTURE	WRITTEN			

AN5.3	At the end of the session the student should be able to List general differences between arteries & veins	K	K	Y	SMALL GROUP	VIVA			
AN5.4	a.At the end of the session the student should be able to Describe the structure of elastic artery,muscular artery and arteriole	k	k	Y	LECTURE	VIVA			
	b.At the end of the session the student should be able to Know the examples of elastic artery,muscular artery ,	k	k	Y	LECTURE	VIVA			
AN5.5	a.At the end of the session the student should be able to Define portal system,explain the formation of it ,explain the functional significanceof it.	K	k	Y	LECTURE	WRITTEN			
	b.At the end of the session the student should be able to Enumerate all the organs in the body having portal system								
AN5.6	a.At the end of the session the student should be able to Define anastamoses,list various types of anastomoses	K	KH	Y	SHORT GROUP	DOAP			
	b.At the end of the session the student should be able to Differentiate between collateral circulation and anastomoses								
	c.At the end of the session the student should be able to Define end artery with clinical impetus and list some example of end arteries.								
AN5.7	At the end of the session the student should be able to Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses	K	K	Y	LECTURE	WRITTEN			PHYSIOLOGY
AN5.8	At the end of the session the student should be able to Define thrombosis, infarction & aneurysm	K	KH	N	LECTURE	WRITTEN		PATHOLOGY	
6.Topic: General Features of lymphatic system									
AN6.1	At the end of the session the student should be able to List the components and functions of the lymphatic system	K	K	Y	LECTURE	VIVA			
AN6.2	At the end of the session the student should be able to Describe structure of lymph capillaries & mechanism of lymph circulation	K	K	Y	LECTURE	WRITTEN			
AN6.3	At the end of the session the student should be able to Explain the concept of lymphoedema and spread of tumors via lymphatics and venous system	K	KH	N	LECTURE	VIVA		GENERAL SURGERY	

7.Topic: Introduction to the nervous system									
AN7.1	At the end of the session the student should be able to Describe general plan of nervous system with components of central, peripheral & autonomic nervous systems	K	K	Y	LECTURE	WRITTEN			
AN7.2	At the end of the session the student should be able to List components of nervous tissue and their functions	k	K	Y	LECTURE	WRITTEN			
AN7.3	At the end of the session the student should be able to List the parts of a neuron and classify them based on number of neurites, size & function.	K	K	Y	LECTURE	VIVA			
AN7.4	At the end of the session the student should be able to Describe structure of a typical spinal nerve	K	K	Y	LECTURE	WRITTEN			
AN7.5	At the end of the session the student should be able to Describe principles of sensory and motor innervation of muscles	K	K	Y	LECTURE	VIVA			PHYSIOLOGY
AN.7.6	At the end of the session the student should be able to Explain concept of loss of innervation of a muscle with its applied anatomy	K	K	Y	LECTURE	VIVA			
AN.7.7	At the end of the session the student should be able to Explain structure of synapse ,classify various type of synapse with examples	K	K	Y	LECTURE	OSPE			PHYSIOLOGY
AN7.8	At the end of the session the student should be able to Differentiate between sympathetic and spinal ganglia	K	KH	N	SMALL GROUP	WRITTEN			
8.Topic: Features of individual bones (Upper Limb)									
AN8.1	1.At the end of the session the student should be able to IDENTIFY ALL THE INDIVIDUAL UPPER LIMB BONES	K,S	SH	Y	DOAP	OSPE			
	2.At the end of the session the student should be able to IDENTIFY THE SIDE OF UPPERLIMB BONES	KS	SH	Y	DOAP	OSPE			
	3.At the end of the session the student should be able to KNOW THE ANATOMIAL POSITION OF UPPER LIMB BONES	K,S	SH	Y	DOAP	OSPE			
	4.At the end of the session the student should be able to DESCRIBE IMPORTANT FEATURES AND MUSCLE ATTACHMENTS OF SCAPULA.	K,S	SH	Y	DOAP	OSPE			
	5.At the end of the session the student should be able to DESCRIBE IMPORTANT FEATURES AND MUSCLE ATTACHMENTS OF HUMERUS	K,S	SH	Y	DOAP	OSPE			

	6.At the end of the session the student should be able to DESCRIBE IMPORTANT FEATURES AND MUSCLE ATTACHMENTS OF RADIUS BONE	K,S	SH	Y	DOAP	OSPE			
	7.At the end of the session the student should be able to DESCRIBE IMPORTANT FEATURES AND MUSCLE ATTACHMENTS OF ULNA BONE	K,S	SH	Y	DOAP	OSPE			
AN8.2	At the end of the session the student should be able to Identify the bone & describe a.number ,b.types of joints,c.ligaments supporting,d.movements of the joint,e.most commonly dislocated joints of the bone.	K	SH	Y	DOAP	VIVA			
AN8.3	a.At the end of the session the student should be able to Enumerate peculiarities of clavicle,b.most common site of fracture of clavicle,c. Most common mode of injury.	K	K	Y	SMALL GROUP	WRITTEN			
AN8.4	At the end of the session the student should be able to Demonstrate important muscle attachment on the given bone	K	KH	Y	SMALL GROUP	VIVA			
AN8.5	At the end of the session the student should be able to a.Identify various bones in articulated hand, b.Differentiate between metacarpels and phalanges,c. peculiarities of 1st metacarpel ,d.joints formed by metacarpels and phalenges and e.enumerate the peculiarities of pisiform	K	KH	Y	PRACTICLE,SMALL GROUP	VIVA			
AN8.6	At the end of the session the student should be able to a.Identify schaphoid bone,b.Determine the side of scaphoid bone,c.Identify the most common site of scaphoid fracture,d.Explain the blood supply of scaphoid,e.Anatomical basis of avascular necrosis.	K	KH	N	LECTURE	VIVA		ORTHOPAEDICS	
9.Topic: Pectoral region									
AN9.1	At the end of the session the student should be able to Identify pectoralis major and pectoralis minor.Define attachment, nerve supply & action of pectoralis major and pectoralis minor.	K	KH,SH	Y	PRACTICAL	VIVA			
AN9.2	1.At the end of the session the student should be able to 1.Define the location ,extent, deep relations ,structure,microanatomy of the breast	k	KH	Y	PRACTICAL	VIVA			

	2. At the end of the session the student should be able to EXPLAIN - Applied anatomy,Age changes,Blood supply,Lymphatic drainage of breast	K	KH	Y	LECTURE	WRITTEN			
AN9.3	At the end of the session the student should be able to 1.EXPLAIN Stages of development of breast ,2.congenital anamolies related to development of breast.	K	KH	Y	LECTURE	WRITTEN			
10.Topic: Axilla, Shoulder and Scapular region									
AN10.1	At the end of the session the student should be able to Identify & describe boundaries and contents of axilla	K,S	SH	Y	PRACTICAL,DOAP	VIVA			
AN10.2	At the end of the session the student should be able to Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein	K,S	SH	Y	DOAP	VIVA			
AN.10.3	At the end of the session the student should be able to Describe a.formation,b.course,c.relations, of Roots ,Trunks,Cords,Branches of brachial plexus.	K,S	SH	Y	LECTURE - followed by - DOAP	VIVA			
AN10.4	1.At the end of the session the student should be able to Classify the anatomical groups of axillary lymph nodes,their location and specify their areas of drainage	K	KH	Y	SMALL GROUP	WRITTEN			
	2.At the end of the session the student should be able to examination of axillary lymph nodes.	K,S	SH	Y	DOAP	VIVA			
AN.10.5	At the end of the session the student should be able to Define 1.prefixed and2. post fixed brachial plexus, 3. Applied anatomy of post fixed and prefixed brachial plexus.	K	KH	Y	SMALL GROUP	VIVA			
AN.10.6	At the end of the session the student should be able to Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis	K	KH	Y	SMALL GROUP	VIVA			
AN10.7	At the end of the session the student should be able to Explain anatomical basis of enlarged axillary lymph nodes	K	KH	Y	SMALL GROUP	VIVA			
AN10.8	At the end of the session the student should be able to Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimus dorsi	K,S	SH	Y	DOAP	VIVA			
AN.10.9	At the end of the session the student should be able to Describe the arterial anastomosis around the scapula and mention the boundaries of triangle of auscultation	K,S	SH	Y	DOAP	VIVA			

AN10.10	At the end of the session the student should be able to Demonstrate,1.origin,2.insertion.3.nerve supply and ,4.Action of deltoid and rotator cuff muscles	K,S	SH	Y	DOAP	VIVA			
AN10.11	At the end of the session the student should be able to Demonstrate,1.origin,2.insertion.3.nerve supply and ,4.Action of Serratus anterior muscle. 5. explain winging of scapula.	K,S	SH	Y	DOAP	WRITTEN			
AN10.12	At the end of the session the student should be able to Describe and demonstrate shoulder joint for– 1.type, articular surfaces, capsule, .synovial membrane, 2.ligaments, 3.relations,4. movements, muscles involved, 5.blood supply, nerve supply and 6.applied anatomy.	K,S	SH	Y	LECTURE,DOAP	WRITTEN		ORTHOPAEDICS	
AN10.13	At the end of the session the student should be able to Explain anatomical basis of Injury to axillary nerve during intramuscular injections	K,S	SH	Y	DOAP	VIVA			
11.Topic: Arm & Cubital fossa									
AN11.1	1.At the end of the session the student should be able to Define origin,insertion,nervesupply and action of muscles of anterior compartment of arm	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Define origin,insertion,nervesupply and action of muscles of posterior compartment of arm	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
AN11.2	1.At the end of the session the student should be able to Describe the Origin ,course ,relations ,branches of musclocutaneous nerveand radial nerve in arm	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Describe the Origin,course,relations,branches of ulnar and median nerves in arm	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to Origin,course,relations,branches of brachial artery in arm	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
AN11.3	At the end of the session the student should be able to Describe the anatomical basis of Venepuncture of cubital veins	K	KH	Y	SMALL GROUP	VIVA			
AN11.4	At the end of the session the student should be able to Describe the anatomical basis of Saturday night paralysis	K	KH	Y	PRACTICLE	WRITTEN		Orthopaedics	

AN11.5	At the end of the session the student should be able to Identify & describe boundaries and contents of cubital fossa from medial to lateral	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN11.6	1.At the end of the session the student should be able to Explain Elbow joint under 1.Type of joint,2.Bones forming,3.Articulating surfaces,4.capsule,synovial membrane and ligaments,5.Range of the movements and muscles responsible for movement,6.Applied antomy.	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Describe the anastomosis around the elbow join	K	KH	Y	SMALL GROUP	VIVA			
12.Topic: Forearm & hand									
AN12.1	At the end of the session the student should be able to Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN12.2	1.At the end of the session the student should be able to Describe the Origin,course,relations,branches of radial ,ulnar and median nerves in forearm	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Describe the Origin,course,relations,branches of ulnar and radial arteries in forearm	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN12.3	At the end of the session the student should be able to Identify & describe flexor retinaculum with its attachments	K	KH	Y	SMALL GROUP	WRITTEN			
AN12.4	At the end of the session the student should be able to 1.Describe structure of carpel tunnel.2 .Enumerate the structures passing through and above the carpel tunnel, 3.Relations of various structures in the carpel tunnel.	K	KH	Y	SMALL GROUP	VIVA			
	4. At the end of the session the student should be able to Define the common eitiology,and symptoms of carpel tunnel syndrome.	K	KH	Y	SMALL GROUP	VIVA			
AN12.5	At the end of the session the student should be able to Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN12.6	At the end of the session the student should be able to 1.Enumerate joints responsible for movements of thumb,2.Explain origin ,insertion ,nerve supply and action of muscles responsible for movement of thumb	K,S	SH	Y	DOAP	SKILL ASSESSMENT			

AN12.7	1.At the end of the session the student should be able to Describe position ,relations ,formation and branches of superficial palmar arch	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Describe position ,relations ,formation and branches of Deep palmar arch	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to Describe the course ,relations , branches and distribution of ulnar,median and radial nerves in hand	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN12.8	At the end of the session the student should be able to Define partial and complete claw hand and nerve lesions responsible for claw hand	K	KH	Y	SMALL GROUP	VIVA			
AN12.9	At the end of the session the student should be able to Identify & describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	K	KH	Y	LECTURE	WRITTEN			
AN12.10	At the end of the session the student should be able to Describe 1.position,2.boundaries ,3. communications ,4.Incisions of drainage of fascial spaces of hand	K,S	SH	N	LECTURE	WRITTEN			
AN12.11	At the end of the session the student should be able to Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions	K,S	SH	Y	PRACTICAL	SKILL ASSESSMENT			
AN12.12	At the end of the session the student should be able to Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN12.13	At the end of the session the student should be able to 1.Define wrist drop,2. muscles paralysed during wrist drop,3.site of the lesion and nerve responsible for wrist drop	K	KH	Y	LECTURE	WRITTEN			
AN12.14	1.At the end of the session the student should be able to Know the number of compartments under extensor retinaculum	K,S	SH	Y	PRACTICLE	WRITTEN			
	2.At the end of the session the student should be able to Enumerate the structures passing through each compartment	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to Define their relation with lister's tubercle	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN12.15	At the end of the session the student should be able to Define the position and attachments of extensor expansion.	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
13.Topic: General Features, Joints, radiographs & surface marking									

AN13.1	1.At the end of the session the student should be able to Define attachments of intermuscular septa in arm and explain the structures piercing them	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session the student should be able to Explain interosseous membrane in forearm and gaps in that ,list out the structures passing through them	K	KH	Y					
	3.At the end of the session the student should be able to Describe venous drainage of upper limb.	K	KH	Y					
	4.At the end of the session the student should be able to Explain lymphatic drainage of upper limb.	K	KH	Y					
AN13.2	At the end of the session the student should be able to Describe dermatomes of upper limb	K	KH	Y	LECTURE	WRITTEN			
AN13.3	1.At the end of the session the student should be able to Explain radioulnar joints under 1.Type of joint,2.Articulating surfaces,3.Capsule ,synovial membrane ,ligaments 4.Relations,5.Movements , and muscles responsible.	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Explain WRIST joint under 1.Type of joint,2.Articulating surfaces,3.Capsule ,synovial membrane ,ligaments 4.Relations,5.Movements , and muscles responsible.	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to Explain FIRST CARPOMETACARPAL joint under 1.Type of joint,2.Articulating surfaces,3.Capsule ,synovial membrane ,ligaments 4.Relations,5.Movements , and muscles responsible.	K,S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
AN13.4	At the end of the session the student should be able to Describe Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metacarpophalangeal join	K	KH	Y	LECTURE	WRITTEN			
AN13.5	At the end of the session the student should be able to 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	SMALL GROUP	SKILL ASSESSMENT			
AN13.6	At the end of the session the student should be able to 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	DOAP	SKILL ASSESSMENT			
AN13.7	1.At the end of the session the student should be able to Identify & demonstrate surface projection of: Cephalic and basilic vein,	K,S	SH	Y	DOAP	SKILL ASSESSMENT			

	2.At the end of the session the student should be able to Know Testing of muscles: Trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, Brachioradialis	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to know Palpation of Brachial artery, Radial artery,	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN13.8	At the end of the session the student should be able to Describe the development of upperlimb	K	KH	Y	LECTURE	WRITTEN			
14.Topic: Features of individual bones (Lower Limb)									
AN14.1	1.At the end of the session the student should be able to IDENTIFY ALL THE INDIVIDUAL LOWER LIMB BONES	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Determine the side of lower limb bones	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to hold all the lower limb bones in anatomical position	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	4.At the end of the session the student should be able to Describe Important features and attachments of hip bone	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	5.At the end of the session the student should be able to Describe Important features and attachments of Femur and Patella	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	6.At the end of the session the student should be able to Describe Important features and attachments of Tibia	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	7.At the end of the session the student should be able to Describe Important features and attachments of Fibula	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN14.2	1.At the end of the session the student should be able to Identify and describe joints formed by hip bone	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Identify and describe joints formed by Femur and Patella	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to Identify and describe joints formed by Tibia	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	4.At the end of the session the student should be able to Identify and describe joints formed by Fibula	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN14.3	At the end of the session the student should be able to Describe the importance of ossification of lower end of femur & upper end of tibia	K	KH	Y	LECTURE	WRITTEN		Forensic Medicine	

AN14.4	At the end of the session the student should be able to Identify and name various bones in the articulated foot with individual muscle attachment	K,S	SH	Y	DOAP	PRACTICAL			
15.Topic: Front & Medial side of thigh									
AN15.1	1.At the end of the session the student should be able to Describe and demonstrate origin, course, relations, branches , termination of Femoral nerve	K,S	SH	Y	PRACTICAL	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Describe and demonstrate origin, course, relations, branches ((tributaries) and, termination of Femoral Vessels	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to Describe and demonstrate origin, course, relations, branches , termination of Obturator nerve	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN15.2	1.At the end of the session the student should be able to Describe ,origin ,insertion, nerve supply ,action of quadriceps femoris muscle.	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	2.At the end of the session the student should be able to Describe origin ,insertion ,nerve supply, action of adductor muscles of thigh	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
AN15.3	At the end of the session the student should be able to Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	K,S	SH	Y	LECTURE,DOAP	SKILL ASSESSMENT, WRITTEN			
AN15.4	At the end of the session the student should be able to Explain anatomical basis of Psoas abscess & Femoral hernia	K	KH	Y	LECTURE	WRITTEN		GENERAL SURGERY	
AN15.4	At the end of the session the student should be able to Describe and demonstrate adductor canal with its content	K,S	SH	Y	LECTURE,DOAP	SKILL ASSESSMENT, WRITTEN			
16.Topic: Gluteal region & back of thigh									
AN16.1	1.At the end of the session the student should be able to Describe and demonstrate origin, course, relations, branches , termination of SCIATIN NERVE.	K,S	SH	Y	DOAP	SKILL ASSESSMENT.			
	2.At the end of the session the student should be able to Describe the origin ,course,relation and distribution of superior and inferior gluteal vesseels and nerves.	K,S	SH	Y	DOAP	SKILL ASSESSMENT.			
AN16.2	1.At the end of the session the student should be able to Explain the origin ,inaertion nerve supply and action of gluteus maximus muscle.	K,S	SH	Y	DOAP	SKILL ASSESSMENT			

	2.At the end of the session the student should be able to Identify structures umder cover of Gluteus maximus from lateral to medial side.	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	3.At the end of the session the student should be able to Locate the suface anatomy of sciatic nerve and how to avoid injury to it during intra muscular injection.	K,S	SH	Y	DOAP	SKILL ASSESSMENT		GENERAL SURGERY	
AN16.3	At the end of the session the student should be able to Explain the anatomical basis of Trendelenburg sign	K	KH	Y	SMALL GROUP	WRITTEN			
AN16.4	1.At the end of the session the student should be able to Define and locate hamstrings, describe the charecteristics of these muscles.	K,S	SH	Y	SMALL GROUP	VIVA			
	2.At the end of the session the student should be able to Differentiate between true and false hamstrings.	K	KH	Y	SMALL GROUP	VIVA			
	3.At the end of the session the student should be able to Desribe the origin insertion ,nerve supply ,and action of hamsrtings	K	SH	Y	SMALL GROUP	VIVA			
AN16.5	At the end of the session the student should be able to Describe and demonstrate the origin, course, relations, branches , termination of important nerves and vessels on the back of thigh	K,S	SH	Y	SMALL GROUP	VIVA			
AN16.6	At the end of the session the student should be able to Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa	K,S	SH	Y	DOAP	SKILL ASSESSMENT			
	17 .Topic: Hip Joint								
AN17.1	1.At the end of the session the student should be able to Explain hip joint under 1.Type of joint,its capsule,ligaments, and synovial membrane.								
	2.At the end of the session the student should be able to Explain relations Of hip joint.								
	3.At the end of the session the student should be able to Explain Movements , and muscles responsible for those movements in hip joint.								
	4. At the end of the session the student should be able to Identify and locate different bursa around hip joint.								
	5.At the end of the session the student should be able to Describe nerve supply and blood supply of hip joint.	K,S	SH	Y	DOAP	SKILL ASSESSMENT.			
AN17.2	At the end of the session the student should be able to Describe anatomical basis of complications of fracture neck of femur	K	KH	N	SMALL GROUP	VIVA		ORTHOPAEDICS	

AN17.3	At the end of the session the student should be able to Describe dislocation of hip joint and surgical hip replacement	K	KH	N	SMALL GROUP	VIVA		ORTHOPAEDICS	

Number	COMPETENCY The student should be able to	SLO	Domain K/S/A/C	Level K/KH/SHP	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	Number required to certify P	Vertical Integration	Horizontal Integration
Topic: Knee joint, Anterior compartment of leg & dorsum of foot		Number of competencies: (7)				Number of procedures for certification: (NIL)				
AN18.1	Describe and demonstrate major muscles of anterior compartment of leg with their attachment, nerve supply and actions	1. Enumerate the muscles of the Anterior compartment of Leg 2. Describe in detail the Origin , Insertion , Nerve supply and actions of muscles of the Anterior compartment of leg	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	1. Describe in detail the course and branches of Anterior Tibial artery	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN18.3	Explain the anatomical basis of foot drop	1. Describe in detail about the formation , course , relations and divisions of the Sciatic nerve 2.Enumerate reasons for occurrence of Foot drop	K	KH	Y	Lecture, DOAP session	Written/ Viva voce			
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	1. Describe the Knee joint - Type 2. Describe the supports of the Knee joint - Capsule / Ligaments / Menisci 3. Describe the cruciate ligaments of Knee joint 4. Describe the bursae of knee joint - Housemaid's knee and Clergyman's knee 5. Describe the anastomosis 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	1. Explain 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	1.Explain the features of Osteoarthritis 2. Describe the bursae of knee joint and its clinical importance 3. Describe meniscal injuries - Bucket handle tear	K	KH	N	Lecture	Written/ Viva voce		Orthopaedics	

AN18.7	Explain anatomical basis of Osteoarthritis	1. Enumerate the factors causing Osteoarthritis 2. List some preventive measures to avoid Osteoarthritis	K	KH	N	Lecture	Written/ Viva voce		Orthopaedics	
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	1. Enumerate muscles of the Back of Leg 2. Describe Origin , Insertion , Nerve supply and Actions of the muscles of Back of Leg 3. Explain the anatomical basis of Peripheral heart 4. Explain the anatomical basis of Calf pump	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	1. Describe in detail the Origin , Course , Relations , Branches and termination of the Peroneal artery 2. Describe in detail the Origin , Course , Relations and Branches of the Posterior Tibial artery 3. Describe in detail about Tibial nerve in the 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"	1. Explain the anatomical basis of Peripheral heart 2. Describe about the Origin , Insertion , Nerve supply and actions of the Soleus muscle 3. Enumerate the Perforators of the Back of Leg	K	KH	Y	Lecture	Written/ Viva voce			
AN19.4	Explain the anatomical basis of rupture of calcaneal tendon	1. Describe the Origin and Insertion of Gastronemius muscle 2. Enumerate factors causing rupture of Calcaneal tendon and how to prevent it 3. Describe the formation and insertion of the Tendocalcaneus	K	KH	N	Lecture	Written/ Viva voce		Orthopaedics	
AN19.5	Describe factors maintaining importance arches of the foot with its importance	1. Enumerate the arches of foot 2. Describe the factors maintaining arches of Foot	K	KH	Y	Lecture	Written/ Viva voce			
AN19.6	Explain the anatomical basis of Flat foot & Club foot	1. Describe about Flat foot and its effects 2. Describe about Club foot and its associated conditions 3. Enumerate deformities of the foot	K	KH	N	Lecture	Written/ Viva voce		Orthopaedics	
AN19.7	Explain the anatomical basis of Metatarsalgia & Plantar fasciitis	1.Describe Metatarsalgia and how it affects the Lateral and Medial plantar nerves in foot 2. Describe the parts ,attachment and functions of the Plantar aponeurosis 3. Enumerate the vessels and nerves supplying sole of foot	K	KH	N	Lecture	Written/ Viva voce		Orthopaedics	
Topic: General Features, Joints, radiographs & surface marking		Number of competencies: (10)				Number of procedures for certification: (NIL)				

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	1. Describe the Type , Articular surfaces , Capsule , Synovial membrane , Ligaments , Relations , Movements and muscles involved ,Blood supply , Nerve supply of the Ankle joint 2. Describe the Type , Articular surfaces , Capsule , Synovial membrane , Ligaments , Relations , Movements and muscles involved ,Blood supply , Nerve supply of the Tibiofibular joint 3. Explain the anatomical basis of Eversion and Inversion	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN20.2	Describe the subtalar and transverse tarsal joints	1. Describe the Type , Capsule , Ligaments and movements of the Subtalar joints 2. Describe the Type , Capsule , Ligaments and movements of the 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	1. Describe the Attachments and extension of the Fascia lata 2. Describe the Course , Tributaries and Termination of the Great Saphenous vein 3. Describe the Attachemnts and extensions of the Extensor retinacula 4. Describe the dermatomal distribution of the 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	1. Enumerate the Inguinal Lymph nodes 2. Explain the Surgical and Clinical importance of Inguinal lymph nodes	K	KH	N	Lecture	Written/ Viva voce		GENERAL SURGERY	
AN20.5	Explain anatomical basis of varicose veins and deep vein thrombosis	1. Describe the formation of Varicose veins and its complications 2. Describe about Trendelenberg's test and its importance 3. Enumerate factors causing Deep vein thrombosis and its complications	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	1. Enumerate bones of the Lower limb 2. Identify bony landmarks , epiphyseal junction in bones on viewing radiographs 3. Identify abnormalities like fracture or dislocation on viewing the radiographs	K/S	SH	Y	Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment			

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, sustentaculum tali, tuberosity of fifth metatarsal, tuberosity of the navicular	1. Identify and demonstrate bony landmarks of a. Highest point of Iliac crest b.Posterior superior Iliac spine c. Iliac tubercle d. Pubic tubercle e. Ischial tuberosity f. Adductor tubercle g. Tibial tuberosity h. Head of Fibula i. Medial and Lateral malleloli j. Condyles of Femur and Tibia k. Sustentaculum tali l. Tuberosity of 5th Metatarsal m. Tuberosity of 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 & dorsalis pedis blood vessels in a simulated environment	1. Identify and demonstrate the location of Femoral and Popliteal artery 2. Enumerate various check sites of Peripheral pulses 3. Explain the anatomical basis of Femoral artery for performing Cardiac catheterization , Embalming and Femoraltapping to obtain an Arterial Blood Gas (ABG) sample	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment			
AN20.9	Identify & demonstrate Palpation of vessels (femoral, popliteal,dorsalis pedis,post tibial), Mid inguinal point, Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins	1. Describe the Origin , Course , relations and branches of the Femoral artery 2. Identify , palpate and demonstrate the Popliteal artery , Posterior Tibial artery and Dorsalis pedis artery 3. Identify and demonstrate the Mid-Inguinal pointand mention its clinical importance 4. Identify and demonstrate the branches of the Femoral nerve 5. Identify and demonstrate the Saphenous opening 6. Identify , palpate and demonstrate the Sciatic nerve, Tibial nerve , Common Peroneal nerve , Deep peroneal nerve 7. Identify and demonstrate the formation , course and termination of the Great and Small Saphenous veins	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment		GENERAL SURGERY	
AN20.10	Describe basic concept of development of lower limb	1. Describe in detail the development of the Lower lim	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, Ist rib and typical thoracic vertebra	1. Describe parts of sternum 2. Describe the Bones forming ,Ligaments , Articular surfaces , Movements of the Sternoclavicular joint 3. Describe the procedure of Sternal Puncture 4. Enumerate parts of a typical rib 5. Describe parts of a typical vertebrae 6. Describe parts of a typical thoracic vertebra and demonstrate points of identification	K/S	SH	Y	Lecture, DOAP sessio	Viva voce/ skill assessment			
AN21.2	Identify & describe the features of 2nd, 11th and 12th ribs, 1st, 11th and 12th thoracic vertebrae	1. Describe the identifying features of the 2nd rib and Demonstrate them 2. Describe the clinical importance of sternal angle and the structures related to it 3. Classify ribs . Explain about floating ribs	K/S	SH	N	Lecture, DOAP session	Viva voce/ skill assessment			
AN21.3	Describe & demonstrate the boundaries of thoracic inlet, cavity and outlet	1. Describe the boundaries of the Thoracic inlet 2. Explain the anatomicl basis of Thoracic Inlet syndrome 3. Describe the boundaries and contents of the Thoracic cavity 4. Describe the boundaries of the Thoracic 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 fibres, nerve supply and actions of intercostal muscles	1. Describe in detail the Origin , Insertion , Nerve supply , Blood supply of the Intercostal muscles 2. Enumerate Accessory muscles of Respiration	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN21.5	Describe & demonstrate origin, course, relations and branches of a typical intercostal nerve	1. Describe the Origin , Course and Distribution of the Typical Intercostal nerve 2. Explain the anatomical basis of Intercostal Neuralgia	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	1. Describe origin , course and branches of Anterior and Posterior Intercostal vessels 2. Describe origin , course and branches of Internal thoracic (Mammary) 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	1.Describe origin , course , relations and branches of Atypical intercostal nerve 2. Describe origin , course , relations and branches of Superior Intercostal artery and Subcostal artery	K	KH	N	Lecture	Written			

AN21.8	Describe & demonstrate type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	1. Describe in detail the articular surfaces and movements of Manubriosternal joint 2. Describe in detail the articular surfaces and movements of Costovertebral and Costotransverse joints 3. Describe in detail the articular surfaces and movements of 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	1. Describe in detail the muscles of expiration and inspiration 2. Describe in detail the mechanism 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	1. Describe the type , articular surfaces and movemen	K	KH	N	Lecture	Written			
AN21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	1. Describe the boundaries and contents of Superior Mediastinum 2. Enumerate parts of the Inferior Mediastinum 3. Describe boundaries and contents of Anterior Mediastinum 4. Describe boundaries and contents of Middle Mediastinum 5. Describe boundaries and contents of 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	1. Describe in detail the layers and contents of the Pericardium 2. Describe about the Sinuses of the Pericardium 3. Describe about the blood supply and nerve supply of the 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	1. Describe in detail about the external features of the heart 2. Describe in detail about the features of Right atrium of the Heart 3. Describe in detail about the features of the Right ventricle of Heart 4. Describe in detail about the valves of the Heart	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN22.3	Describe & demonstrate origin, course and branches of coronary arteries	1. Describe in detail about origin , course and branches of the Right Coronary artery 2. Describe in detail about origin , course and branches of the Left Coronary artery 3. Describe in detail about Coronary dominance	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN22.4	Describe anatomical basis of ischaemic heart disease	1. Describe Anatomical basis of Ischaemic heart disea	K	KH	Y	Practical, Lecture	Written/ Viva voce		General Medicine	
AN22.5	Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	1. Describe in detail about the formation and course of Coronary sinus 2. Enumerate the tributaries of the Coronary sinus 3. Describe the termination of the Coronary sinus	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN22.6	Describe the fibrous skeleton of heart	1. Describe the Fibrous skeleton of the Heart	K	KH	Y	Lecture	Written			
AN22.7	Mention the parts, position and arterial supply of the conducting system of heart	1. Enumerate the parts of the conducting system 2. Describe in detail the position of parts of the conducting system of heart 3. Describe the arterial supply to 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 oesophagus	1. Describe the external features and relations of Oesophaus 2. Describe the blood supply and nerve supply of Oesophagus 3. Describe the lymphatic drainage of Oesophagus 4. Enumerate the anatomical basis of Barrets Oesophagus , Achalasia cardia and Oesophageal varices	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN23.2	Describe & demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy	1. Describe in detail the formation and extent of the Thoracic duct 2. Describe in detail the relations of the thoracic duct 3. Enumerate the tributaries joining the Thoracic duct 4. Describe the applied and clinical significance of the Thoracic duct	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins	1. Describe origin , course , relations , tributaries and termination of Superior vena cava 2. Describe origin , course , relations , tributaries and termination of Azygous vein 3. Describe origin , course , relations , tributaries and termination of Hemiazygous vein 4. Describe origin , course , relations , tributaries and termination of Accessory Hemiazygous vein	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	1.Describe the extent, relations and branches of Arch of Aorta 2.Describe the extent, relations and branches of Descending Thoracic Aorta	K	KH	Y	Practical, Lecture	Written/ Viva voce			
AN23.5	Identify & Mention the location and extent of thoracic sympathetic chain	1. Identify the location of Thoracic Sympathetic chain 2. Describe the 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	1. Describe the Splanchnic nerves	K	KH	N	Lecture	Written			
AN23.7	Mention the extent, relations and applied anatomy of lymphatic duct	1. Describe the extent and reltions of Right Lymphatic duct 2. Describe the applied anatomy of Right Lymphatic duct	K	KH	Y	Lecture	Written/ Viva voce			
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	1. Describe the blood supply and lymphatic drainage of the Pleura 2. Describe the extent of Pleura and its reflections 3. Describe the Pleural recesses 4. Describe the applied and clinical significance of Pleuritis / Thoracocentesis / Pleurisy	K	KH	Y	Lecture, Practical	Written/ Viva voce		General Medicine	
AN24.2	Identify side, external features and relations of structures which form root of lung & bronchial tree and their clinical correlate	1. Enumerate and describe the structures with relations which form the root of Right lung 2. Enumerate and describe the structures with relations which form the root of Left lung 3. Enumerate parts of the Tracheobronchial tree 4. Desceribe the clinical correlation of the Root of Lung and Bronchial tree	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		General Medicine	

AN24.3	Describe a bronchopulmonary segment	1. Define Bronchopulmonary segment 2. Enumerate the different bronchopulmonary segments seen in right lung 3. Enumerate the different bronchopulmonary segments seen in left lung	K	KH	Y	Lecture	Written/ Viva voce			
AN24.4	Identify phrenic nerve & describe its formation & distribution	1. Describe the formation and distribution of branches of Phrenic nerve	K/S	SH	Y	Practical, Lecture	Written/ Viva voce			
AN24.5	Mention the blood supply, lymphatic drainage and nerve supply of lungs	1. Describe the blood supply , nerve supply and lymphatic drainage of right lung 2. Describe the blood supply , nerve supply and lymphatic drainage of left lung	K	KH	Y	Lecture	Written/ Viva voce			
AN24.6	Describe the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea	1. Describe the extent , length and relations of the Trachea 2. Describe the blood supply and nerve supply of the Trachea 3. Describe the lymphatic drainage of the 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	1. Draw and label the histological structure of the Trachea 2. Draw and label the histological structure of the Lung 3. Identify and mention 2 points after seeing a slide of Trachea 4. Identify and mention 2 points after seeing a slide of Lung	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			
AN25.2	Describe development of pleura, lung & heart	1. Describe development of Pleura 2. Describe development of Lung 3. Describe development of Heart 4. Describe development of Right Atrium of Heart 5. Describe development of Interatrial septum 6. Describe development of Interventricular septum	K	KH	Y	Lecture	Written			
AN25.3	Describe fetal circulation and changes occurring at birth	1. Describe in detail the fetal circulation 2. Enumerate the changes which occur in circulation at birth	K	KH	Y	Lecture	Written			

AN25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula B198	1. Describe the embryological basis of Atrial septal defect 2. Describe the embryological basis of Ventricular septal defect 3. Describe the embryological basis of Fallot's tetralogy 4. Describe the embryological basis of Tracheo-Oesophageal fistula	K	KH	Y	Lecture,	Written/ Viva voce		Paediatrics	
AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta	1. Describe developmental basis of Transposition of great vessels 2. Describe developmental basis of Dextrocardia 3. Describe developmental basis of Patent ductus arteriosus 4. Describe developmental basis of Coarctation of Aorta	K	KH	Y	Lecture,	Written/ Viva voce		Paediatrics	
AN25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus	1. Describe development of Aortic arch arteries 2. Describe development of Superior vena cava 3. Describe development of Inferior vena cava 4. Describe development of Coronary sinus	K	KH	N	Lecture,	Written/ Viva voce			
AN25.7	Identify structures seen on a plain x-ray chest (PA view)	1. Identify and enumerate structures seen in a plain Chest x-ray	K/S	SH	Y	Practical, DOAP session	Written/ Viva voce		Radiodiagnosis, General Medicine	
AN25.8	Identify and describe in brief a barium swallow	1. Identify and Enumerate the features on radiograph of Barium swallow	K/S	SH	N	Practical, DOAP session	Written/ Viva voce		Radiodiagnosis	
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	1. Demonstrate surface marking of lines of Pleural reflection 2. Demonstrate surface marking of lung borders and fissures 3. Demonstrate surface marking of heart borders	K/S	SH	Y	Practical	Viva voce/ skill assessment		General Medicine	
Topic: Skull osteology		Number of competencies: (7)					Number of procedures for certification: (NIL)			
AN26.1	Demonstrate anatomical position of skull, Identify and locate individual skull bones in skull	1. Enumerate parts of the human skull 2. Identify each bone and demonstrate their anatomical position	K/S	SH	Y	Lecture, DOAP sessio	Viva voce/ skill assessment			
AN26.2	Describe the features of norma frontalis, verticalis, occipitalis, lateralis and basalis	1. Describe features of Norma frontalis 2. Describe features of Norma verticalis 3. Describe features of Norma occipitalis 4. Describe features of Norma lateralis 5. Describe features of Norma basalis	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			

AN26.3	Describe cranial cavity, its subdivisions, foramina and structures passing through them	1. Enumerate the various subdivisions of the cranial cavity 2. Enumerate the various foramina of the cranial cavity 3. Describe in detail the structures passing through various foramina	K/S	SH	Y	Lecture, DOAP sessio	Viva voce/ skill assessment			
AN26.4	Describe morphological features of mandible	1. Describe in detail the features of Mandible 2. Differentiate the features of Mandible based of age 3. Differentiate the features of Mandible based of sex	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment			
AN26.5	Describe features of typical and atypical cervical vertebrae (atlas and axis)	1. Describe features of Typical cervical vertebrae 2. Describe features of Atlas 3. Describe features of Axis	K/S	SH	Y	Lecture, DOAP sessio	Viva voce/ skill assessment			
AN26.6	Explain the concept of bones that ossify in membrane	1. Enumerate types of Ossification 2. Describe in detail about Membranous ossification 3. Describe in detail about Endochondral ossification	K	KH	N	Lecture	Viva voce			
AN26.7	Describe the features of the 7th cervical vertebra	1. Describe the features of 7th cervical vertebrae 2. Identify the 7th cervical vertebrae and demonstrate its anatomical position	K/S	SH	N	DOAP session	Viva voce			
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	1. Enumerate the Layers of Scalp 2. Describe the blood supply and nerve supply of Scalp 3. Describe the applied and clinical significance of Scalp	K	KH	Y	Practical, Lecture	Written/ Viva voce			
AN27.2	Describe emissary veins with its role in spread of infection from extracranial route to intracranial venous sinuses	1. Enumerate the Emissary veins of Head and Neck 2. Describe in detail the spread of infection through emissary veins	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	1. Describe the muscles of Facial expression 2. Describe the nerve supply of muscles of the Face	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN28.2	Describe sensory innervation of face	1. Enumerate the nerves innervating the face	K	KH	Y	Practical, Lecture	Written/ Viva voce			

AN28.3	Describe & demonstrate origin /formation, course, branches /tributaries of facial vessels	1. Describe in detail the origin , course , branches of the Facial artery 2. Describe in detail the formation and termination of the Facial vein	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	1. Enumerate the branches of Facial nerve in face 2. Describe the origin , course and distribution of branches of Facial nerve in face	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	1. Enumerate the various lymph nodesin head and neck region 2. Describe in detail about lymph nodes and their drainage in head neck and face region	K	KH	Y	Practical, Lecture	Written/ Viva voce			
AN28.6	Identify superficial muscles of face, their nerve supply and actions	1. Describe in detail the superficial muscles of face with their nerve supply 2. Describe the actions of the superficial muscles of the face	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	1. Enumeratethe various causes for Facial nerve palsy and its anatomical basis	K	KH	Y	Lecture	Written			
AN28.8	Explain surgical importance of deep facial vein	1. Describe in detail the surgical importance of the Deep facial vein	K	KH	Y	Lecture	Written			
AN28.9	Describe & demonstrate the parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance	1. Describe parts , borders , surfaces of the Parotid gland 2. Describe contents and relations of the Parotid gland 3. Describe nerve supply of the Parotid gland 4. Describe formation , course and opening of Parotid gland 5. Describe applied and surgical anatomy of the Parotid gland	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	1. Describe anatomical basis of Frey's syndrome	K	KH	N	Lecture	Written			
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	1. Describe origin and insertion of Sternocleidomastoid 2. Describe Nerve supply and relations of Sternocleidomastoid 3. Describe actions and applied anatomy 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	1. Describe the anatomical basis of Erb's palsy 2. Describe the anatomical basis of Klumpke's paralysis	K	KH	Y	Lecture	Written			
AN29.3	Explain anatomical basis of wry neck	1. Describe Wry neck or Torticollis	K	KH	N	Lecture	Written			
AN29.4	Describe & demonstrate attachments of 1) inferior belly of omohyoid, 2)scalenus anterior, 3) scalenus medius & 4) levator scapulae	1. Describe origin and insertion of Inferior belly of Omohyoid 2. Describe origin and insertion of Scalenus anterior 3. Describe origin and insertion of Scalenus medius 4. Describe origin and insertion of Levator scapulae	K/S	SH	N	Lecture, Practica	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	1. Enumerate the various cranial fossa 2. Describe in detail the cranial fossa and their related structures	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN30.2	Describe & identify major foramina with structures passing through them	1. Enumerate the major foramina in the cranial fossa 2. Identify the major foramina and describe in detail the structures passing through them	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN30.3	Describe & identify dural folds & dural venous sinuses	1. Enumerate the folds of Duramater 2. Classify Dural venous sinuses and describe in detail about their relations 3. Describe in detail the cavernous sinus	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	1. Describe applied and clinical importance of Dural venous sinuses	K	KH	Y	Lecture	Written			
AN30.5	Explain effect of pituitary tumours on visual pathway	1. Enumerate parts of the visual pathway 2. Describe effect of Pituitary tumour on visual pathway	K	KH	N	Lecture	Written			
Topic: Orbit		Number of competencies: (5)					Number of procedures for certification: (NIL)			
AN31.1	Describe & identify extra ocular muscles of eyeball	1. Enumerate the extraocular muscles 2. Describe in detail the origin and insertion of the Extraocular muscles 3. Describe in detail the nerve supply and actions of the extraocular muscles	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	1. Describe the nerves of the orbit in detail 2.Describe the vessels of the orbit in detail	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	1. Describe the anatomical basis of Horner's syndrome	K	KH	N	Lecture	Written			
AN31.4	Enumerate components of lacrimal apparatus	1. Enumerate parts of Lacrimal apparatus	K	KH	Y	Lecture	Written			
AN31.5	Explain the anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus	1. Describe in detail about anatomical basis of Occulomotor palsy 2. Describe in detail about anatomical basis of Trochlear palsy 3. Describe in detail about anatomical basis of Abducens palsy 4. Describe Strabismus	K	KH	Y	Lecture	Written		Opthalmology	
Topic: Anterior Triangle			Number of competencies:			Number of procedures for certification: (NIL)				
AN32.1	Describe boundaries and subdivisions of anterior triangle	1. Describe the boundaries and contents of Anterior triangle 2. Enumerate the subdivisions of Anterior triangle	K	KH	Y	Practical, Lecture	Written/ Viva voce			
AN32.2	Describe & demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	1. Describe boundaries and contents of Muscular triangle 2. Describe boundaries and contents of Carotid triangle 3. Describe boundaries and contents of Digastric triangle 4. Describe boundaries and contents of Submental triangle	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Topic: Temporal and Infratemporal regions			Number of competencies: (5)			Number of procedures for certification: (NIL)				
AN33.1	Describe & demonstrate extent, boundaries and contents of temporal and infratemporal fossae	1.Describe Extent , Boundaries and contents of the Temporal fossa 2.Describe Extent , Boundaries and contents of the Infratemporal fossa	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN33.2	Describe & demonstrate attachments, direction of fibres, nerve supply and actions of muscles of mastication	1. Describe origin , insertion and nerve supply and action of Masseter 2. Describe origin , insertion and nerve supply and action of Temporalis 3. Describe origin , insertion and nerve supply and action of Lateral Pterygoid 4. Describe origin , insertion and nerve supply and action of Medial Pterygoid	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN33.3	Describe & demonstrate articulating surface, type & movements of temporomandibular joint	1. Describe articular surfaces , type and 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	1. Explain the clinical significance of Pterygoid venous plexus	K	KH	Y	Lecture	Written			
AN33.5	Describe the features of dislocation of temporomandibular joint	1. Describe features of dislocation of Temporomandibular joint	K	KH	N	Lecture	Written			

Number	COMPETENCY The student should be able to	SLO	Domain K/S/A/ C	elK/KH/	Core (Y/N)	Teaching- Learning Methods	Assessment Methods	Number required to certify P	Vertical Integratio n	Horizontal Integration
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	1. At the end of session, the phase I student should be able to describe & demonstrate the morphology and relations of submandibular salivary gland correctly 2. At the end of session, the phase I student should be able to describe & demonstrate the nerve supply of submandibular salivary gland correctly 3. At the end of session, the phase I student should be able to describe the roots and branches of submandibular ganglion correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN34.2	Describe the basis of formation of submandibular stones	At the end of session, the phase I student should be able to describe the basis of formation of submandibular stones correctly	K	KH	N					
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	1. At the end of session, the phase I student should be able to describe the parts, extent, attachments, modifications of deep cervical fascia correctly 2. At the end of session, the phase I student should be able to describe the applied aspects of deep cervical fascia correctly	K	KH	Y	Lecture	Written			

AN35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland	1. At the end of session, the phase I student should be able to describe & demonstrate location, parts, borders, surfaces & relations of thyroid gland correctly 2. At the end of session, the phase I student should be able to describe & demonstrate the blood supply of thyroid gland correctly 3. At the end of session, the phase I student should be able to describe the clinical significance of Thyroid gland correctly	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	1.At the end of session, the phase I student should be able to demonstrate & describe the origin, parts, course & branches subclavian artery correctly 2. At the end of session, the phase I student should be able to describe subclavian steel syndrome correctly 3. Enumerate the causes of vertebral artery insufficiency correctly	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	1. At the end of session, the phase I student should be able to describe & demonstrate origin, course, relations, tributaries and termination of internal jugular vein correctly 2. At the end of session, the phase I student should be able to describe & demonstrate origin, course, relations, tributaries and termination of brachiocephalic vein correctly	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	1. At the end of session, the phase I student should be able to describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes 2. At the end of session, the phase I student should be able to describe waldeyer's ring and add a note on applied aspects	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN35.6	Describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain	1. At the end of session, the phase I student should be able to describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain correctly 2. At the end of session, the phase I student should be able to describe ansa subclavia correctly 3. At the end of session, the phase I student should be able to describe stellate ganglion correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN35.7	Describe the course and branches of IX, X, XI & XII nerve in the neck	1. At the end of session, the phase I student should be able to describe the orgin,course, relations and branches, distribution and applied aspects of IX nerve in the neck correctly 2. At the end of session, the phase I student should be able to describe the orgin,course, relations and branches, distribution and applied aspects of X nerve in the neck correctly 3.At the end of session, the phase I student should be able to describe the orgin,course, relations and branches, distribution and applied aspects of XI nerve in the neck correctly 4. At the end of session, the phase I student should be able to describe the orgin,course, relations and branches, distribution and applied aspects of XII nerve in the neck correctly	K	KH	Y	Lecture	Written			
AN35.8	Describe the anatomically relevant clinical features of Thyroid swellings	At the end of session, the phase I student should be able to describe the anatomically relevant clinical features of Thyroid swellings correctly	K	KH	N	Lecture	Written			
AN35.9	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib	At the end of session, the phase I student should be able todDescribe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib correctly	K	KH	N	Lecture	Written		General Surgery	

AN35.10	Describe the fascial spaces of neck	1.At the end of session, the phase I student should be able to describe the location, boundaries, contents and surgical importance of retropharyngeal space correctly 2.At the end of session, the phase I student should be able to describe thelocation, boundaries, contents and surgical importance of parapharyngeal space correctly 3. At the end of session, the phase I student should be able to describe the location, boundaries, contents and surgical importance of submandibular space correctly 4. Describe the location, boundaries, contents and surgical importance of suprasternal space of Burns correctly	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	1. At the end of session, the phase I student should be able to describe the morphology, relations, blood supply and applied anatomy of palatine tonsil correctly 2.At the end of session, the phase I student should be able to describe the composition and applied aspects of soft palate correctly	K	KH	Y	Lecture	Written			
AN36.2	Describe the components and functions of Waldeyer's lymphatic ring	At the end of session, the phase I student should be able to describe the components, functions and clinical sigificance of Waldeyer's lymphatic ring correctly	K	KH	Y	Lecture	Written			
AN36.3	Describe the boundaries and clinical significance of pyriform fossa	At the end of session, the phase I student should be able to describe the location, boundaries and clinical significance of pyriform fossa correctly	K	KH	N	Lecture	Written			

AN36.4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess	1.At the end of session, the phase I student should be able to describe the anatomical basis of peri-tonsillar abscess correctly 2.At the end of session, the phase I student should be able to describe the anatomical basis of tonsillitis and tonsillectomy correctly 3. At the end of session, the phase I student should be able to describe the anatomical basis of adenoids correctly	K	KH	N	Lecture	Written		ENT	
AN36.5	Describe the clinical significance of Killian's dehiscence	At the end of session, the phase I student should be able to describe the clinical significance of Killian's dehiscence correctly	K	KH	N	Lecture	Written			
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	1. At the end of session, the phase I student should be able to describe & demonstrate features of nasal septum, their blood supply, nerve supply, lymphatic drainage and clinical significance correctly 2. At the end of session, the phase I student should be able to describe & demonstrate features of lateral wall of nose, their blood supply, nerve supply, lymphatic drainage and clinical significance correctly 3. At the end of session, the phase I student should be able to describe Little's area and its applied aspects correctly 4. At the end of session, the phase I student should be able to describe the structures and openings present in the middle meatus correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN37.2	Describe location and functional anatomy of paranasal sinuses	At the end of session, the phase I student should be able to describe location and functional anatomy of paranasal sinuses correctly	K	KH	Y	Lecture	Written		ENT	
AN37.3	Describe anatomical basis of sinusitis & maxillary sinus tumours	At the end of session, the phase I student should be able to describe anatomical basis of sinusitis & maxillary sinus tumours correctly	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	1. At the end of session, the phase I student should be able to describe the cartilages of larynx correctly 2. At the end of session, the phase I student should be able to describe the orgin, insertion, nerve supply, actions and clinical significance of intrinsic muscles of the larynx and add a note on Semon's law correctly 3. At the end of session, the phase I student should be able to describe the subdivisions of laryngeal cavity correctly 4. At the end of session, the phase I student should be able to describe the intrinsic membranes of larynx correctly 5. At the end of session, the phase I student should be able to describe the folds of the larynx correctly 6. At the end of session, the phase I student should be able to describe the vocal cord paralysis correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN38.2	Describe the anatomical aspects of laryngitis	At the end of session, the phase I student should be able to describe the anatomical aspects of laryngitis correctly	K	KH	N	Lecture	Written		ENT	
AN38.3	Describe anatomical basis of recurrent laryngeal nerve injury	At the end of session, the phase I student should be able to describe anatomical basis of recurrent laryngeal nerve injury correctly	K	KH	N	Lecture	Written			

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	1.At the end of session, the phase I student should be able to describe & demonstrate the morphology of tongue correctly 2.At the end of session, the phase I student should be able to describe & demonstrate the nerve supply of tongue correctly 3.At the end of session, the phase I student should be able to describe & demonstrate the embryological basis of nerve supply of tongue correctly 4.At the end of session, the phase I student should be able to describe & demonstrate the blood supply, lymphatic drainage of tongue correctly 5.At the end of session, the phase I student should be able to describe & demonstrate the actions of extrinsic and intrinsic muscles of tongue correctly	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	At the end of session, the phase I student should be able to explain the anatomical basis of hypoglossal nerve palsy correctly	K	KH	N	Lecture	Written			
Topic: Organs of hearing and equilibrium		Number of competencies: (5)								Number of procedures for certification: (NIL)

AN40.1	At the end of session, the phase I student should be able to describe & identify the parts, blood supply and nerve supply of external ear	1. At the end of session, the phase I student should be able to describe & identify the parts of external ear correctly 2. At the end of session, the phase I student should be able to describe & identify the blood supply, nerve supply and lymphatic drainage of external ear correctly 3. At the end of session, the phase I student should be able to describe & identify the clinical significance of external ear correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN40.2	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	1.At the end of session, the phase I student should be able to describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear correctly 2.At the end of session, the phase I student should be able to describe & demonstrate the functional anatomy of auditory tube correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN40.3	Describe the features of internal ear	At the end of session, the phase I student should be able to describe the features of internal ear correctly	K	KH	N	Lecture	Written			
AN40.4	Explain anatomical basis of otitis externa and otitis media	1. At the end of session, the phase I student should be able to explain anatomical basis of otitis externa correctly 2. At the end of session, the phase I student should be able to explain anatomical basis of otitis media correctly	K	KH	N	Lecture	Written		ENT	
AN40.5	Explain anatomical basis of myringotomy	At the end of session, the phase I student should be able to explain anatomical basis of myringotomy correctly	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	At the end of session, the phase I student should be able to describe & demonstrate parts and layers of eyeball correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN41.2	Describe the anatomical aspects of cataract, glaucoma & central retinal artery occlusion	1. At the end of session, the phase I student should be able to describe the anatomical aspects of cataract correctly 2.At the end of session, the phase I student should be able to describe the anatomical aspects of glaucoma correctly 3. At the end of session, the phase I student should be able to describe the anatomical aspects of central retinal artery occlusion correctly	K	KH	N	Lecture	Written		Ophthal mology	
AN41.3	Describe the position, nerve supply and actions of intraocular muscles	At the end of session, the phase I student should be able to describe the orgin, insertion, nerve supply, actions and clinical significance of intraocular muscles	K	KH	N	Lecture	Written			
Topic: Back Region			Number of competencies: (3)						Number of procedures for certification: (NIL)	
AN42.1	Describe the contents of the vertebral canal	At the end of session, the phase I student should be able to describe the contents of the vertebral canal correctly	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	At the end of session, the phase I student should be able to describe & demonstrate the boundaries, contents and clinical significance of Suboccipital triangle correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN42.3	Describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis	At the end of session, the phase I student should be able to describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis correctly	K	KH	N	Lecture	Written			
ppic: Head & neck Joints, Histology, Development, Radiography & Surface marking				Number of competencies: (9)				Number of procedures for certification: (NI		
AN43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	1. At the end of session, the phase I student should be able to describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint correctly 2. At the end of session, the phase I student should be able to describe & demonstrate the movements with muscles producing the movements of atlantoaxial joint correctly	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	1.At the end of session, the phase I student should be able to Identify, describe and draw the microanatomy of pituitary gland, 2.At the end of session, the phase I student should be able to Identify, describe and draw the microanatomy of thyroid, parathyroid gland, 3.At the end of session, the phase I student should be able to Identify, describe and draw the microanatomy of tongue 4.At the end of session, the phase I student should be able to Identify, describe and draw the microanatomy of salivary glands 5. At the end of session, the phase I student should be able to Identify, describe and draw the microanatomy of tonsil 6. At the end of session, the phase I student should be able to identify, describe and draw the microanatomy of cornea and retina	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			
AN43.3	Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of corti, pineal gland	At the end of session, the phase I student should be able to Identify, describe and draw microanatomy of optic nerve	K/S	SH	N	Lecture, Practical	Written/ skill assessment			

AN43.4	Describe the development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland & eye	1. At the end of session, the phase I student should be able to describe the development and developmental basis of congenital anomalies of face 2. At the end of session, the phase I student should be able to describe the development and developmental basis of congenital anomalies of palate 3. At the end of session, the phase I student should be able to describe the development and developmental basis of congenital anomalies of tongue 4. At the end of session, the phase I student should be able to describe the development and developmental basis of congenital anomalies of branchial apparatus 5. At the end of session, the phase I student should be able to describe the development and developmental basis of congenital anomalies of pituitary gland 6. At the end of session, the phase I student should be able to describe the development and developmental basis of congenital	K	KH	Y	Lecture	Written/ Viva voce			

AN43.5	Demonstrate- 1) Testing of muscles of facial expression, extraocular 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	1. At the end of session, the phase I student should be able to demonstrate testing of muscles of facial expression 2.At the end of session, the phase I student should be able to demonstrate testing of extraocular muscles 3. At the end of session, the phase I student should be able to demonstrate testing of muscles of mastication 4. At the end of session, the phase I student should be able to demonstrate Palpation of carotid arteries, facial artery, superficial temporal artery, Location of internal and external jugular veins 5. Demonstrate the Location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels	K/S	SH	Y	Practical	Viva voce/ skill assessment			
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	1. At the end of session, the phase I student should be able to 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			

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 xray of paranasal sinuses	1. At the end of session, the phase I student should be able to Identify the anatomical structures in Plain x-ray skull, AP view and lateral view 2. At the end of session, the phase I student should be able to Identify the anatomical structures in Plain x-ray cervical spine-AP and lateral view 3. At the end of session, the phase I student should be able to Identify the anatomical structures in Plain x-ray of paranasal sinuses	K/S	SH	Y	Practical	Viva voce/ skill assessment		Radiodiagnosis	
AN43.8	Describe the anatomical route used for carotid angiogram and vertebral angiogram	At the end of session, the phase I student should be able to describe the anatomical route used for carotid angiogram and vertebral angiogram	K/S	SH	N	Practical	Viva voce/ skill assessment			
AN43.9	Identify anatomical structures in carotid angiogram and vertebral angiogram	At the end of session, the phase I student should be able to Identify anatomical structures in carotid angiogram and vertebral angiogram	K/S	SH	N	Practical	Viva voce/ skill assessment		Radiodiagnosis	
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, linea semilunaris), regions & Quadrants of abdomen	1. At the end of session, the phase I student should be able to describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen correctly1. At the end of session, the phase I student should be able to describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen correctly1. At the end of session, the phase I student should be able to describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN44.2	Describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall	At the end of session, the phase I student should be able to describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall correctly	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	At the end of session, the phase I student should be able to describe the formation of rectus sheath and its contents correctly	K	KH	Y	Lecture	Written/ Viva voce			
AN44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle.	At the end of session, the student should be able toDescribe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN44.5	Explain the anatomical basis of inguinal hernia.	At the end of session, the student should be able toExplain the anatomical basis of inguinal hernia correctly	K	KH	Y	Lecture	Written/ Viva voce			

AN44.6	Describe & demonstrate attachments of muscles of anterior abdominal wall	At the end of session, the student should be able toDescribe & demonstrate attachments of muscles of anterior abdominal wall correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN44.7	Enumerate common Abdominal incisions	At the end of session, the student should be able to Enumerate common Abdominal incisions correctly	K	KH	N	Lecture	Written/ Viva voce		General Surgery	
opic: Posterior abdominal wall			Number of competencies: (3)							Number of procedures for certification: (NIL
AN45.1	Describe Thoracolumbar fascia	At the end of session, the student should be able to describe Thoracolumbar fascia correctly	K	KH	Y	Lecture	Written			
AN45.2	Describe & demonstrate Lumbar plexus for its root value, formation & branches	At the end of session, the phase I student should be able to describe & demonstrate Lumbar plexus for its root value, formation & branches emerging from the borders of psoas major muscle correctly	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	At the end of session, the phase I student should be able to mention the major subgroups of back muscles, nerve supply and action correctly	K	KH	N	Lecture	Written			
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	1. At the end of session, the phase I student should be able to describe & demonstrate coverings, internal structure, side determination, blood supply, nerve supply, lymphatic drainage of testis with its applied anatomy correctly 2. At the end of session, the phase I student should be able to describe the decent of testis correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN46.2	Describe parts of Epididymis	At the end of session, the phase I student should be able to describe parts of Epididymis correctly	K	KH	Y	Lecture, Practical	Written/ Viva voce			

AN46.3	Describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)	At the end of session, the phase I student should be able to describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)correctly	K	KH	Y	Lecture, Practical	Written/ Viva voce			
AN46.4	Explain the anatomical basis of Varicocoele	At the end of session, the phase I student should be able to explain the anatomical basis of Varicocoele correctly	K	KH	N	Lecture	Written			
AN46.5	Explain the anatomical basis of Phimosis & Circumcision	At the end of session, the phase I student should be able to explain the anatomical basis of Phimosis & Circumcision correctly	K	KH	N	Lecture	Written			
pic: Abdominal cavity		Number of competencies: (14)						Number of procedures for certification: (NI		
AN47.1	Describe & identify boundaries and recesses of Lesser & Greater sac	1. At the end of session, the phase I student should be able to describe & identify boundaries and recesses of Lesser sac correctly 2. At the end of session, the phase I student should be able to describe & identify boundaries and recesses of Greater sac correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN47.2	Name & identify various peritoneal folds & pouches with its explanation	At the end of session, the phase I student should be able to name & identify various peritoneal folds & pouches with its explanation correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN47.3	Explain anatomical basis of Ascites & Peritonitis	At the end of session, the phase I student should be able to explain anatomical basis of Ascites & Peritonitis correctly	K	KH	N	Lecture	Written		General Surgery	
AN47.4	Explain anatomical basis of Subphrenic abscess	At the end of session, the phase I student should be able to explain anatomical basis of Subphrenic abscess correctly	K	KH	N	Lecture	Written			

AN47.5	At the end of session, the phase I student should be able to 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)	1. At the end of session, the phase I student should be able to describe & demonstrate the stomach under following headings (anatomical position, external and internal features) correctly 2. At the end of session, the phase I student should be able to describe & demonstrate important peritoneal and other relations of the stomach correctly 3. At the end of session, the phase I student should be able to describe & demonstrate the blood supply of the stomach correctly 4. At the end of session, the phase I student should be able to describe & demonstrate the nerve supply of the stomach correctly 5. At the end of session, the phase I student should be able to describe & demonstrate the lymphatic drainage of the stomach correctly 6. At the end of session, the phase I student should be able to describe & demonstrate the applied aspects of the stomach correctly 7. At the end of session, the phase I student should be able to describe & demonstrate Duodenum under following headings (anatomical position, external and internal features, important	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

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	1. At the end of session, the phase I student should be able to explain the anatomical basis of Splenic notch, Accessory spleens, Kehr's sign correctly 2. At the end of session, the phase I student should be able to explain the anatomical basis of Different types of vagotomy correctly 3. At the end of session, the phase I student should be able to explain the anatomical basis of Liver biopsy (site of needle puncture)correctly 4. At the end of session, the phase I student should be able to explain the anatomical basis of Referred pain in cholecystitis, Obstructive jaundice, Referred pain around umbilicus, Radiating pain of kidney to groin correctly 5. At the end of session, the phase I student should be able to explain the anatomical basis of Lymphatic spread in carcinoma stomach correctly	K	KH	N	Lecture	Written		General Surgery	
AN47.7	Mention the clinical importance of Calot's triangle	At the end of session, the phase I student should be able to mention the clinical importance of Calot's triangle	K	KH	N	Lecture	Written			
AN47.8	Describe & identify the formation, course relations and tributaries of Portal vein, Inferior vena cava & Renal vein	1. At the end of session, the phase I student should be able todDescribe & identify the formation, course relations, tributaries of Portal vein correctly 2. At the end of session, the phase I student should be able to describe & identify the formation, course relations and tributaries of Inferior vena cava & Renal vein correctly	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	1. At the end of session, the phase I student should be able to describe & identify the origin, course, important relations and branches of Abdominal aorta correctly 2. At the end of session, the phase I student should be able to describe & identify the origin, course, important relations and branches of Coeliac trunk correctly 3. At the end of session, the phase I student should be able to describe & identify the origin, course, important relations and branches of Superior mesenteric and Inferior mesenteric arteries correctly 4. At the end of session, the phase I student should be able to describe & identify the origin, course, important relations and branches of Common iliac arteries correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN47.10	Enumerate the sites of portosystemic anastomosis	At the end of session, the phase I student should be able to enumerate the sites of portosystemic anastomosis correctly	K	KH	Y	Lecture	Written			
AN47.11	Explain the anatomic basis of hematemesis& caput medusae in portal hypertension	At the end of session, the phase I student should be able to explain the anatomic basis of hematemesis& caput medusae in portal hypertension correctly	K	KH	Y	Lecture	Written/ Viva voce			
AN47.12	Describe important nerve plexuses of posterior abdominal wall	At the end of session, the phase I student should be able to describe important nerve plexuses of posterior abdominal wall correctly	K	KH	N	Lecture	Written			

AN47.13	Describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm	At the end of session, the phase I student should be able to describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm correctly	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	At the end of session, the phase I student should be able to describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia correctly	K	KH	N	Lecture	Written			
Topic: Pelvic wall and viscera			Number of competencies: (8)					Number of procedures for certification: (NIL)		
AN48.1	Describe & identify the muscles of Pelvic diaphragm	At the end of session, the phase I student should be able to describe & identify the muscles of Pelvic diaphragm correctly	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	1. At the end of session, the phase I student should be able to describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of Uterus correctly 2. At the end of session, the phase I student should be able to describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of fallopian tubes correctly 3. At the end of session, the phase I student should be able to describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of ovaries correctly 4. At the end of session, the phase I student should be able to describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of epididymis correctly 5. At the end of session, the phase I	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	At the end of session, the phase I student should be able to describe & demonstrate the origin, course, important relations and branches of internal iliac artery correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN48.4	Describe the branches of sacral plexus	student should be able to describe the branches	K	KH	Y	Lecture	Written			

AN48.5	Explain the anatomical basis of suprapubic cystostomy, Urinary obstruction in benign prostatic hypertrophy, Retroverted uterus, Prolapse uterus, Internal and external haemorrhoids, Anal fistula, Vasectomy, Tubal pregnancy & Tubal ligation	1. At the end of session, the phase I student should be able to explain the anatomical basis of suprapubic cystostomy correctly 2. At the end of session, the phase I student should be able to explain the anatomical basis of Urinary obstruction in benign prostatic hypertrophy correctly 3. At the end of session, the phase I student should be able to explain the anatomical basis of Prolapse of uterus correctly 4. At the end of session, the phase I student should be able to explain the anatomical basis of Internal and external haemorrhoids correctly 5. At the end of session, the phase I student should be able to explain the anatomical basis of Anal fistula correctly 6. At the end of session, the phase I student should be able to explain the anatomical basis of Vasectomy correctly 7. At the end of session, the phase I student should be able to explain the anatomical	K	KH	N	Lecture	Written		General Surgery	
AN48.6	Describe the neurological basis of Automatic bladder	At the end of session, the phase I student should be able to describe the neurological basis of Automatic bladder correctly	K	KH	N	Lecture	Written			
AN48.7	Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	At the end of session, the phase I student should be able to mention the lobes involved in benign prostatic hypertrophy & prostatic cancer correctly	K	KH	N	Lecture	Written			

AN48.8	Mention the structures palpable during vaginal & rectal examination	1.At the end of session, the phase I student should be able to mention the structures palpable during vaginal examination correctly 2.At the end of session, the phase I student should be able to mention the structures palpable during rectal examination correctly	K	KH	N	Lecture	Written			
Topic: Perineum		Number of competencies: (5)					Number of procedures for certification: (NIL)			
AN49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	1. At the end of session, the phase I student should be able to describe & demonstrate the superficial perineal pouch (boundaries and contents) correctly 2. At the end of session, the phase I student should be able to describe & demonstrate the deep perineal pouch (boundaries and contents) correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN49.2	Describe & identify Perineal body	At the end of session, the phase I student should be able to describe & identify Perineal body and its clinical significance correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN49.3	Describe & demonstrate Perineal membrane in male & female	1. At the end of session, the phase I student should be able to describe & demonstrate Perineal membrane in male & female correctly 2. At the end of session, the phase I student should be able to describe the structures piercing the Perineal membrane correctly	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	At the end of session, the phase I student should be able to describe & demonstrate location, boundaries, content & applied anatomy of Ischiorectal fossa correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN49.5	Explain the anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure	1. At the end of session, the phase I student should be able to explain the anatomical basis of Perineal tear correctly 2. At the end of session, the phase I student should be able to explain the anatomical basis of Episiotomy correctly 3. At the end of session, the phase I student should be able to explain the anatomical basis of Perianal abscess correctly 4. At the end of session, the phase I student should be able to explain the anatomical basis of Anal fissure correctly	K	KH	N	Lecture	Written		Obstetrics & Gynaecology	
Topic: Vertebral column			Number of competencies: (4)							Number of procedures for certification: (NIL)
AN50.1	Describe the curvatures of the vertebral column	At the end of session, the phase I student should be able to describe the curvatures of the vertebral column and add a note on clinical significance	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	1. At the end of session, the phase I student should be able to describe & demonstrate the type, articular ends, ligaments and movements of Intervertebral joints correctly 2.At the end of session, the phase I student should be able to describe & demonstrate the type, articular ends, ligaments and movements of Sacroiliac joints correctly 3. At the end of session, the phase I student should be able todDescribe & demonstrate the type, articular ends, ligaments and movements of Pubic symphysis correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			

AN50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	At the end of session, the phase I student should be able to describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture) and clinical significance correctly	K	KH	Y	Lecture	Written/ Viva voce			
AN50.4	Explain the anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida	1. At the end of session, the phase I student should be able to explain the anatomical basis of Scoliosis and Lordosis correctly 2. At the end of session, the phase I student should be able to explain the anatomical basis of Prolapsed disc correctly 3. At the end of session, the phase I student should be able to explain the anatomical basis of Spondylolisthesis correctly 4. At the end of session, the phase I student should be able to explain the anatomical basis of Spina bifida correctly	K	KH	N	Lecture	Written			
Topic: Sectional Anatomy			Number of competencies: (2)					Number of procedures for certification: (NIL)		
AN51.1	Describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane)	At the end of session, the phase I student should be able to describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane) correctly	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
AN51.2	Describe & identify the midsagittal section of male and female pelvis	At the end of session, the phase I student should be able to describe & identify the midsagittal section of male and female pelvis correctly	K	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment			
Topic: Histology & Embryology			Number of competencies: (8)					Number of procedures for certification: (NIL)		

AN52.1	Describe & identify the microanatomical features of Gastro-intestinal system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum, Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland	1. At the end of session, the phase I student should be able to describe & identify the microanatomical features of Oesophagus correctly 2. At the end of session, the phase I student should be able to describe & identify the microanatomical features of Fundus and Pylorus of stomach correctly 3. At the end of session, the phase I student should be able to describe & identify the microanatomical features of Small intestine correctly 4. At the end of session, the phase I student should be able to describe & identify the microanatomical features of Large intestine correctly 5. At the end of session, the phase I student should be able to describe & identify the microanatomical features of Appendix correctly 6. At the end of session, the phase I student should be able to describe & identify the microanatomical features of Liver correctly 7. At the end of session, the phase I student should be able to describe & identify the microanatomical features of	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			

AN52.2	Describe & identify the microanatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis,Vas deferens, Prostate & penis Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	1. At the end of session, the phase I student should be able to describe & identify the microanatomical features of Kidney correctly 2. At the end of session, the phase I student should be able to describe & identify the microanatomical features Ureter correctly 3. At the end of session, the phase I student should be able to describe & identify the microanatomical features Urinary bladder correctly 4. At the end of session, the phase I student should be able to describe & identify the microanatomical features Testis 5. At the end of session, the phase I student should be able to describe & identify the microanatomical features Epididymis 6. At the end of session, the phase I student should be able to describe & identify the microanatomical	K/S	SH	Y	Lecture, Practical	Written/ skill assessment			
AN52.3	Describe & identify the microanatomical features of Cardiooesophageal junction, Corpus luteum	At the end of session, the phase I student should be able to describe & identify the microanatomical features of Cardiooesophageal junction, Corpus luteum correctly	K/S	SH	N	Lecture, Practical	Written/ skill assessment			
AN52.4	Describe the development of anterior abdominal wall	At the end of session, the phase I student should be able to describe the development of anterior abdominal wall correctly	K	KH	N	Lecture	Written/ Viva voce			
AN52.5	Describe the development and congenital anomalies of Diaphragm	At the end of session, the phase I student should be able to describe the development and congenital anomalies of Diaphragm correctly	K	KH	Y	Lecture	Written/ Viva voce			

AN52.6	Describe the development and congenital anomalies of: Foregut, Midgut & Hindgut	1. At the end of session, the phase I student should be able to describe the development of Oesophagus and congenital anomalies correctly 2. At the end of session, the phase I student should be able to describe the development of Duodenum and congenital anomalies correctly 3. At the end of session, the phase I student should be able to describe the development of Midgut rotation and congenital anomalies correctly 4. At the end of session, the phase I student should be able to describe the vitello intestinal duct and its congenital anomalies correctly 5. At the end of session, the phase I student should be able to describe the Meckel's diverticulum and its clinical importance correctly 6. At the end of session, the phase I student should be able to describe the development of allantoic diverticulum and congenital anomalies correctly 7. At the end of session, the phase I	K	KH	Y	Lecture	Written/ Viva voce			

AN52.7	Describe the development of Urinary system	1. At the end of session, the phase I student should be able to describe the development of Kidney and congenital anomalies 2. At the end of session, the phase I student should be able to describe the development of Urinary bladder and congenital anomalies 3. At the end of session, the phase I student should be able to describe the development of Prostate and congenital anomalies 4. Describe the development of Urethra and congenital anomalies	K	KH	Y	Lecture	Written/ Viva voce			
AN52.8	Describe the development of male & female reproductive system	1. At the end of session, the phase I student should be able to describe the development of Testis and mention the factors responsible for the descent of testis 2. At the end of session, the phase I student should be able to describe the development of Ovary 3. At the end of session, the phase I student should be able to describe the derivatives of mesonephric duct 4. At the end of session, the phase I student should be able to describe the derivatives of paramesonephric duct	K	KH	Y	Lecture	Written/ Viva voce			

HUMAN ANATOMY - CBME

Number	SLO The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods	required to certify P	Vertical Integration	Horizontal Integration
TOPIC =OSTEOLOGY OF ABDOMEN									
AN53.1	a.Student should be able to Identify and hold the LUMBAR VERTEBRAE in anatomical position and Describe the salient features and articulations of them	K/S	SH	Y	Small Group Teaching, DOAP	Viva Voce, Skill assessment			
	b.Student should be able to Demonstrate the muscular attachments of Lumbar Vertebrae	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
AN53.2	a.Student should be able to Demonstrate the Anatomical Position of Bony Pelvis	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
	b.Student should be able to show boundaries of pelvic inlet, pelvic cavity, pelvic outlet	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
AN53.3	a.Student should be able to Define true pelvis and false pelvis	K	k	Y	Small group teaching,	Viva Voce			
	b.Student should be able to Demonstrate sex determination in male & female bony pelvis	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
AN53.4	Student should be able to Explain and Demonstrate clinical importance of bones of abdominopelvic region	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
Radio-diagnosis of Abdomen									
AN54.1	Student should be able to Describe & identify features of plain X ray abdomen	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
AN54.2	Student should be able to identify and describe the special radiographs of abdominopelvic region	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment		Radiodiagnosis	
AN54.3	Student should be able to Describe role of ERCP, CT abdomen, MRI, Arteriography in radiodiagnosis of abdomen	K	KH	N	Lecture	Viva Voce		Radiodiagnosis	
SURFACE MARKING									

AN55.1	Student should be able to Demonstrate the surface marking of; Regions and planes of abdomen, Superficial inguinal ring, Deep inguinal ring , McBurney's point, Renal Angle & Murphy's point	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
AN55.2	Student should be able to Demonstrate the surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys	K/S	SH	Y	Small group teaching,DOAP	Viva Voce, Skill assessment			
	Meninges & CSF								
AN56.1	a.Student should be able to identify various layers of meninges	K/S	SH	Y	Lecture, Small group teaching,DOAP	Written, Viva Voce, Skill assessment			
	b.Student should be able to Describe various layers of meninges with its extent & modifications	K/S	SH	Y	Lecture, Small group teaching,DOAP	Written, Viva Voce, Skill assessment			
AN56.2	Student should be able to Describe circulation of CSF with its applied anatomy	K	KH	Y	Lecture	Written			
	SPINAL CORD								
AN57.1	a.Student should be able to Identify the external features of spinal cord	K/S	SH	Y	Lecture, Small group teaching,DOAP	Written, Viva Voce, Skill assessment			
	b.Student should be able to Describe the external features of spinal cord	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce.			
AN57.2	a.Student should be able to Describe extent of spinal cord in child & adult	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce			
	b.Student should be able to Describe the clinical implications of extent of spinal cord in child & adult	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce			
AN57.3	a.Student should be able to Draw & label transverse section of spinal cord at mid-cervical level	K	KH	Y	Lecture, Small group teaching	Written			
	b.Student should be able to Draw & label transverse section of spinal cord at mid-thoracic level	K	KH	Y	Lecture, Small group teaching	Written			
AN57.4	a.Student should be able to Enumerate ascending tracts at mid thoracic level of spinal cord	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce			
	b.Student should be able to Enumerate descending tracts at mid thoracic level of spinal cord	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce			
AN57.5	Student should be able to Describe anatomical basis of syringomyelia	K	KH	Y	Lecture	Written, Viva Voce,			
	MEDULLA OBLONGATA								

AN58.1	Student should be able to Identify external features of medulla oblongata	K/S	SH	Y	Lecture, Small group teaching,DOAP	Written, Viva Voce, Skill			
AN58.2	a.Student should be able to Describe transverse section of medulla oblongata at the level of pyramidal decussation	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
	b.Student should be able to Describe transverse section of medulla oblongata at the level of sensory decussation	K	KH	Y	Lecture,Small group teaching	Written, Viva Voce,			
	c.Student should be able to Describe transverse section of medulla oblongata at the level of Inferior Olivary Nucleus	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
AN58.3	a.Student should be able to Enumerate cranial nerve nuclei in medulla oblongata	K	K	Y	Lecture	Written, Viva Voce,			
	b.Student should be able to Enumerate functional groups of cranial nerve nuclei in medulla oblongata	K	K	Y	Lecture	Written, Viva Voce,			
AN58.4	Student should be able to Describe anatomical basis & effects of lateral medullary syndrome	K	KH	Y	Lecture	Written, Viva Voce,		General Medicine	
AN58.5	Student should be able to Describe anatomical basis & effects of medial medullary syndrome	K	KH	Y	Lecture	Written, Viva Voce,		General Medicine	
PONS									
AN59.1	Student should be able to Identify external features of pons	K/S	SH	Y	Lecture, Small group teaching,DOAP	Written, Viva Voce, Skill assessment			
AN59.2	a.Student should be able to Draw & label transverse section of pons at the upper level	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
	b.Student should be able to Draw & label transverse section of pons at the lower level	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
AN59.3	a.Student should be able to Enumerate cranial nerve nuclei in pons	K	K	Y	Lecture	Written, Viva Voce,			
	b.Student should be able to Enumerate the functional groups of cranial nerve nuclei in pons	K	K	Y	Lecture	Written, Viva Voce,			
CEREBELLUM									
AN60.1	a.Student should be able to Describe & demonstrate external features of cerebellum	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	b.Student should be able to Describe & demonstrate internal features of cerebellum	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
AN60.2	a.Student should be able to Describe connections of cerebellar cortex	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			

	b.Student should be able to Describe connections of intracerebellar nuclei	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
AN60.3	Student should be able to Describe anatomical basis of cerebellar dysfunction	K	K	Y	Lecture, Small group teaching	Written, Viva Voce,			

MIDBRAIN

AN61.1	a.Student should be able to Identify external features of midbrain	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	b.Student should be able to Identify internal features of midbrain	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
AN61.2	a.Student should be able to Describe internal features of midbrain at the level of superior colliculus	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
	b. Student should be able to Describe internal features of midbrain at the level of inferior colliculus	K	KH	Y	Lecture, Small group teaching,	Written, Viva Voce,			
AN61.3	a.Student should be able to Describe anatomical basis & effects of Benedikt's syndrome	K	K	Y	Lecture, Small group teaching	Written, Viva Voce,		General Medicine	
	b.Student should be able to Describe anatomical basis & effects of Weber's syndrome	K	K	Y	Lecture, Small group teaching	Written, Viva Voce,		General Medicine	

CRANIAL NERVE NUCLEII & CEREBRAL HEMISPHERES

AN62.1	Student should be able to Enumerate cranial nerve nuclei with their functional component	K	K	Y	Lecture, Small group teaching	Written, Viva Voce,			
AN62.2	a.Student should be able to Describe & demonstrate surfaces, sulci, gyri & poles of cerebral hemisphere	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	b.Student should be able to Describe & demonstrate functional areas of cerebral hemisphere	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
AN62.3	b.Student should be able to Describe the white matter of cerebrum	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce,			
AN62.4	a.Student should be able to Enumerate parts & major connections of basal ganglia	K	KH	Y	Lecture	Written, Viva Voce,			
	b.Student should be able to Enumerate parts & major connections of limbic lobe	K	KH	Y	Lecture	Written, Viva Voce,			
AN62.5	a.Student should be able to Describe boundaries, parts, gross relations of dorsal thalamus	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce			

	b.Student should be able to Describe boundaries, parts, gross relations of hypothalamus, epithalamus, metathalamus and subthalamus	K	KH	Y	Lecture, Small group teaching	Written,Viva Voce			
	c.Student should be able to Describe major nuclei and connections of dorsal thalamus	K	KH	Y	Lecture, Small group teaching	Written,Viva Voce			
	d.Student should be able to Describe major nuclei and connections hypothalamus, epithalamus, metathalamus and subthalamus	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce,			
AN62.6	a.Student should be able to Describe formation & branches of circle of Willis	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce,			
	b.Student should be able to identify branches of circle of Willis	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	c.Student should be able to Describe major areas of distribution of branches of circle of Willis	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce,			
	d.Student should be able to identify major areas of distribution of branches of circle of Willis	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			

VENTRICULAR SYSTEM

AN63.1	a.Student should be able to Describe & demonstrate parts of third ventricle	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	b.Student should be able to Describe & demonstrate parts of fourth ventricle	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	c.Student should be able to Describe & demonstrate parts lateral ventricle	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	d.Student should be able to Describe & demonstrate boundaries & features of IIIrd ventricle	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	e.Student should be able to Describe & demonstrate boundaries & features of IVth ventricle	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	f.Student should be able to Describe & demonstrate boundaries & features of lateral ventricle	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
AN63.2	a.Student should be able to Describe anatomical basis of congenital hydrocephalus	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce			
	HISTOLOGY & EMBRYOLOGY								
AN64.1	a.Student should be able to Describe the microanatomical features of Spinal cord	K	KH	Y	Lecture, Small group teaching	Written,Viva Voce			

	b.Student should be able to identify the microanatomical features of Spinal cord in a given slide	K	KH	Y	Practical,DOAP,Small group teaching	Practical, Viva Voce,			
	c.Student should be able to Describe the microanatomical features of cerebellum	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce,			
	d.Student should be able to identify the microanatomical features of cerebellum in a given slide	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
	e.Student should be able to Describe the microanatomical features of cerebrum	K	KH	Y	Lecture, Small group teaching	Written, Viva Voce,			
	f.Student should be able to identify the microanatomical features of cerebrum in a given slide	K/S	SH	Y	Lecture, Small group teaching,DOAP,Practical	Written, Viva Voce, Skill assessment			
AN64.2	a.Student should be able to Describe the development of neural tube and spinal cord	K	KH	Y	Lecture	Written,Viva Voce			
	b.Student should be able to Describe the development of medulla oblongata, pons, midbrain	K	KH	Y	Lecture	Written,Viva Voce			
	c.Student should be able to Describe the development of cerebral hemisphere & cerebellum	K	KH	Y	Lecture	Written, Viva Voce,			
AN64.3	Student should be able to Describe various types of open neural tube defects with its embryological basis	K	KH	Y	Lecture	Written, Viva Voce,			
	EPITHELIUM HISTOLOGY								
AN65.1	a.Student should be able to define epithelium & describe the various types of epithelium	K	kH	Y	Lecture	Written, Viva Voce			
	b.Student should be able to identify different types of epithelia under microscope in given slides	K/S	SH	Y	Lecture,Small group teaching,Practical	Written, Viva Voce, Skill assessment			
	c.Student should be able to correlate the functions of different types of epithelia	K	KH	Y	Lecture	Written,Viva Voce			
AN65.2	Student should be able to Describe the ultrastructure of epithelium	K	KH	Y	Lecture	Written, Viva Voce,			
	CONNECTIVE TISSUE HISTOLOGY								
AN66.1	a.Student should be able to Describe various types of connective tissue with functional correlation	K	kH	Y	Lecture	Written, Viva Voce			
	b.Student should be able to identify different types of connective tissues under microscope in given slides	K/S	SH	Y	Lecture, Small group teaching,Practical	Written, Viva Voce, Skill assessment			
AN66.2	Student should be able to Describe the ultrastructure of connective tissue	K	KH	Y	Lecture	Written,Viva Voce		Pathology	
	MUSCLE HISTOLOGY								

AN67.1	a.Student should be able to Describe various types of Muscles	K	KH	Y	Lecture	Written, Viva Voce			
	b.Student should be able to identify different types of muscles under microscope in given slides	K/S	SH	Y	Lecture, Small group teaching,Practical	Written, Viva Voce, Skill assessment			
AN67.2	Student should be able to Classify muscle and describe the structure-function correlation of the same	K	KH	Y	Lecture,Practical	Written,Viva Voce			
AN67.3	Describe the ultrastructure of muscular tissue	K	KH	Y	Lecture,Practical	Written,Viva Voce			

NERVE TISSUE HISTOLOGY

AN68.1	a.Student should be able to Describe multipolar & unipolar neuron, ganglia, peripheral nerve	K	KH	Y	Lecture	Written, Viva Voce			
	b.Student should be able to identify multipolar & unipolar neuron, ganglia, peripheral nerve under microscope in given slides	K/S	SH	Y	Lecture, Small group teaching,Practical	Written, Viva Voce, Skill assessment			
AN68.2	Student should be able to Describe the structure-function correlation of neuron	K	KH	Y	Lecture,Practical	Written,Viva Voce			
AN68.3	Describe the ultrastructure of nervous tissue	K	KH	Y	Lecture,Practical	Written,Viva Voce			

HUMAN ANATOMY - CBME

Number	OBJECTIVES FOR THE RESPECTIVE COMPETENCY (At the end of the session 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	Vertical Integration	Horizontal Integration
			69.BLOOD VESSELS						
AN69.1	1.At the end of the session student should be able to Differentiate the elastic and muscular arteries under microscope accurately.	K/S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	2.At the end of the session student should be able to Differentiate different type of capillaries under microscope	K/S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
AN69.2 & AN69.3	1.At the end of the session student should be able to Enumerate different generations of blood vessels from larger diameter to smaller diametere	K	KH	Y	LECTURE	VIVA			
	2.At the end of the session student should be able to Explain the structure and function of different blood vessels.	K	KH	Y	LECTURE	VIVA			
			70.Glands & Lymphoid tissue						
AN 70.1	1.At the end of the session student should be able to Differentiete endocrine and exocrine glands under the microscope Correctly	K/S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	2.At the end of the session student should be able to Differentiate serous ,mucous, and mixed type of acini and different type of ducts and their functional significance correctly under microscope.	K/S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
AN70.2	1.At the end of the session student should be able to Differentiate ,and identify different lymphoid organs like spleen,thymus,lymph node and palatine tonsil under microscope, accurately.	K/S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			

	2.At the end of the session student should be able to Explain the structure and function of lymphnode	K	KH	Y	SMALL GROUP	VIVA			
	3.At the end of the session student should be able to Explain the structure and function of thymus.	k	KH	Y	SMALL GROUP	VIVA			
	4.At the end of the session student should be able to Explain the structure and function of spleen.	K	KH	Y	SMALL GROUP	VIVA			
					71. Bone & Cartilage				
AN71.1	1.At the end of the session student should be able to Differentiate Longitudinal section and Transverse section of a bone under microscope accurately.	K/S	SH	Y	DOAP	SKILL ASSESSMENT			
	2.At the end of the session student should be able to Explain Haversian system and different kind of lamelle in the bone under microscope.	K	KH	Y	SMALL GROUP	VIVA			
	3.At the end of the session student should be able to Differentiate between compact and cancellous bone.	K	KH	Y	LECTURE	WRITTEN			
	4.At the end of the session student should be able to Explain the functional anatomy of compact and spongy bone.	K	KH	Y	LECTURE	WRITTEN			
AN71.2	1.At the end of the session student should be able to Differentiate different types of cartilage under microscope accurately.	K/S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	2.Explain the microanatomy of hyaline ,elastic and fibrocartilage with examples .	K	KH	Y	LECTURE	WRITTEN			
	3.At the end of the session student should be able to Explain the functional significance of hyaline ,elastic and	K	KH	Y	LECTURE	WRITTEN			
					72.Integumentary System				
AN72.1	1.At the end of the session student should be able to Differentiat between thick skin and thin skin under microscope accurately.	K/S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			

	2.At the end of the session student should be able to Enumerate different appendages of skin and their functions.	K	KH	Y	SMALL GROUP	VIVA			
	3.At the end of the session student should be able to Enumerate different layers of epidermis and cells present in each layer and their function.	K	KH	Y	SMALL GROUP	VIVA			
	4.At the end of the session student should be able to Explain the structure of dermis of skin.	K	KH	Y	SMALL GROUP	VIVA			
					73.Chromosomes				
AN73.1	1.At the end of the session student should be able to Explain the structure of chromosomes in detail.	K	KH	Y	LECTURE	VIVA			
	2.At the end of the session student should be able to Classify the chromosomes based on the size and positin of centromere in to groups.	K	KH	y	LECTURE	VIVA			
AN73.2	1.At the end of the session student should be able to Explain the procedure of karyotyping in detail.	K	KH	Y	LECTURE	VIVA			
	2.At the end of the session student should be able to List out the clinical application of karyotyping.	K	KH	Y	LECTURE	VIVA			
AN73.3	At the end of the session student should be able to Explain Lyon's hypothesis.	K	KH	Y	LECTURE	VIVA			
					74.Patterns of Inheritance				
AN74.1	1.At the end of the session student should be able to Enumerate different modes of inheritance.	K	KH	Y	SMALL GROUP	VIVA			
	2.At the end of the session student should be able to Explain Autosomal dominante mode of inheritance in detail.	K	KH	Y	SMALL GROUP	VIVA			
	3.At the end of the session student should be able to Explain Autosomal reccessive mode of inheritance in detail.	K	KH	Y	SMALL GROUP	VIVA			

	4.At the end of the session student should be able to Explain X-linked dominant mode of inheritance in detail.	K	KH	Y	SMALL GROUP	VIVA			
	5.At the end of the session student should be able to Explain X-linked reccessive mode of inheritance in detail.	K	KH	Y	SMALL GROUP	VIVA			
	6.At the end of the session student should be able to Explain Y-linked inharitance in detail.	K	KH	Y	SMALL GROUP	VIVA			
AN74.2	At the end of the session student should be able to illustrate pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance by drawing diagrams.	K	KH	Y	SMALL GROUP	WRITTEN			
AN74.3	At the end of the session student should be able to Explain multifactorial inheritance with examples in detail.	K	KH	Y	SMALL GROUP	VIVA			
AN74.4	At the end of the session student should be able to Explain the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchene's muscular dystrophy & Sickle cell anaemia.	K	KH	Y	SMALL GROUP	VIVA			
	75.Principle of Genetics, Chromosomal Aberrations & Clinical Genetics								
AN75.1	1.At the end of the session student should be able to Explain structural chromosomal aberrations with examples.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Explain numerical chromosomal aberrations with examples.	K	KH	Y	LECTURE	WRITTEN			
AN75.2	At the end of the session student should be able to Define the terms chimera and mosaic with examples.	K	KH	Y	LECTURE	WRITTEN			
AN75.3	1.At the end of the session student should be able to Explain genomic imprinting disorders with features of praderwillie syndrome.	K	KH	Y	LECTURE	WRITTEN			

	2.At the end of the session student should be able to Enumerate genotypic and phenotypic features of Edward syndrome and Patau syndrome.	K	KH	Y	LECTURE	WRITTEN			
AN75.4	At the end of the session student should be able to Explain in detail about variation , polymorphism and mutation.	K	KH	Y	LECTURE	VIVA			
AN75.5	At the end of the session student should be able to Enumerate and explain the principles of genetic counselling.	K	KH	Y	LECTURE	WRITTEN		Paediatrics,Community Medicine,Obstetrics & Gynaecology	
	76.Introduction to Embryology								
AN76.1	1.At the end of the session student should be able to Define and explain Prenatal and Postnatal development.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Differentiate different stages of postnatal development like Infancy,Childhood,Puberty,Adolescence,Adulthood	K	KH	Y	LECTURE	WRITTEN			
AN76.2	At the end of the session student should be able to Explain the terms- phylogeny, ontogeny, trimester, viability	K	KH	Y	LECTURE	WRITTEN			
	77.Gametogenesis and fertilization								
AN77.1	1.At the end of the session student should be able to Explain the morphological changes of uterus during different phases of menstrual cycle	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Differentiate between secretory and proliferative phase of menstrual cycle.	K	KH	Y	LECTURE	WRITTEN			

AN77.2	At the end of the session student should be able to Describe the synchrony between the ovarian and menstrual cycles	K	KH	Y	LECTURE	WRITTEN			
AN77.3	1.At the end of the session student should be able to Explain spermatogenesis with diagrams.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Explain oogenesis with diagrams.	K	KH	Y	LECTURE	WRITTEN			
	3.At the end of the session student should be able to List out all the possible differences between oogenesis and spermatogenesis	K	KH	Y	LECTURE	WRITTEN			
AN77.4	1.At the end of the session student should be able to Explain the stages of fertilisation in detail.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Explain the effects of fertilisation.	K	KH	Y	LECTURE	WRITTEN			
AN77.5	At the end of the session student should be able to Enumerate and describe the anatomical principles underlying contraception	K	KH	Y	LECTURE	WRITTEN			
AN77.6	At the end of the session student should be able to Describe teratogenic influences; fertility and sterility, surrogate motherhood, social significance of “sex-ratio”.	K	KH	Y	LECTURE	WRITTEN		Obstetrics & Gynaecology	
78.Second week of development									
AN78.1	At the end of the session student should be able to Explain cleavage and formation of blastocyst in detail.	K	KH	Y	LECTURE	WRITTEN			
AN78.2	At the end of the session student should be able to Describe the development of trophoblast	K	KH	Y	LECTURE	WRITTEN			
AN78.3	1.At the end of the session student should be able to Explain process of implantation of embryo.	K	KH	Y	LECTURE	WRITTEN			

	2.At the end of the session student should be able to Explain the anatomical basis of ectopic pregnancy and list out the sites of ectopic implantation.	K	KH	Y	LECTURE	WRITTEN			
AN78.4	1.At the end of the session student should be able to Describe the formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate	K	KH	Y	LECTURE	WRITTEN			
AN78.5	1.At the end of the session student should be able to Explain the process of Abortion.	K	KH	Y	LECTURE	VIVA			
	2.At the end of the session student should be able to Define decidual reaction.	K	KH	Y	LECTURE	VIVA			
	3.At the end of the session student should be able to Explain the anatomical basis of pregnancy test.	K	KH	Y	LECTURE	VIVA			
79..3rd to 8th week of development									
AN79.1	At the end of the session student should be able to Describe the formation & fate of the primitive streak	K	KH	Y	LECTURE	VIVA			
AN79.2	At the end of the session student should be able to Describe formation & fate of notochord	K	KH	Y	LECTURE	VIVA			
AN79.3	At the end of the session student should be able to Describe the process of neurulation	K	KH	Y	LECTURE	VIVA			
AN79.4	1.At the end of the session student should be able to Explain the formation of somite .	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to List out the derivatives of somite.	K	KH	Y	LECTURE	WRITTEN			
	3.At the end of the session student should be able to Explain the formation of intra-embryonic coelom.	K	KH	Y	LECTURE	WRITTEN			

AN79.5	1.At the end of the session student should be able to Explain the anatomical basis of prolapsed intervertebral disc.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Explain the anatomical basis of sacro coccygeal teratoma.	K	KH	Y	LECTURE	WRITTEN			
	3. At the end of the session student should be able to Enumerate different neural tube deffects.	K	KH	Y	LECTURE	WRITTEN			
	4.At the end of the session student should be able to Explain the anatomical basis of neural tube deffects.	K	KH	Y	LECTURE	WRITTEN			
AN79.6	1.At the end of the session student should be able to Define teratogenecity.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Classify the teratogens .	K	KH	Y	LECTURE	WRITTEN			
	3.At the end of the session student should be able to Define critical period of organogenesis.	K	KH	Y	LECTURE	WRITTEN			
	4.At the end of the session student should be able to Explain the importance of alpha feto protein during first trimister of pregnancy.	K	KH	Y	LECTURE	WRITTEN			
				80.Fetal membranes					
AN80.1	1.At the end of the session student should be able to Define the terms chorion,amnion,yolk sac,allantois,decidua.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Explain formation of chorion,amnion,yolksac,allantois,decidua.	K	KH	Y	LECTURE	WRITTEN			
	3.At the end of the session student should be able to Explain fate of chorion,amnion,yolksac,allontois.	K	KH	Y	LECTURE	WRITTEN			
AN80.2	At the end of the session student should be able to Describe formation & structure of umbilical cord	K	KH	Y	LECTURE	WRITTEN			

AN80.3	1.At the end of the session student should be able to Explain the formation of placenta .	K	KH	Y	LECTURE	VIVA			
	2.At the end of the session student should be able to Enumerate the functions of placenta.	K	KH	Y	LECTURE	VIVA			
	3.At the end of the session student should be able to Explain in detail about foetomaternal circulation	K	KH	Y	LECTURE	VIVA			
	4.At the end of the session student should be able to Explain in detail about placental barrier.	K	KH	Y	LECTURE	VIVA			
AN80.4	1.At the end of the session student should be able to Explain embryological basis of twinning.	K	KH	Y	LECTURE	WRITTEN			
	2.At the end of the session student should be able to Differetiate between monozygotic and dizygotic twinning.	K	KH	Y	LECTURE	WRITTEN			
AN80.5	At the end of the session student should be able to Describe role of placental hormones in uterine growth & parturition	K	KH	Y	LECTURE	WRITTEN			
AN80.6	At the end of the session student should be able to Explain embryological basis of estimation of fetal age.	K	KH	Y	LECTURE	WRITTEN			
AN80.7	At the end of the session student should be able to Describe various types of umbilical cord attachments	K	KH	Y	LECTURE	WRITTEN			
	81.Prenatal Diagnosis								
AN 81.1	At the end of the session student should be able to Enumerate various methods of prenatal diagnosis.	K	KH	Y	LECTURE	WRITTEN		Obstetrics & Gynaecology	
AN81.2	1.At the end of the session student should be able to List out the indications of amniocentesis	K	KH	Y	LECTURE	WRITTEN		Obstetrics & Gynaecology	
	2.At the end of the session student should be able to Explain the process of amniocentesis	K	KH	Y	LECTURE	WRITTEN			

	3.At the end of the session student should be able to Enumerate the disadvantages of amniocentesis	K	KH	Y	LECTURE	WRITTEN			
AN81.3	1.At the end of the session student should be able to List out the indications of Chorionic villous biopsy	K	KH	Y	LECTURE	WRITTEN		Obstetrics & Gynaecology	
	2.At the end of the session student should be able to Explain the process of chorionic villous biopsy	K	KH	Y	LECTURE	WRITTEN			
	3.At the end of the session student should be able to Enumerate the disadvantages of chorionic villous biopsy.	K	KH	Y	LECTURE	WRITTEN			
					82.Ethics in Anatomy				
AN82.1	1.At the end of the session student should be able to Demonstrate respect while handling cadavers and other biologic tissue	S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			
	2.Demonstrate the correct procedure while handling cadavers and other biologic tissue.	S	SH	Y	SMALL GROUP	SKILL ASSESSMENT			

ANATOMY INTEGRATIONS

HORIZONTAL INTEGRATION – ANATOMY TO PHYSIOLOGY

No.	COMPETENCY The student should be able to:	Specific learning objectives 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	Hours
AN 5.7	Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses	1.Describe about micro circulation	K	KH	Y	Small group teaching	Viva voce			Horizontal	1
		2.Explain the structure of interstia									
		3.Describe the maintenance of colloidal osmotic pressure and hydrostatic									
		4.Discuss about the formation of edema									
		5.Mention the names of sensory receptors									
AN 7.5	Describe principles of sensory and motor innervations of muscles	1.Mention the names of sensory receptors	K	KH	Y	Lecture	W			Horizontal	2
		2.Describe the properties of receptors									
		3.Discuss about the different types of									

		sensations									
		4.Discuss about the different sensory tracts carrying the sensations									
		5.Discuss about the structure of the reflex arc									
		6.Discuss about the motor tracts									
		7.Enumerate the different types of superficial and deep reflexes									
		8.Mention the functions of sensory and motor tracts									
AN 7.7	Describe various types of synapse	1.What is definition of synapse	K	KH	Y	Small group teaching	Viva voce			Horizontal	1
		2.Describe the structure of the synapse									
		3.Mention the physiological classification of synapse									
AN21.9	Describe & demonstrate mechanics and	1.Mention the names of the inspiratory and	K	KH	Y	Small group teaching	Viva voce			Horizontal	1

	types of respiration	expiratory muscles									
		2.What is compliance									
		3.Explain the different pressure and volumes of the thoracic cavity									
AN 22.7	Mention the parts, position and arterial supply of the conducting system of heart	1.Describe the conducting system of heart	K	KH	Y	Small group teaching	Viva voce			Horizontal	1
		2.Mention the nerve and blood supply									
		3.Mention the functions of conducting system									

Anatomy topics integrated with Pathology						
Number	COMPETENCY	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods
AN5.8	Define thrombosis, infarction & aneurysm	K	KH	N	Lecture	Written
Objectives						
	AN5.8.1 At the end of the session, phase I student must be able to define thrombosis correctly	k	KH	Y	Lecture	Written/ viva voce
	AN5.8.2 At the end of the session, phase I student must be able to define infarction correctly	k	KH	N	Lecture	Written/ viva voce
	AN5.8.3 At the end of the session, phase I student must be able to define aneurysm correctly	k	KH	y	Lecture	Written/ viva voce
AN66.2	Describe the ultrastructure of connective tissue	K	KH	N	Lecture	Written/ viva voce
Objectives						
	AN66.2.1 At the end of the session, phase I student must be able to know types of collagen accurately	k	KH	N	Lecture	Written/ viva voce
	AN66.2.2 At the end of session , phase I students should have knowldge of molecular stucture of proteoglycan, elastin & collagen correctly	k	KH	N	Lecture, small group disscsion	Written/ viva voce
	AN66.2.3 At the end of the session, phase I student must be able to know the interaction between collagen, proteoglycan and elastin significantly	k	KH	N	Lecture, small group disscsion	Written/ viva voce

Anatomy topics integrated with Forensic Medicine

Number	COMPETENCY	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods
AN 14.3	Describe the importance of ossification of lower and femur and upper end of tibia					
OBJECTIVES	The first phase students should be able to know when the ossification centres appear in the intrauterine life for lower end of femur	k	KH	Y	Lecture	Written/ viva voce
	The first phase students should be able to know when the ossification centres appear in the intrauterine life of uppwer end of tibia	k	KH	Y	Lecture	Written/ viva voce
	The first phase students should be able to know Medico legal importance of ossification centres of lower end of femur and upper end of tibia.	k	KH	Y	Lecture	Written/ viva voce

ANATOMY INTEGRATION WITH COMMUNITY MEDICINE

Genetic Counselling

SN	Competency	SLO: At the end of the session the phase – I students must be able to	Domain	Level	T/L method	Assessment Method	Duration
AN 75.5	Describe the principles of genetic counselling	**SLO: At the end of the session the phase – I students must be able to** define counselling accurately	K	KH	Lecture	Written / Viva Voce	5 min
		SLO: At the end of the session the phase – I students must be able to know principles and commonly used methods of genetic counselling	k	KH	Lecture	Written	5 min

ANATOMY INTEGRATION WITH OTORHINOLARYNGOLOGY

Number	Competency The phase 1 student should be able to	Specific learning objective (SLO)	Domain K/S/A/C	LEVEL K/KH/S /SH/P	CORE (Y/N)	Teaching learning methods	Assesment methods	Vertical integration
AN 36.4	Describe the anatomical basis of Tonsillitis , Tonsillectomy , Adenoids and Peritonsillar abscess	1. At the end of session student s should able to explain different between palatine tonsil land adenoids	k	KH	Y	Lecture Small group discussion	Written exam Practical exam with viva	
		2. Enumerate or list the components of the Waldeyers lymphatic ring	k	K	Y	Lecture Small group discussion	Written exam Practical exam with viva	
		3. At the end of session the students should able to explain types of tonsillitis , tonsillectomy procedure and symptoms of peritonsillar abcess.	k	KH	Y	Lecture Small group discussion	Written exam Practical exam with viva	
AN 37.2	Describe location and functional anatomy of paranasal sinuses	1.Identify and locate the various paranasal sinuses in an x-ray of AP view of skull	K/S	SH	Y	Lecture Small group discussion	Written exam Practical exam with viva	
		2. At the end of session students should explain function of the paranasal sinuses .	K/S	KH	Y	Lecture Small group discussion	Written exam Practical exam with viva	

AN 37.3	Describe anatomical basis of sinusitis & maxillary sinus tumours	1. Explain the causes for the sinusitis	K	KH	Y	Lecture	Written exam Practical exam with viva	
		2.types of different maxillary sinus tumours.	K	KH	Y	Lecture	Written exam Practical exam with viva	
AN 38.2	Describe the anatomical aspects of laryngitis	1.Explain the anatomical basis of hoarseness of voice.	K	K	Y	Lecture	Written exam	
		2. casuse for laryngitis	K	K	Y	Lecture	Written exam	
AN 40.4	Explain anatomical basis of otitis and otitis media	1.Explain the causes of Otitis externa	K	K	Y	Lecture	Written exam	
		2 Otitis media causes	K	K	Y	Lecture	Written exam	
AN 40.5	Explain anatomical basis of myringotomy	1.Explain the indication for myringotomy	K	K	Y	Lecture	Written exam	
		2.myringotomy procedure .	K	K	Y	Lecture	Written exam	

VERTICAL INTEGRATION – HUMAN ANATOMY TO OPHTHALMOLOGY

No.	COMPETENCY The student should be able to:	Specific learning objectives 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	Hours
AN 31.5	Explain the anatomal basis of oculomotor , trochler and abducent nerve palsies along with strabismus	1. Should be able to describe the cranial nerves and their pathway	K	KH	Y	lecture	written		Vertical		
		2. Should be able to enumerate the extra ocular muscles, their innervation and actions									
		3. Be able to describe strabismus due to their paralysis									

No.	COMPETENCY	Specific learning objectives 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	Hours
AN 41.2	Describe the anatomical aspects of cataract, glaucoma and central retinal artery occlusion	1. Be able to describe parts of the eye ball and functions	K	KH	N	lecture	written		Vertical		
		2. Be able to define glaucoma									
		3. Be able to enumerate types of glaucoma									
		4. Be able to describe anatomy and pathophysiology of lens									
		5.Be able to describe central retinal artery and it's distribution									
		6.Be able to enumerate the effects of CRA obstruction									

VERTICAL INTEGRATION ANATOMY TO GENERAL SURGERY

Number	Competency The student should be able to	Specific learning objectives (SLO)	Domain K/S/A/C	Level K/KH/S/SH/P	CORE (Y/N)	Teaching learning method	Assessment method	Vertical integration	Horizontal integration
AN 6.3	Explain the concept of Lymphoedema and spread of tumours via lymphatics	1.Explain the common causes of lymphatic obstruction 2. Describe the mode of spread of tumours through lymphatics	K	KH	N	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	
AN 15.4	Explain anatomical basis of psoas abscess & femoral hernia	1.Describe the clinical presentation and common causes of psoas abscess. 2.Clinical features of obstructed femoral hernia.	k	KH	N	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	
AN 16.2	Describe anatomical basis of sciatic nerve injury during gluteal intramuscular injections	1. Describe the complications following sciatic nerve injury. 2. Precautions to avoid sciatic nerve injury.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	

AN 20.4	Describe anatomical basis of enlarged inguinal lymph nodes	1. Explain causes of enlarged inguinal lymph nodes. 2. Clinical examination of vertical & Horizontal group of lymph nodes.	k / S	KH / SH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	
AN 20.5	Describe anatomical basis of varicose veins and deep vein thrombosis	1. Identify long saphenous vein and short saphenous vein,Sapheno Femoral Junction and different groups of perforating veins in a patient. 2. Describe complications of varicose veins like Deep Vein Thrombosis .	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	

AN 20.9	Identify & demonstrate palpation of vessels (femoral, popliteal, dorsalis pedis, post tibial), mid inguinal point, Surface projection of : femoral nerve, saphenous opeaning, sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins.	1.Explain and identify The major arteries of lower limb i.e femoral, poplitel,dorsalis etc. 2. Identify the sciatic, femoral , tibial common peroneal and deep peroneal nerve and its clinical significance and diseases. 3.Identify mid inguinal point saphenous opening, great and small saphenous veins.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	
AN 28.9	Describe & demonstrate the parts, boerders, surfaces, contects, relations and nerve supply of parotid gland with course of its duct and surgical importance.	1. Explain Topography of parotid gland, different lobes facio-venous plain, course and branches of facial nerve. 2. Explain consequences of facial nerve injury	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	

AN 35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland.	1. Describe the relation and surgical importance of superior thyroid artery and inferior thyroid artery to the gland. 2. The relation and surgical importance of recurrent laryngeal nerve and superior laryngeal nerve during thyroid surgery.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	
AN 35.9	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib	1. Describe suspect the presence of cervical rib with clinical picture. Complications following subclavian artery and lower brachial plexus compression due to cervical rib.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	
AN 44.7	Enumerate common abdominal incisions	1. Different abdominal incisions given in elective and emergency surgeries. 2. Complications following from different incisions Ideal abdominal incisions practiced.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	

AN 47.3	Explain anatomical basis of Ascites & Peritonitis.	1.Explain the common causes of ascites & peritonitis in prevailing diseases.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	
AN 47.6	Explain the anatominal 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, Reeferred pain around umbilicus, Radiating pain of kidney to groin & Lymphatic spread in carcinoma stomach.	1. The location of splenic notch, surgical importance of accessory spleens, and kehr's sign. 2. Significance about types of vagotomy, and indication liver biopsy with exact location of needle. 3.Identify and locate exact site of referred pain in cholecystitis and about clinical significance of obstructive jaundice.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	

AN 48.5	Explain the anatominal basis of Suprapubic cystostomy, Urinary obstruction in benign prostatic hypertrophy internal and external haemorrhoids, Anal fistula, Vasectomy	1.List the common indications for suprapubic cystostomy in urinary obstructive diseases. 2.Describe external and internal hemorrhoids, anal fistula and vasectomy.	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Anatomy	

VERTICAL INTEGRATION ANATOMY TO GENERAL MEDICINE									
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
No.	Objectives for the respective Competency	Domain	K/KH/SH/P	CORE	T/L Method	Assessment Method	No req to certify P	Vertical Integration	Horizontal Integration
AN22.4	1. The first phase students should be able to DEFINE TYPICAL ANGINA AND ATYPICAL ANGINA	K	K	Y	LECTURE	WRITTEN			
AN22.4	The first phase students should be able to enumerate clinical features of acute coronary syndrome	K	K	Y	LECTURE	WRITTEN			
AN22.4	The first phase students should be able to enumerate risk factors for IHD	K	K	Y	LECTURE	WRITTEN			
AN22.4	The first phase students should be able to DISCUSS basic investigations to diagnose IHD	K	K	Y	LECTURE	WRITTEN			
AN22.7	The first phase students should be able to Classify Heart blocks	K	K	Y	LECTURE	WRITTEN			
AN22.7	The first phase students should be able to Discuss the clinical features of diseases of conducting system	K	K	Y	LECTURE	WRITTEN			
AN22.7	The first phase students should be able to describe the first AID measures for handling the heart block patients	K/S	SH	Y	Small group teaching	Viva voice			
AN24.1	The first phase students	K/S	SH	Y	Small	Viva voice			

	should be able to Enumerate the clinical features of pleural disease				group teaching				
AN24.1	The first phase students should be able to List basic investigation to know pleural disease	K	KH	Y	LECTURE	WRITTEN			
AN24.1	The first phase students should be able to enumerate the causes of pleural disease	K	KH	Y	LECTURE	WRITTEN			
AN24.2	The first phase students should be able to Descibe the clinical features of superior mediastinal syndrome	k	kH	y	Small group teaching	Viva voice			
AN24.2	The first phase students should be able to enumerate the causes of superior mediastinal syndrome	K	K	y	LECTURE	WRITTEN			
AN25.7	The first phase students should be able to TO differentiate PA & AP VIEW and their significance	S	SH	y	Small group	SKILL ASSESSMENT			
AN25.7	The first phase students should be able to Enumerate few conditions of lung and Heart that can be diagnosed by chest xray	S	SH	y	Small group teaching	SKILL ASSESSMENT			
AN25.9	The first phase students should be able to list different areas of Auscultation in C.V.S examination	S	P	y	Small group teaching	SKILL ASSESSMENT			
AN25.9	The first phase students should be able to demonstrate clinical significance of Lung lobe borders	S	P	y	Small group teaching	SKILL ASSESSMENT			
AN58.4 & 58.5	The first phase students should be able to Discuss chief complaints of patients with Medial and Lateral Medullary syndrome	K	K	Y	LECTURE	WRITTEN			

AN58.4 & 58.5	The first phase students should be able to List few causes of paralysis	K	K	Y	LECTURE	WRITTEN			
AN61.3	The first phase students should be able to discuss chief complaints of patients with BENEDICT & webers syndrome	K	K	Y	LECTURE	WRITTEN			
AN61.3	The first phase students should be able to Mention risk factors for CVA	K	K	Y	LECTURE	WRITTEN			

VERTICAL INTEGRATION ANATOMY TO OBSTETRICS & GYNAECOLOGY

Number	Competency The student should be able to	Specific Learning objectives (SLO)	Domain K/S/A/C	LEVEL K/KH/S/SH/P	CORE (Y/N)	Teaching learning methods	Assessment methods	Vertical integration	Horizontal integration
AN 49.5	Expalin the anatomical basis of Perineal tear , Epsiotomy	1. Describe in detail the anatomy of pelvic musculature 2. List or enumerate the degrees of Perineal tears 3. Expalin the anatomical basis of Episiotomy and its role in child birth	K	KH	N	LECTURE	written	Anatomy	
AN 75.5	Describe the principles of genetic counselling	1.List out the indications of genetic counselling 2.Descibe the priniciples of gentic counselling	K	KH	Y	LECTURE	written	Anatomy	

AN 77.6	Describle teratogenic influences; Fertility and sterility,surrogate motherhood,social significance of "sex-ratio	1.Describe teratogenicity and list various drugs causing teratogenicity 2.Define Fertility and Sterility 3.Explain surrogacy and enumerate indications of surrogacy 4.Describe in detail Preconceptional and Prenatal Diagnosis Test Act (PCPNDT)and social significance of sex - ratio	K	KH	N	LECTURE	written	Anatomy	
AN 81.1	Descide various methods of prenatal diagnosis	List out the various methods of prenatal diagnosis	K	KH	Y	LECTURE	written	Anatomy	
AN 81.2	Describe indications,process and disadvantages of Amniocentesis	1.List out the indications of amniocentesis. 2.Descibe the procedure of amniocentesis. 3.Enumerate the complications associated with amniocentesis.	K	KH	Y	LECTURE	written	Anatomy	

AN 81.3	DescriBe indications,process and disadvantages of chorion villus biopsy	1.List out the indications of chorion villus biopsy. 2.Descibe the procedure of chorion villus biopsy. 3.Enumerate the complications associated with chorion villus biopsy.	K	KH	Y	LECTURE	written	Anatomy	

Anatomy topics integrated with Orthopaedics

Number	COMPETENCY	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods
AN 8.6	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE SCAPHOID FRACTURE AND EXPLAIN THE ANATOMICAL BASIS OF AVASCULAR NECROSIS.					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE BLOOD SUPPLY OF SCAPHOID	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE INJURY PATTERN LEADING TO DISRUPTION OF BLOOD SUPPLY	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE THE CLASSIFICATION OF SCAPHOID FRACTURES	K	KH	Y	LECTURE	WRITTEN/VIVA
AN 10.12	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE AND DEMONSTRATE SHOULDER JOINT FOR – TYPE,ARTICULAR SURFACES ,CAPSULE,SYNOVIAL MEMBRANE,LIGAMENTS,RELATIONS,MOVEMENTS					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULLD BE ABLE TO DESCRIBE ROTATOR CUFF INSERTIONAL ANATOMY	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE IMPORTANCE OF MOVEMENTS ASSOCIATED WITH EACH MUSCLE	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE MRI IN INJURIES	K	KH	Y	LECTURE	WRITTEN/VIVA

AN 11.4	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE ANATOMICAL BASIS OF STURDAY NIGHT PARALYSIS					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE SPIRAL GROOVE DEMONSTRATION	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE CLASSIFICATTION OF RADIAL NERVE PALSY	K	KH	Y	LECTURE	WRITTEN/VIVA
AN 17.2	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE ANATOMICAL BASIS OF COMPLICATIONS OF FRACTURE NECK OF FEMUR.					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE ANATOMY OF HEAD AND NECK OF FEMUR	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE BLOOD SUPPLY OF HEAD AND NECK OF THE FEMUR .	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE FRACTURE NECK OF FEMUR CLASSIFICATION	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE XRAY,CT-SCAN,MRI	K	KH	Y	LECTURE	WRITTEN/VIVA
AN 17.3	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE DISLOCATIONS OF HIP JOINT AND SURGICAL HIP REPLACEMENT.					
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE CLASSIFICATION OF HIP DISLOCATION	K	KH	Y	LECTURE	WRITTEN/VIVA

Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DISCUSS THE MECHANISM OF EACH DISLOCATION	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO ENNUMERATE THE COMPLICATIONS	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE AVN OF HEAD OF FEMUR	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE THR	K	KH	Y	LECTURE	WRITTEN/VIVA
AN 18.6	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE KNEE JOINT INJURIES WITH ITS APPLIED ANATOMY					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE ROLE OF ACL,PCL, LCL, MCL, POPLITEUS IN INJURIES	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO EXPLAIN TESTS FOR INJURIES OF EACH LIGAMENT	K	KH	Y	LECTURE	WRITTEN/VIVA
AN 18.7	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO EXPLAIN ANATOMICAL BASIS OF OSTEOARTHRITIS					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DISCUSS PATHOPHYSIOLOGY OF OA	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE STAGING OF OA	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE X RAY	K	KH	Y	LECTURE	WRITTEN/VIVA

AN 19.4	AT THE END OF SESSION PHASE 1, STUDENT SHOULLD BE ABLE TO EXPLAIN THE ANATOMICAL BASIS OF RUPTURE OF CALCANEAL TENDON					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE ANATOMY OF TA	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO ENNUMERATE THE CAUSES OF RUPTURE	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO EXPLAIN TESTS	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE IMAGING	K	KH	Y	LECTURE	WRITTEN/VIVA
AN 19.6	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO EXPLAIN THE ANATOMICAL BASIS OF FLAT FOOT & CLUB FOOT					
Objectives	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE ANATOMY OF ARCHES OF FOOT	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE FLATFOOT,CLUBFOOT.	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE PATHOANATOMY	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE XRAY,MRI	K	KH	Y	LECTURE	WRITTEN/VIVA
AN 19.7	AT THE END OF SESSION PHASE 1 STUDENT SHOULD BE ABLE TO EXPLAIN THE ANATOMICAL BASIS OF METATARSALGIA & PLANTAR FASCIITIS					

Objectives	AT THE END OF SESSIONPHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE METATARSAL ANATOMY 	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO DESCRIBE ANATOMY IN RELATION TO HEEL PAD AND PLANTAR FASCIA	K	KH	Y	LECTURE	WRITTEN/VIVA
	AT THE END OF SESSION PHASE 1, STUDENT SHOULD BE ABLE TO ENNUMERATE THE CAUSES	K	KH	Y	LECTURE	WRITTEN/VIVA

Anatomy topics integrated with Paediatrics						
Number	COMPETENCY	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods
AN 25.4	**Tracheo-oesophageal fistula**	k	kh	y	Lecture	Written
Objectives	Difine the Tracheo-oesophegeal fistula	k	kh	y	Lecture	Written
	Epidemiology and Types and Clinical features and Prognosis of Tracheo-oesophageal fistula	k	kh	y	Lecture	Written
AN 25.5	**Transposition of Great arteries**					
Objectives	Define the transposion of great arteries	k	kh	y	Lecture	Written
	Incidence and Types and Etiology and Prognosis of Transposition of Great arteries	k	kh	y	Lecture	Written
AN 25.5	**Patent ductes arteriosus**					
	Explain Fetal circulation	k	kh	y	Lecture	Written
Objectives	Define the Patent ducts arteriousus	k	kh	y	Lecture	Written
	Histology, Incedence,Clinical features of Patent ductes arteriosus	k	kh	y	Lecture	Written

AN 25.5	**Dextro cardia**					
Objectives	Define the Dextro cardia	k	kh	y	Lecture	Written
	Etiology, Types, Clinical features and Prognosis of Dextro cardia	k	kh	y	Lecture	Written
AN 75.5	**Principles of genetic counsellig**					
Objectives	Define the Genetic counselling	k	kh	y	Lecture	Written
	Indications of Genetic counselling in Paediatrics	k	kh	y	Lecture	Written
	Clasification of Genetic disorders and Purpose of Genetic counselling.	k	kh	y	Lecture	Written

VERTICAL INTEGRATION ANATOMY TO RADIO-DIAGNOSIS

Number	Competency The student should be able to	Specific Learning objective (SLO)	Domain K/S/A/C	Level K/KH/S/SH/ P	Core (Y/N)	Teaching Learning method	Assessment method	Vertical integration	Horizontal integration	
AN 25.7	Identify the structures seen on Plain X-ray Chest P.A.View	1. Identify and describe the hilar structures and bronchovascular markings 2. Describe the Costophrenic angle and mention its importance 3.Identify the domes of diaphragm and ribs.	K/S	KH/SH	Y	PRACTICAL DOAP SESSION	WRITTEN EXAM VIVA	Anatomy		
AN 25.8	Identify and describe in brief a Barium swallow	1. Describe the position of patient , contrast used and part examined in a Barium swallow 2. Identify the presence of any strictures / filling defects.	K/S	KH / SH	N	PRACTICAL /DOAP SESSION	WRITTEN EXAM / VIVA	Anatomy		

AN 43.7	Identify the anatomical structures in 1) Plain X ray skull, AP and LATERAL view 2) Plain X ray cervical spine - AP/ LAT view 3) Plain X RAY of paranasal sinuses.	1. Identify the various structures of skull bones , atlanto axial joint and mandible. 2. Describe in detail the paranasal sinuses with mastoids. 3. Identify the parts of cervical vertebral bodies. 4. Identify if there are any osteophytes / joint space narrowing. 5.Assess the paranasal sinuses for any opacification .	K/S	KH/SH	Y	PRACTICAL	VIVA/ SKILL ASSESSMENT	ANATOMY		
AN 43.9	Identify the anatomical structures in carotid and vertebral angiogram.	1. Identify the anatomical structures in carotid angiogram. 2. Identify the anatomical structures in vertebral angiogram.	K/S	KH/SH	N	PRACTICAL	VIVA/ SKILL ASSESSMENT	ANATOMY		
AN 54.3	Describe the role of ERCP, CT abdomen , MRI, Arteriographyin radiodiagnosis of abdomen.	1. Describe the views in CT abdomen. 2. Identify the major structures in CT abdomen. 3. Describe the sequences in MRI used for abdomen. 4. Identify various organs in MRI abdomen.	K	KH	N	LECTURE	VIVA	Anatomy		

AN 54.2	Describe and identify the special radiographs of abdomino pelvic region (contrast x ray, barium swallow, barium meal , barium enema, cholecystography, IVP, hysterosalpingography.)	1. Identify the position , part examined and view for the Barium swallow, meal , enema. 2. Describe about the type of contrast and amount to be given. 3. Describe in detail the mode of contrast administration with the procedure of IVP. 4. Describe in detail the mode of contrast administration with procedure of HSG.	K/S	KH/SH	Y	LECTURE/ DOAP SESSION	VIVA/ SKILL ASSESSMENT	Anatomy		

OBJECTIVES FOR PHYSIOLOGY COMPETENCIES

No.	COMPETENCY The student should be able to:	Specific learning objectives 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	Hours
PY 1.1	Describe the structure & function of mammalian cell	1.Describe the structure of cell membrane 2.Discuss different types of integral & peripheral proteins 3.Mention Intracellular organelles & their functions 4.Discuss about the Cytoskeleton 5 . Enumerate the functions of nucleus and other organelles	K	KH	Y	Lecture	Written				1
PY 1.2	Describe & discuss the principles of Homeostasis	1.Define and discuss Homeostasis 2.Describe the Controlling mechanisms	K	KH	Y	Lecture	Viva voce				1
PY 1.3	Describe intercellular communications	1.Describe the structure and function of the Integrins, cadherins (CAMs) 2. Describe the Gap junctions and Tight junctions	K	KH	Y	Lecture	Written				1

PY 1.4	Describe Apoptosis , Programmed cell death	1. Define Apoptosis 2. Discuss the different types of mechanisms involved. 3. Discuss the Factors affecting Apoptosis	K	KH	Y	Lecture	Written				1
PY 1.5	Describe & discuss transport mechanism across cell membrane	1.Enumerate different types of Active transport mechanisms 2.Describe in detail.	K	KH	Y	Lecture	Written				1
		2 Discuss different types of Passive transport	K	KH	Y	Lecture					1
PY 1.6	Describe the fluid compartment of body ionic composition & measurement	1.Outline Compositions of ICF & ECF 2.Discuss the methods of measurement of fluid compartments	K	KH	Y	Lecture	Written			Biochemistry	1
PY 1.7	Describe the concept of pH & buffer system in body	1.Define pH & Buffer 2.Discuss the different types of buffers to maintain pH	K	KH	Y	Lecture	Written			Biochemistry	1
PY 1.8	Describe & discuss the molecular basis of Resting membrane potential & Action potential in excitable tissue	1.Explain about generation of resting membrane potential 2.Explain the generation of action potential	K	KH	Y	Self Directed Learning	Written				1
PY 1.9	Demonstrate the ability to describe & discuss the method used to demonstrate the functions of the cell and its products,	1.Discuss the method used to demonstrate the functions of the cell 2. Describe the steps of patch clamp method and	K	KH	Y	Self Directed Learning	Written				1

	its communications & their application in clinical care & research	its use in clinical research									
PY 2.1	Describe the composition & functions of blood component	1.Discuss about blood Cells & Plasma 2.Discuss the functions of Blood	K	KH	Y	Self Directed Learning	Written				1
PY 2.2	Discuss the origin, forms, variations & functions of plasma proteins	1.Mention the origin & formation of plasma proteins 2.Explain the normal values & functions of plasma proteins	K	KH	Y	Lecture	Written				1
PY 2.3	Describe and discuss the synthesis & functions of haemoglobin & explain its break down. Describe variants of Haemoglobin	1. Explain the formation of Haemoglobin and iron metabolism	K	KH	Y	Lecture	Written				1
		2.Discuss breakdown of Haemoglobin and pathophysiology of jaundice 3.Mention different types of Haemoglobin, and their clinical significance	K	KH	Y	Lecture	Written				1
PY 2.4	Describe RBC formation (Erythropoiesis & its regulations) functions	1.Explain the Structure of bone marrow 2. Explain the steps of Erythropoiesis 3.Mention the Factors effecting Erythropoiesis	K	KH	Y	Lecture	Written				1
PY 2.5	Describe different types of anemias	1.Outline the classification of anemia	K	KH	Y	Lecture	Written		Pathology	Biochemistry	1

	and jaundice	2.Explain Iron deficiency, vitamin B_{12} & Folic acid anemia									
PY 2.6	Describe WBC formation & its regulation	1.Enumerate different types of WBC	K	KH	Y	Self Directed Learning	Written				1
		2.Discuss the steps of leucopoiesis 3. Mention the factors affecting leucopoiesis 4. Discuss the functions of granulocytes	K	KH	Y	Lecture	Written				1
PY 2.7	Describe the formation of platelets, functions & variations	1.Explain about thrombopoiesis & factors affecting it 2.Explain the functions of platelets	K	KH	Y	Lecture	Written				1
PY 2.8	Describe the physiological basis of hemostasis & anticoagulants, describe bleeding & clotting disorder (Hemophilia, purpura)	1.Define Hemostasis and 2.Describe the steps of Hemostasis	K	KH	Y	Lecture	Written		Pathology		1
		3.Discuss Bleeding and Clotting disorders 4. Explain Hemophilia & purpura	K	KH	Y	Lecture	Written				1
PY 2.9	Describe different Blood groups & discuss the clinical importance of blood grouping, blood banking & transfusion	1.Enumearte the different types of blood groups 2.Explain ABO & RH systems 3.Explain the Hazards of mismatched blood transfusion	K	KH	Y	Lecture	Written		Pathology		1

		4.Discuss Blood grouping & cross matching 5.Explain RH incompatibility	K	KH	Y	Lecture	Written / viva voce				1
PY 2.10	Define & classify different types of immunity. Describe the development of immunity & its regulations	1.Describe Innate immunity & Acquired immunity 2.Explain the Complement system	K	KH	Y	Lecture	Written				1
		3. Explain the functions of B-lymphocytes & T-lymphocytes 4.Discuss the disorders associated with immunity , Applied Aspects	K	KH	Y	Lecture	Written				1
PY 2.11	Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups BT/CT	1.Estimate Hb concentration by the Sahli‘s acid hematin method.	S	SH	Y	Practical	Viva voce				2
		2.Estimate the RBC Count	S	SH	Y	Practical	Viva voce				8
		3.Estimate the WBC Count	S	SH	Y	Practical	Viva voce				8
		4. Describe the normal corpuscular values and how to obtain them. Explain the clinical significance of calculating absolute corpuscular values.	S	SH	Y	Practical	Viva voce				2
		5.Prepare satisfactory blood films, fix and stain them, and describe the features of a well-stained	S	SH	Y	Practical	Viva voce				8

		film. 6.Identify different blood cells in a film, and indicate the identifying features of each type of leukocyte. 7.Differentiate between neutrophils, eosinophils, and basophils and between a large lymphocyte and a monocyte. 8.Carry out the differential count and express results in their percentages and absolute numbers.									
		9. Determine blood groups by using commercially available anti-sera, and precautions to be observed.	S	SH	Y	Practical	Viva voce				2
		10. Determine BT and CT by the routine laboratory methods, and give their normal values.	S	SH	Y	Practical	Viva voce				2
PY 2.12	Describe test for ESR osmotic fragility, Hematocrit, note the findings & interpret the test results etc.	1.Mention the tests for ESR	S	SH	Y	Practical	Viva voce				2
		2.Mention the test for osmotic fragility	S	SH	Y	Practical	Viva voce				2
PY 2.13	Describe steps for reticulocytes & platelet count	1.Estimate reticulocytes count	S	SH	Y	Practical	Viva voce				4
		2.Estimate platelet count	S	SH	Y	Practical	Viva voce				4

PY 3.1	Describe the structure & function of a neuron & Neuroglia. Discuss nerve growth factor & other growth factors/cytokines	1.Describe the Structure of neuron									
		2.Explain the functions of neuron, neuroglia	K	KH	Y	Lecture	Written				1
		3.Describe Nerve growth factors & cytokines 4.Discuss classifications of nerve fibers & neuroglia	K	KH	Y	Lecture	Written				1
		5.Explain the Synthesis of neurotransmitters, 6.Discuss physiological basis of local anesthesia	K	KH	Y	Lecture	Written				1
PY 3.2	Describe the types, functions & properties of nerve fibers	1.Describe Properties of nerve fibers	K	KH	Y	Lecture	Written				1
PY 3.3	Degeneration & regeneration of peripheral nerves	1.Describe Wallerian degeneration 2.Explain about Regeneration 3. Discuss the grading of nerve injury	K	KH	Y	Lecture	Written		General Medicine		1
PY 3.4	Describe the structure of Neuromuscular junction	1.Describe the Structure of neuromuscular junction 2. Describe about transmission of impulse, end plate potential	K	KH	Y	Lecture	Written				1
PY 3.5	Discuss the action of neuromuscular blocking agents	1.Explain about Blocking agents 2.Mention the Drugs that enhance transmission	K	KH	Y	Small group teaching	Written		Anaesthesia & Pharmacology		1

PY 3.6	Describe the pathophysiology of myasthenia gravis	1.Explain Autoimmune disease. 2.Discuss the Features of myasthenia gravis	K	KH	Y	Small group teaching	Written				1
PY 3.7	Describe the different types of muscle fibers & their structure	1.Discuss the Classification of muscle fibers 2.Describe the Structure of skeletal, smooth & cardiac muscle	K	KH	Y	Lecture	Viva voce				1
PY 3.8	Describe action potential & its properties in different muscle types (Skeletal & smooth)	1.Describe Properties of skeletal muscle 2.Explain ionic basis of Action potential 3.Discuss action potential in different types of muscle	K	KH	Y	Lecture	Written				1
PY 3.9	Describe the molecular basis of muscle contraction in skeletal & smooth muscle	1. Describe Sarcomere, Sarcotubular system in smooth and skeletal muscle 2.Explain about theory of muscle contraction 3. Describe the Molecular mechanism of muscle contraction 4.Explain Excitation contraction coupling 5.Describe the Structure of contractile proteins	K	KH	Y	Lecture	Written				1

		6. Outline the differences in smooth and skeletal muscle contractions									
PY 3.10	Describe the mode of muscle contraction (Isometric & Isotonic)	1.Mention Isotonic contractions with examples 2.Mention Isometric contractions with examples	K	KH	Y	Lecture	Written				1
PY 3.11	Explain energy source & muscle metabolism	1.Describe the Source of energy 2.Explain about ATP, phosphor creatine creatinine system 3.Describe about Glycogen lactic acid system, aerobic system 4.Explain oxygen debt 5.Mention Nutrients used during muscle activity	K	KH	Y	Small group teaching	Written				1
PY 3.12	Explain the gradation of muscular activity	1.Explain about the Strength of muscle 0 to 5 level	K	KH	Y	Small group teaching	Written				1
PY 3.13	Describe muscular dystrophy, myopathies	1.Describe Duchenne muscular dystrophy 2. Mention about Auto immune conditions	K	KH	Y	Small group teaching	Written				1
PY 3.14	Perform ergography	1.Demonstrate the Practical procedure of ergography	K	SH	Y	DOAP	Practical				2

PY 3.15	Demonstrate effect of mild, moderate & severe exercise & record changes in cardio respiratory parameters	1.Describe and perform the recordings of Heart rate and pulse rate 2.Describe the steps of recording BPand perform 3.Describe and perform the recording of respiratory rate 4.Explain Respiratory changes on exercise	K	SH	Y	DOAP	Practical				2
PY 3.16	Demonstrate Harvard step test & describe the impact on induced physiologic parameters in a stimulated environment	1.Explain changes in respiratory and cardiovascular systems during exercise	K	SH	Y	DOAP	Practical				2
PY 3.17	Describe strength duration curve	1.Explain Rheobase, chronaxie, unit time with the help of chart	K	KH	Y	Small group teaching	Written				1
PY 3.18	Observe with computer assisted learning a) Amphibian nerve muscle experiments	1.Identify and describe different Nerve muscle charts like a)Simple muscle twitch	K	KH	Y	Small group teaching	Written				2

	b) Amphibian cardiac experments	b)Effective of two successive stimuli c)Demonstration of fatigue d)Demonstration of tetanus e)Effect of temperature un contracting muscle									
		2. Identify and discuss Amphibian cardiac charts	K	KH	Y	Small group teaching	Viva voce				2
PY 4.1	Describe the structure and functions of digestive system..	1.Explain the structure of digestive system	K	KH	Y	Self directed learning	Written/ viva voce				1
		2.List out the functions of digestive system.	K	KH	Y	Lecture	Written/ viva voce				2
		3 Explain different phases of deglutition	K	KH	Y	Small group discussion	Written/ viva voce				1
PY 4.2	Describe the composition, mechanism of secretion, functions and regulation of saliva, gastric, pancreatic,intestinal juices and bile secretion.	1. Explain the composition of saliva	K	KH	Y	Self directed learning	Written/ viva voce				1
		2. Explain the mechanism of secretion of saliva 3. Enumerate different functions of saliva 4. Explain the regulation of secretion of saliva	K	KH	Y	Lecture	Written/viva voce				2
		5. Explain the composition of gastric juice 6. Explain the mechanism of secretion of HCL	K	KH	Y	Lecture	Written/viva voce				1

		7. List out the functions of gastric juice									
		8. Explain the regulation of secretion of gastric juice	K	KH	Y	Lecture	Written/viva voce				1
		9.Explain the composition of pancreatic juice 10.List out the functions of pancreatic juice 11.Describe the regulation of secretion of pancreatic juice	K	KH	Y	Lecture	Written/viva voce				
		12.Explain the composition of intestinal juice 13.Enumerate the different functions of intestinal juice 14.Explain the regulation of secretion of intestinal juice	K	KH	Y	Lecture	Written/viva				1
		15.Explain the composition of bile 16.Enumerate the different functions of bile 17.Explain the regulation of secretion of bile	K	KH	Y	Lecture	Written/viva				1
PY 4.3	Describe GIT movements, regulation and	1.Explain different phases of Gastro intestinal motility	K	KH	Y	Small group discussion	Written/viva voce				1

	functions. Describe defecation reflex. Explain role of dietary fiber.	2.Discuss regulation of Gastro intestinal motility	K	KH	Y	Small group discussion	Written/viva voce				1
		3.Explain the pathway of defecation reflex	K	KH	Y	Lecture	Written /viva				1
		4.List out the different dietary fibers	K	K	Y	Lecture	Written /viva				
		5.Explain the mechanism of Dietary fibers in treatment of constipation	K	KH	Y	Small group discussion	Written/viva voce				1
PY 4.4	Describe the physiology of digestion & absorption of nutrients.	1.Explain the digestion of fats carbohydrate and proteins .	K	KH	Y	Lecture	Written/viva voce			Biochem	1
		2.Explain the absorption of fats carbohydrate and proteins .	K	KH	Y	Lecture	Written/viva voce			Biochem	1
PY 4.5	Describe the sources of GIT hormones, their regulation and functions	1.Enumurate the hormones involved in Gastro intestinal motility 2.List out the functions of gastro intestinal hormones	K	K	Y	Small group discussion	Written/viva voce				1
		3.Explain the regulation of gastro intestinal hormones secretion	K	KH	Y	Lecture	Written/viva voce				1
PY 4.6	Describe the gut-brain axis	1.Explain the structure of enteric nervous system 2.List out the functions of enteric nervous system	K	KH	Y	Small group discussion	Written/ viva voce				1
PY 4.7	Describe & discuss the structure and	1.Explain the physiological anatomy of liver	K	KH	Y	Lecture	Written/ viva voce				2

	functions of liver and gall bladder	2.Enumerate the functions of liver	K	K	Y	Small group discussion	Written/viva voce				1
		3. Explain the physiological anatomy of Gall bladder	K	KH	Y	Small group discussion	Written/viva voce				1
		4. .Enumerate the functions of Gall bladder	K	K	Y	Small group discussion	Written/viva voce		General medicine		1
PY 4.8	Describe and discuss gastric function tests, pancreatic exocrine function tests and liver function test	1.Discuss the different Gastric function tests	K	KH	Y	lecture	Written/viva voce				1
		2.Explain the different Pancreatic exocrine function tests	K	KH	Y	Small group discussion	Written/viva voce			Biochem	1
		3.Explain the different Liver function tests	K	KH	Y	lecture	Written/viva voce				1
PY 4.9	Discuss the physiological aspects of peptic ulcer, gastro-oesophageal reflux disease, vomiting, diarrhoea,constipation,adynamicileus,Hirschsprung's disease.	1.Explain the physiological aspects of peptic ulcer,	K	KH	Y	lecture	Written/viva voce				2
		2.List out the different Gastro-oesophageal reflux disease	K	K	Y	Small group teaching	Written/viva voce				1
		3.Discuss the physiology of vomiting,diarrhoe and constipation	K	KH	Y	lecture	Written/viva voce				2
		4.Discuss the pathophysiology of adynamicileus and Hirschsprung's disease	K	KH	Y	Small group teaching	Written/viva voce				1

PY 4.10	Demonstrate the correct clinical examination of abdomen in a normal volunteer or simulated environment	1.Clinicallyexamine the abdomen and interpret the findings to differentiate normal and abnormal features	S	SH	Y	DOAP session	Skill assessment / viva voce/ OSCE				4
PY 5.1	Describe the functional anatomy of heart including chambers, sounds and pacemaker tissue and conducting system	1.Explain the different cardiac chambers	K	KH	Y	Lecture	Written/ viva voce				1
		2.Explain the conducting system of the heart.	K	KH	Y	small group discussion	Written/ viva voce				1
PY 5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions.	1.Describe in detail the Properties of cardiac muscle	K	KH	Y	Self directed learning	Written/ viva voce				1
		2.Explain the morphology of cardiac muscle	K	KH	Y	small group discussion	Written/ viva voce				1
		3.Explain the electrical properties of cardiac muscle 4.Explain the mechanical properties of cardiac muscle 5.Explain the metabolic properties of cardiac muscle	K	KH	Y	Lecture	Written/ viva voce				1
PY 5.3	Discuss the events occurring during cardiac cycle.	1.Explain cardiac cycle and pressure and volume changes	K	KH	Y	Lecture	Written/ viva voce				2
		2.Discuss the different waves of Jugular venous	K	KH	Y	small group	Written/ viva voce				1

		pressure				discussion					
PY 5.4	Describe generation, conduction of cardiac impulse.	1.Discuss cardiac impulse generation	K	KH	Y	small group discussion	Written/ viva voce				1
PY 5.5	Describe the physiology of ECG, its applications and the cardiac axis.	2.Explain the physiological basis of different waves of ECG	K	KH	Y	lecture	Written/viva voce				2
		3.List out the applications of ECG 4.Calculate the cardiac axis , and heart rate on a given ECG paper	K	KH	Y	lecture	Written/ viva voce				1
PY 5.6	Describe abnormal ECG, arrhythmias, heart block and myocardial infraction.	1.Identify arrhythmias, heart block/ myocardial infarction on a given ECG paper	K/s	KH	Y	lecture	Written/viva voce		Gen medicine	Anatomy	1
PY 5.7	Describe and discuss the hemodynamics of circulatory system	1.Explain the hemodynamics of circulatory system	K	KH	Y	lecture	Written/viva voce				2
PY 5.8	Describe and discuss local and systemic cardiovascular regulatory mechanism	1.Explain the local cardiovascular regulatory mechanism	K	KH	Y	Lecture	Written/viva voce				2
		2.Explain the systemic cardiovascular regulatory mechanism	K	KH	Y	Lecture	Written/viva voce				2
PY 5.9	Describe the factors affecting heart rate, regulation of cardiac output and blood pressure	1.Enumerate the factors affecting the heart rate	K	K	Y	Lecture	Written/ viva voce				2
		2.Define cardiac output and Explain the factors altering the cardiac output	K	KH	Y	Lecture	Written/ viva voce				1

		3.List out the methods of measurement of cardiac output	K	K	Y	Lecture	Written/ viva voce				1
		4.Explain the different factors affecting blood pressure	K	KH	Y	Lecture	Written/ viva voce				1
PY 5.10	Describe and discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation.	1.Enumerate different components of regional circulations	K	K	Y	Small group discussion	Written/viva voce				2
		2.Explain the physiology of each different regional circulations	K	KH	Y	Small group discussion	Written/ viva voce				2
PY 5.11	Describe the pathophysiology of shock, syncope and heart failure.	1.Classify types of shock	K	KH	Y	Small group discussion	Written/ viva voce		General medicine		1
		2.Explain the pathophysiology of shock and syncope 3.Describe the pathophysiology of heart failure	K	KH	Y	Smallgroup discussion	Written/ viva voce				1
PY 5.12	Record BP and pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment	1.Record BP and pulse at rest and different postures and in different grades of exercise	S	SH	Y	DOAP sessions	Practical/OSPE/ viva voce	1			4

PY 5.13	Record and interpret normal ECG in a volunteer or simulated environment	1.Record an ECG on a volunteer	S	SH	Y	DOAP sessions	Practical/OSPE/viva voce				4
		2.Interpret a normal ECG	S	SH	Y	DOAP sessions					6
PY 5.14	Observe cardiovascular autonomic function tests in a volunteer or simulated environment.	1.Observe cardiovascular autonomic function tests in a volunteer	S	SH	N	DOAP SESSIONS	Skill assessment /viva voce				2
PY 5.15	Demonstrate the correct clinical examination of the CVS in a normal volunteer or simulated environment	1.Clinically examine the Cardiovascular system	S	SH	Y	DOAP sessions	Practical/OSPE/viva voce	1			6
		2. Differentiate abnormal Heart Sounds from normal heart sounds.	K	SH	Y	small group discussion	Written/ viva voce				1
PY 5.16	Record arterial pulse tracing using finger plethysmography in a volunteer or simulated environment	1.Record arterial pulse tracing using finger plethysmography.	S	SH	N	DOAP session/computer assisted learning methods	Practical/ OSPE/viva voce				2
PY 6.1	Describe the functional anatomy of respiratory tract	1.Describe the functional anatomy of respiratory tract	K	KH	Y	Self directed learning	Written/viva voce				1
		2.Discuss the different layers of respiratory membrane	K	KH	Y	self directed learning	Written/viva voce				1
PY 6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung	1.Discuss the mechanics of normal respiration,	K	KH	Y	small group discussion	Written/viva voce				2
		2.Describe the various lung volumes and capacities	K	KH	Y	Small group	Written/viva voce				2

	volumes and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs					discussion					
		3.Define the terms alveolar surface tension, compliance and airway resistance 4.Discuss the factors affecting each	K	KH	Y	Lecture	Written/viva voce				2
		5.Define the V/P ratio, 6.Mention the factors affecting diffusion capacity of lungs	K	KH	Y	small group discussion	Written/viva voce				2
		7.Define Dead space 8.Mention the types and their clinical significance 9.Describethe measurement method for dead space	K	KH	Y	small group discussion	Written/viva voce				2
PY 6.3	Describe and discuss the transport of O2 and CO2	1.Describe the transport of oxygen 2.Discuss the significance of O2-Hb dissociation curve	K	KH	Y	lecture	Written/viva voce				2
		3.Describe the CO2 transport and Haldane effect and its significance	K	KH	Y	lecture	Written/viva voce				2
		4.Discuss the components of neural regulation of respiration	K	KH	Y	Lecture	Written/viva voce				2
		5.Explain the chemical regulation of respiration	K	KH	Y	lecture	Written/viva voce				2

PY 6.4	Describe and discuss the physiology of high altitude and deep sea diving.	1.Explain the Pathophysiology of high altitude sickness- acute and chronic	K	KH	Y	lecture	Written/ viva voce				2
		2.Explain the physiological changes in high altitude dwellers and in mountain climbers.	K	KH	Y	Small group teaching	Written/ viva voce				1
		3.Describe the physiology of Deep sea diving,	K	KH	Y	Lecture	Written/ viva voce				2
PY 6.5	Describe and discuss the principals of artificial respiration, oxygen therapy, acclimatization and decompression sickness.	1.Mention the Principles of artificial respiration, 2.Outline the indications and uses of oxygen therapy	K	KH	Y	Lecture	Written/ viva voce		Anaesthesia		1
		3.Define Acclimatization and decompression sickness 4.Explain the signs and symptoms of Acute & chronic mountain sickness 5.Mention the causes and symptoms of decompression sickness	K	KH	Y	small group discussion	Written/viva voce				2
PY 6.6	Describe and discuss the pathophysiology of dysponea, hypoxia, cyanosis asphyxia, drowning, periodic breathing.	1.Discuss the Pathophysiology of dysponea, 2.Define and Classify hypoxia	K	KH	Y	small group discussion	Written/viva voce				2
		3.Define the terms Cyanosis, asphyxia, drowning, &periodic breathing	K	KH	Y	small group discussion	Written/viva voce				2

		4.Describe the physiological basis of each									
		5.Mention the different types of Abnormal respirations	K	KH	Y	small group discussion	Written/viva voce				1
PY 6.7	Describe and discuss lung function tests and their clinical significance	1.Enumerate various lung function tests and their clinical significance	K	KH	Y	Small group discussion	Written/viva voce				2
PY 6.8	Demonstrate the correct technique to perform and interpret spirometry.	2.Perform and interpret spirometry	S	SH	Y	DOAP sessions	Skill assessment /viva voce		Respiratory medicine		2
PY 6.9	Demonstrate the correct clinical examination of respiratory system in a normal volunteer or simulated environment.	1.Clinically examine respiratory system 2.Identify normal and abnormal findings and interpret	S	SH	Y	DOAP sessions	Skill assessment /viva voce	1			6
		3.Identify Abnormal Breath Sounds	K	KH	Y	small group discussion	Written/viva voce				1
PY 6.10	Demonstrate the correct technique to perform measurement of peak expiratory flow rate in a normal volunteer or simulated environment.	1.Perform measurement of peak expiratory flow rate	S	SH	Y	DOAP sessions	Practical/OSPE/viva voce				2
PY 7.1	Describe structure and function of kidney.	1.Describe the structure and function of nephron	K	KH	Y	Self directed learning	Written/ viva voce				1

		2.Explain the non-excretory functions of kidney	K	KH	Y	Self directed learning	Written/ viva voce				1
		3.Describe the renal circulation 4.Discuss the steps to Measure renal blood flow and calculate	K	KH	Y	Small group discussions	Written/ viva voce				2
PY 7.2	Describe the structure and function of JG apparatus and renin-angiotensin system.	1.Explain the structure of JG apparatus 2.Describe in detail renin-angiotensin system..	K	KH	Y	Small group discussion	Written/ viva voce				3
PY 7.3	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption and secretion, concentration and diluting mechanisms.	1.Discuss in detail the mechanism of Counter-current multiplier and Counter-current exchange systems	K	KH	Y	lecture	Written/ viva voce				3
		2.Define GFR & factors regulating it,	K	KH	Y	lecture	Written/ viva voce				2
		3.Mention the process of tubular reabsorption and secretion.	K	KH	Y	Lecture	Written				2
PY 7.4	Describe and discuss the significance and implication of renal clearance.	1.Describe renal clearance mechanisms,	K	KH	Y	Small group discussion	Written/ viva voce				1
		2.Discuss the methods to measure GFR, and other clearance tests	K	KH	Y	Small group discussion	Written/ viva voce				1

PY 7.5	Describe the renal regulation of fluid and electrolytes and acid-base balance.	1.Discuss Acid-base balance and the buffers	K	KH	Y	lecture	Written/ viva voce				2
		2.Describe and define Acidosis and Alkalosis	K	KH	Y	Small group discussion	Written/ viva voce				1
PY 7.6	Describe the innervation of urinary bladder, physiology of micturation and its abnormalities.	1.Describe the nerve supply of bladder, 2.Explain the Micturation reflex, 3.Discuss cystometry and cystometrogram	K	KH	Y	Small group discussion	Written/ viva voce		Pharmacology		2
		4.Enumerate the anamolies of Bladder Dysfunction	K	KH	Y	Small group discussion	Written/ viva voce				1
		5.Explain the mechanism of action of diuretics	K	KH	Y	Lecture	Written/ viva voce				1
PY 7.7	Describe artificial kidney, dialysis and renal transplantation.	1.Explain the role of artificial kidney, and mechanism of action 2.Outline the indications of dialysis and uses 3.Discuss the indications and advantages and complications of renal transplantation..	K	KH	Y	Lecture	Written/ viva voce		General medicine		1
PY 7.8	Describe and discuss renal function tests.	1.Enumerate the various renal function tests 2.Discuss the advantages and disadvantages of various tests	K	KH	Y	Lecture	Written/ viva voce			biochem	1

PY 8.1	Describe the physiology of bone and calcium metabolism.	1.Explain Physiological anatomy of bone	K	KH	Y	Self directed learning	Written/ viva voce				1
		2.Discuss the hormones for Calcium metabolism, the secretion and regulation	K	KH		Lecture	Written/ viva voce				1
		3.Describe the role of Parathormone in calcium metabolism	K	KH		Lecture	Written/ viva voce				1
PY 8.2	Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid, parathyroid, adrenal, pancreas and hypothalamus.	1 Discuss the physiological anatomy of hypothalamus 2.Outline the hormones released from hypothalamus with their mechanism of action	K	KH	Y	Small group teaching	Written/ viva voce				1
		3.Discuss the physiological anatomy of Ant pituitary, 4.Outline the hormones secreted from anterior pituitary 5.Describe the synthesis, function and regulation of the Growth hormone	K	KH	Y	Lecture	Written/ viva voce				2
		6.Explain the pathophysiology , signs and symptoms of Gigantism & dwarfism	K	KH	Y	small group discussion	Written/viva voce				1
		7.Enumerate the hormones released from Posterior pituitary 8.Outline the synthesis , regulation and actions of ADH	K	KH	Y	Lecture	Written/viva voce				2

		9.Describe the Thyroid secretion , synthesis and functions,	K	KH	Y	Lecture	Written/viva voce				3
		10.Enumerate the signs and symptoms of hyper & hypo thyroidism	K	KH	Y	small group discussion	Written/viva voce		General surgery		2
		11.Describe the physiological anatomy of adrenal cortex and medulla. 12.Enumerate the hormones released from adrenal cortex and medulla , 13.Explain in detail the synthesis , regulation and mechanism of action of cortisol. And catecholamines	K	KH	Y	Lecture	Written/ viva voce				3
		14.Enumerate the signs and symptoms of Cushing's and addison's disease	K	KH	Y	Lecture	Written/ viva voce		General medicine		1
		15.Describe the physiological anatomy of Pancreas 16.Outline the endocrine hormones secreted 17.Discuss in detail the synthesis, regulation and functions of insulin and glucagon	K	KH	Y	Lecture	Written/ viva voce				1

		18.Discuss the pathophysiology, signs and symptoms of Diabetes mellitus	K	KH	Y	Lecture	Written/ viva voce		General medicine		1
PY 8.3	Describe the physiology of thymus and pineal gland	1.Describe the physiological anatomy of thymus and pineal gland	K	KH	Y	Self directed learning	Written/ viva voce				1
		2.Discuss the physiology of Circadian Rhythm	K	KH	Y	Small group teaching	Written/ viva voce				1
PY 8.4	Describe the function tests:.	1.Enumerate the various thyroid function test, 2.Interpret the tests	K	KH	Y	Small group discussions	Written/ viva voce			Biochem	2
		3.Describe Glucose tolerance test and interpret the results	K	KH	Y	Self directed learning	Written/ viva voce				1
PY 8.5	Describe the metabolism and endocrine consequences of obesity & metabolic syndrome, stress response. Outline the psychiatry component pertaining to metabolic syndrome.	1.Discuss the pathophysiology of of obesity 2.Describe the endocrine consequences of various metabolic syndromes	K	KH	Y	Lecture	Written/ viva voce				1
		3.Outline the Stress response in metabolic syndrome	K	KH	Y	Small group teaching	Written/ viva voce				1
		4.Discuss the psychiatric component pertaining to metabolic syndrome.	K	KH	Y	Small group discussion	Written/ viva voce				1
PY 8.6	Describe& differentiate the mechanism of action	1.Enumerate different types of hormones based on the composition and	K	KH	Y	Small group discussion	Written/ viva voce				1

	of steroid, protein and amine hormone.	structure 2.Discuss the Mechanism of action of steroid, protein and amine hormone.									
PY 9.1	Describe and discuss sex determinationsex differentiation and their abnormities and outline psychiatry and practical implication of sex determination.	1.Outline the role of. Human chromosomes, Human gametes, 2.Genetic sex determination, Formation of Barr body	K	KH	Y	Lecture,	Written			Human Anatomy	1
		3. Summarize Gonadal differentiation, Genital differentiation and Psychological differentiation	K	KH	Y	Lecture,	Written				1
		4.list Chromosomal abnormalities ,Hormonal abnormalities and their features	K	KH	Y	Small group teaching	Viva voce				
		5.Discuss the psychiatric and practical implication of sex determination	A	K H	Y	Small group teaching	Viva voce				1
PY9.2	Describe and discuss puberty: onset, progression, stages;	1.Summarize Components of puberty	K	KH	Y	Small group teaching					1

	early and delayed puberty and outline adolescent clinical and psychological association.	2.Outline Hormonal changes during puberty 3. Describe Control of onset of puberty 4. Discuss Disorders of puberty	K	KH	Y	Lecture	Written				1
PY 9.3	Describe male reproductive system: functions of testis and control of spermatogenesis& factors modifying it and outline its association with psychiatric illness	1. Describe the physiological anatomy of Male reproductive system	K	KH	Y	Self directed learning	Written				1
		2 .Outline the steps involved in spermatogenesis	K	KH	Y	lecture	Written				1
		3 .Discuss the general structure of testosterone, and describe its biosynthesis, transport, metabolism, and actions. 4.Describe the processes involved in regulation of testosterone secretion.	K	KH	Y	Small group teaching	Written				
		5.Enumerate the abnormal conditions like Cryptorchidism , Hypogonadism and Hypergonadism	K	K	N	Small group teaching-CBL	Viva Voce				
PY	Describe female reproductive	1 .Describe physiological anatomy of female reproductive system	K	KH	Y	Lecture	Written				1

9.4	system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes	2 .Describe the physiologic changes that occur in the female reproductive organs during the menstrual cycle.	K	KH	Y	Lecture,	Written				1
		3.Describe the roles of the pituitary and the hypothalamus in the regulation of ovarian function, and the role of feedback loops in this process.	K	KH	Y	Small group discussion	Written				1
PY9.5	Describe and discuss the physiological effects of sex hormones	1.Discuss the general structures of 17 -estradiol and progesterone 2 .Describe their biosynthesis, transport, metabolism	K	KH	Y	Small group discussion	Viva Voce				1
		3. Enumerate all the physiological actions.	K / S	KH	Y	Small group discussion	Written				1
PY9.6	Enumerate the contraceptive methods for male and female. Discuss their advantages & disadvantag	1. Enumerate the contraceptive methods for male with advantages and disadvantages	K/A /C	KH	Y	Self directed learning	Written, viva voce				1
		2 .Enumerate the contraceptive methods for female with advantages and disadvantages	K/A /C	KH	Y	Lecture,	Written, viva voce				1

PY9.7	Describe and discuss the effects of removal of gonads on physiological functions	1 .Describe the causes of gonadectomy 2 .Outline the effects of removal of gonads	K	KH	Y	Small group discussion	Written				1
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.	1 .Describe the Fertilization and implantation and formation of placenta	K	KH	Y	Lecture	Written				1
		2 .Enumerate the hormones secreted from placenta and their functions	K	KH	Y	Small group discussion	Written				1
		3. Describe the hormonal changes that accompany pregnancy	K	KH	Y	Small group discussion	Written				1
		4.Describe Mechanics and Control of parturition	K	KH	Y	Lecture	Written				1
		5.Outline Phases of lactation and the processes involved in lactation 6.List the physiologic stimuli and the drugs that affect prolactin secretion	K /C	KH	Y	Small group discussion	Viva voce				1

		7.Outline the disorders associated with it. 8.Enumerate the Advantages of breastfeeding	K /C	KH	Y	Small group discussion	Viva voce				1
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	1.Interpret a normal (a) sperm count, (b) sperm morphology (c) sperm motility, as per WHO guidelines 2.Discuss the results	K	KH	Y	Small group discussion	OSPE				1
PY 9.10	Discuss the Physiological basis of various pregnancy tests	1 .Outline all the tests for diagnosing and confirming pregnancy 2. Describe the physiological basis of the test	K	KH	Y	Small group discussion	Viva voce				1
PY 9.11	Discuss the hormonal changes and their effects during peri menopause and menopause	1. Define menopause 2.Explain the hormonal changes	K	KH	Y	Small group discussion	Viva voce				1
		3. Enumerate physiologic effects during peri menopause and menopause.	K	KH	Y	Small group discussion	Viva voce				1

PY 9.12	Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility	1.Outline abnormal Conditions that Cause Female infertility 2. list thetreatment modalities	K	KH	Y	lecture	Viva voce		Obstetrics & Gynaecology		1
PY 10.1	Describe and discuss the organization of nervous system	1. Describe the functional anatomy and physiological properties of the nerve	K	KH	Y	Self directed learning	Written				1
		2. Define and describe nerve potentials	K	KH	Y	Small group discussion	Written				1
		3.Describe the Physiological anatomy and functional organization of nervous system	K	KH	Y	Lecture	Written , viva voce			Human Anatomy	1
PY 10.2	Describe and discuss the functions and properties of synapse, reflex, receptor	1.Describe the main morphologic features of synapses.	K	KH	Y	Small group discussion	Written				1
		2-.Distinguish between chemical and electrical transmission at synapses.	K	KH	Y	Lecture	Written				1
		3.Define convergence and divergence in neural networks, and discuss their implications. 4.Describe fast and slow excitatory and inhibitory	K	KH	Y	Lecture	Written				1

		postsynaptic potentials,									
		5. Outline the ionic fluxes that underlie them, and explain how the potentials interact to generate action potentials	K	KH	Y	Small group discussion	Written				1
		6.Define and give examples of direct inhibition, indirect inhibition, presynaptic inhibition, and postsynaptic inhibition.	K	KH	Y	Small group discussion	Written				1
		7.Describe the components of a reflex arc. 8.Describe the muscle spindles and their role in the stretch reflex	K	KH	Y	Small group discussion	Written				1
		9.Describe the Golgi tendon organs and analyze their function as part of a feedback system that maintains muscle force	K	KH	Y	Small group discussion	Written				1
		10.Define reciprocal innervation, inverse stretch reflex, clonus, and lengthening reaction	K	KH	Y	Small group discussion	Written				1

		11.Describe the classification of sensory receptors. 12.Explain the types of sensory receptors found in the skin, and discuss their relation to touch, cold, warmth, and pain.	K	KH	Y	Lecture	Written				1
		13.Define generator potential. 14.Explain the essential elements of sensory coding	K	KH	Y	Small group discussion	Written				1
PY 10.3	Describe and discuss somatic sensations & sensory tracts	1.Name the types of peripheral nerve fibers and receptor types that mediate warmth, cold, and nociception. 2.Explain the somatotopic organization of ascending sensory pathways.	K	KH	Y	Lecture	Written Vivo voce				1
		3.Describe the pathway that mediates sensory input from touch, proprioceptive, and vibratory senses and	K	KH	Y	Small group discussion	OSCE				1
		4.Explain pathways mediating information from pain and thermo receptors. 5.Explain the differences between fast and slow	K	KH	Y	Small group discussion	Written Vivo voce				1

		pain and acute and chronic pain									
		6 .Explain hyperalgesia and allodynia. 7.Define and explain referred pain	K	KH	Y	Small group discussion	Written Vivo voce				1
PY 10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus	1.Describe motor tracts – descending projections	K	KH	Y	Lecture	Written Vivo voce				1
		2.Describe how skilled movements are planned and carried out. 3. Name the posture-regulating parts of the central nervous system and discuss the role of each	K	KH	Y	Lecture	Written Vivo voce				1
		4 . Define decerebrate and decorticate rigidity, and comment on the cause and physiologic significance of each	K	KH	Y	Lecture	Written Vivo voce				1
		5.Describe the components and functions of the inner ear	K	KH	Y	Self directed learning	Vivo voce				1
		6.Explain how the receptors in the semicircular canals detect rotational acceleration and how the receptors in the saccule and utricle detect linear acceleration	K	KH	Y	Lecture	Written Vivo voce				1
		7.List the major sensory inputs that provide the information which is synthesized in the brain into the sense of position	K	KH	Y	Lecture	Written Vivo voce				1

		in space									
PY 10.5	Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)	1. Describe the location of the cell bodies and axonal trajectories of preganglionic sympathetic and parasympathetic neurons. 2. Describe the location and trajectories of postganglionic sympathetic and para-sympathetic neurons	K	KH	Y	Lecture	Written Vivo voce			Human Anatomy	1
		3-.Name the neurotransmitters that are released by preganglionic autonomic neurons, postganglionic sympathetic neurons, postganglionic parasympathetic neurons, and adrenal medullary cells	K	KH	Y	Small group discussion	Written Vivo voce				1
		4. Outline the functions of the autonomic nervous system	K	KH	Y	Self directed learning	Vivo voce				1
		5.List the ways that drugs act to increase or decrease the activity of the components of the autonomic nervous system	K	KH	Y	Small group discussion	Written Vivo voce				1
		6. Describe the location of neurons that provide input to sympathetic preganglionic neurons	K	KH	Y	Small group discussion	Written Vivo voce				1
PY 10.6	Describe and discuss Spinal cord, its	1.Define spinal shock	K	KH	Y	Lecture	Written				1

	functions, lesion & sensory disturbances	2.Describe the initial and long-term changes in spinal reflexes that follow transection of the spinal cord.									
		3. Outline the features of spinal injury	K	KH	Y	Small group discussion	Written				1
PY 10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities	1.Describe the physiological anatomy of basal ganglia	K	KH	Y	Self directed learning	Written				1
		2.List the pathways that interconnect them, along with the neurotransmitters in each pathway.	K	KH	Y	Small group discussion	Written				1
		3.Mention Functions of basal ganglia andDisorders of basal ganglia	K	KH	Y	Small group discussion	Written				1
		4.Describe and explain the symptoms of Parkinson disease and Huntington disease	K	KH	Y	Small group teaching	Written				1
		5.Describe Physiological anatomy of thalamus- and Classification of thalamic nuclei	K	KH	Y	Small group discussion	Written				1
		6 .Explain Connections of thalamus	K	KH	Y	Small group discussion	Written				1
		7.Mention Functions of thalamus and Applied aspects	K	KH	Y	Small group discussion	Written				1

		8.Describe Physiological anatomy of HYPOTHALAMUS ,External features, Subdivisions and nuclei of hypothalamus	K	KH	Y	Lecture	Written			Human anatomy	1
		9.Discuss Connections of hypothalamus	K	KH	Y	Lecture	Written				1
		10.Explain Functions of hypothalamus	K/s	KH	Y	Small group discussion	Viva voce				1
		11.Describe Cerebellum - Physiological anatomy ,External features, Subdivisions and nuclei of hypothalamus	K	KH	Y	Self directed learning	Written				1
		12.List the pathways to and from the cerebellum and the connections of each within the cerebellum.	K	KH	Y	Small group discussion	Viva voce				1
		13.Discuss the functions of the cerebellum 14 .Discuss the neurologic abnormalities produced by diseases of this part of the brain	K	KH	Y	Small group discussion	Written				1
		15.Explain Physiological anatomy of cortex, different lobes and their functions	K	KH	Y	Small group discussion	Written				1

		16 .Discuss components of limbic system, functions and applied aspects	K	KH	Y	Small group teaching	Written				1
PY 10.8	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its production	1.Summarize the behavioral and EEG characteristics of each of the stages of non rapid eye movement (NREM) and rapid eye movement (REM) sleep and the mechanisms responsible for their production	K	KH	Y	Lecture	Written				1
		2. Describe the pattern of normal nighttime sleep in adults and the variations in this pattern from birth to old age. 3. Discuss the circadian rhythm and the role of the suprachiasmatic nuclei (SCN) in its regulation	K	KH	Y	Small group discussion	Viva voce				1
		4.Describe the diurnal regulation of synthesis of melatonin from serotonin in the pineal gland and its secretion into the bloodstream	K	KH	Y	Small group discussion	Viva voce				1
PY 10.9	Describe and discuss the physiological basis of memory, learning and speech	1. Describe the various types of long-term memory.	K	KH	Y	Lecture	Written				1
		2. Define synaptic plasticity, long-term potentiation (LTP), long-									

		term depression (LTD), habituation, and sensitization, and their roles in learning and memory									
		3.List the parts of the brain that appear to be involved in memory in mammals and summarize the proposed role of each in memory processing and storage	K	KH	Y	Small group discussion	Viva voce				1
		4. Describe the abnormalities of brain structure and function found in Alzheimer disease	K	KH	Y	Small group discussion	Viva voce				1
		5. Define the terms categorical hemisphere and representational hemisphere and summarize the difference between these hemispheres.	K	KH	Y	Lecture	Written				1
		6. Summarize the differences between fluent and non fluent aphasia, 7.Explain each type on the basis of its pathophysiology.	K	KH	Y	Small group discussion	OSCE				1

PY 10.10	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).	1. List neurotransmitters and the principal sites in the nervous system at which they are released.	K	KH	Y	Lecture	Written				1
		2. Describe the receptors for catecholamines, acetylcholine, 5-HT, amino acids, and opioids									
		3. Summarize the steps involved in the biosynthesis, release, action, and removal from the synaptic cleft of the various synaptic transmitters.	K	KH	Y	Small group discussion	Written				1
		4.Define opioid peptide, list the principal opioid peptides in the body, and name the precursor molecules from which they originate.									
		5.Outline the physiological basis of schizophrenia	K	KH	Y	Lecture	Written		Psychiatry		1
PY 10.11	Demonstrate the correct clinical examination of the nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or	1.Outline the various cranial nerves, their functions,	K	KH	Y	Self directed learning	Written				1
		2.Examine and test for functions of cranial nerves– I, III, IV,VI, VII, IX, X, XI, XII	S/C	P	Y	DOAP sessions	Skill assessment and OSCE	1			8
		3.Elicit various superficial and deep reflexes and	S/C	P	Y	DOAP	OSCE	1			2

	simulated environment	indicate their clinical significance.									
		4.Clinically examine the motor functions	S/C	P	Y	DOAP	Long case	1			6
		5.Clinically examine the sensory functions.	S/C	P	Y	DOAP	Long case	1			6
		6. Enumerate the differences between upper and lower motor neuron lesions	K	KH	Y	Lecture	Viva voce				1
		7.Perform Tests for various higher functions like memory and speech	S/C	P	Y	DOAP	OSCE	1			2
PY 10.12	Identify normal EEG forms	1. Describe the primary types of rhythms that make up the electroencephalogram (EEG). 2.Interpret the results. 3. List the main clinical uses of the EEG	S	S	Y	Small group teaching	OSPE/Viva voce				2
PY 10.13	Describe and discuss perception of smell and taste sensation	1.Describe the basic features of the neural elements in the olfactory epithelium and olfactory bulb. 2.Describe signal transduction in odorant	K	KH	Y	Lecture	Written				1

		receptors.									
		3.Describe the location and cellular composition of taste buds.	K	KH	Y	Self directed learning	Viva voce				1
		4.Mention the five major taste receptors and signal transduction mechanisms in these receptors	K	KH	Y	Lecture	Written				1
PY 10.14	Describe and discuss patho-physiology of altered smell and taste sensation	1.Outline the pathway by which impulses generated in the olfactory epithelium reach the olfactory cortex.	K	KH	Y	Small group discussion	Written				1
		2.Outline the pathways by which impulses generated in taste receptors reach the insular cortex.	K	KH	Y	Small group discussion	Written				1
PY 10.15	Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing	1.Describe the components and functions of the external, and middle, ear.	K	KH	Y	Self directed learning	Viva voce				1
		2.Describe the way by which impulses are generated in hair cells in the cochlea	K	KH	Y	Small group teaching	Written				1
		3.Discuss auditory pathways 4.Discuss the function of the auditory cortex	K	KH	Y	Small group teaching	Written				1

		5.Explain how pitch, loudness, and timbre are coded in the auditory pathways. and theories of hearing	K	KH	Y	Small group teaching	Viva voce				1
PY 10.16	Describe and discuss pathophysiology of deafness. Describe hearing tests	1.Describe pathophysiology of deafness	K/S	KH	Y	Lecture	Written		ENT		2
		2.Outline various tests of hearing	K/S	SH/P	Y	Small group teaching	Viva voce				1
PY 10.17	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	1.Describe the various parts of the eye and list the functions of each	K	KH	Y	Self directed learning	Written				1
		2.Explain the neural pathways that transmit visual information from the rods and cones to the visual cortex	K	KH	Y	Small group discussion	Written				1
		3.Explain how light rays are brought to a focus on the retina and the role of accommodation in this process.	K	KH	Y	Small group discussion	Viva voce				1
		4.Define hyperopia, myopia, astigmatism, presbyopia, and strabismus	K	KH	Y	Small group discussion	OSCE				1
		5.Describe the electrical responses produced by rods and cones, and explain	K	KH	Y	Lecture	Written				1

		6..Describe the electrical responses and function of bipolar, horizontal, amacrine, and ganglion cells.									
		7.Describe the responses of cells in the visual cortex and the functional organization of the dorsal and ventral pathways to the parietal cortex	K	KH	Y	Lecture	Written				1
		8.Define and explain dark adaptation and visual acuity.	K	KH	Y	Lecture	Written				1
		9.Describe the receptors of color vision. 10.Explain the mechanism of color vision. 11.Describe the neural pathways involved in color vision	K	KH	Y	Small group teaching	OSCE				1
PY 10.18	Describe and discuss the physiological basis of lesion in visual pathway	1.Describe the physiological basis of lesions 2.Discuss Effect of lesions in the optic pathways	K	KH	Y	Lecture	Written		Ophthalmology		1
PY 10.19	Describe and discuss auditory & visual evoked potentials	1.Define auditory & visual evoked potentials 2.Discuss the physiology of	K	KH	Y	lecture	Written				1

		generation of potentials									
PY 10.20	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	1.Define visual acuity. 2.Explain the importance of determining distant and near vision.	K	KH	Y	lecture	Written				1
		3.Mention in detail the errors of refraction and how they are corrected. 4.Describe steps to test distant and near vision	K /S/C	KH /P	Y	DOAP	Skill assessment OSPE	1			4
		5-Perform Ishihara test on a subject. 6.Name some other tests of color vision 7.Explain the practical importance of color vision	K /S/C	KH /P	Y	DOAP	Skill assessment OSPE				2
		8.Define field of vision and physiological blind spot.	K	KH	Y	lecture	Written				1
		9.Determine the field of vision in a subject and describe its extent in various meridians.	K	KH	Y	DOAP	Skill assessment OSPE	1			4
		10.Perform hearing tests	K /S/C	SH /P	Y	DOAP	Skill assessment OSPE	1			4
		11.Assess the smell sensation on the patient	K /S/C	SH /P	Y	DOAP	Skill assessment OSPE	1			2

		12.Assess the taste sensation on the patient	K /S/C	SH /P	Y	DOAP	Skill assessment OSPE	1			2
PY 11.1	Describe and discuss mechanism of temperature regulation	1.List the mechanisms by which heat is produced in and lost from the body 2.Interpret the differences in temperature in the hypothalamus, rectum, oral cavity, and skin	K	KH	Y	lecture	Written				1
		3.List the temperature regulating mechanisms	K	KH	Y	Small group discussion	Viva voce				1
PY 11.2	Describe and discuss adaptation to altered temperature (heat and cold)	1.Describe the way in which regulating mechanisms are integrated under hypothalamic control to maintain normal body temperature	K	KH	Y	Small group discussion	Written / Viva voce				1
PY 11.3	Describe and discuss mechanism of fever, cold injuries and heat stroke	1 .Discuss the pathophysiology of fever	K	KH	Y	lecture	Written				1
		2.Describe the physiological mechanisms involved in cold injuries 3 .Discuss the pathophysiology of heat stroke and the symptoms associated	K	KH	Y	Small group discussion	Viva voce				1
PY 11.4	Describe and discuss cardio-respiratory and metabolic adjustments during	1 .DefineExercise 2 .Discuss types and grading	K	KH	Y	lecture	Written				1

	exercise; physical training effects	4.Describe responses to exercise 5.Explain Oxygen consumption during exercise , Oxygen deficit and O_2 debt	K	KH	Y	Small group discussion	Viva voce				1
		6 .Enumerate Cardiovascular responses to exercise	K	KH	Y	lecture	Written				1
		7-.Enumerate Respiratory responses to exercise	K	KH	Y	lecture	Written				1
PY 11.5	Describe and discuss physiological consequences of sedentary lifestyle	1- Discuss physiological consequences of sedentary life 2.Enumerate the complications associated with obesity	K	KH	Y	Small group discussion	Viva voce				1
PY 11.6	Describe physiology of Infancy	1.Describe Systemic physiology of fetus, Newborn and childhood	K	KH	N	Lecture	Viva voce				1
PY 11.7	Describe and discuss physiology of aging; free radicals and antioxidants	1. Define ageing 2 .Describe Age-related changes in different organ systems	K	KH	N	lecture	Written				1
		3 .Enumerate Theories of ageing 4 .Discuss the process of ageing	K	KH	N	Small group discussion	Viva voce				1

PY 11.8	Discuss & compare cardio-respiratory changes in exercise (isometric and isotonic) with that in the resting state and under different environmental conditions (heat and cold)	1. Discuss Effects of training on cardiovascular system , on respiratory system,on skeletal muscles,psychological effects ,metabolic effects	K	KH	Y	lecture	Written				1
		2.Compare the changes under different environmental conditions	K	KH	Y	Small group discussion	Viva voce				1
PY 11.9	Interpret growth charts	1.Explain physiology of Growth 2.Discuss Factors affecting growth and various Growth factors	K	KH	N	Lecture	OSPE/ Viva voce		Pediatrics		1
PY 11.10	Interpret anthropometric assessment of infants	1.Analyse anthropometric assessment of infants 2 .Discuss the physiological significance	K	KH	N	Small group discussion	OSPE/ Viva voce				1
PY 11.11	Discuss the concept, criteria for diagnosis of Brain death and its implications	1.Define brain death 2 .Outline the criteria for diagnosis 3.Describe the implications of brain death	K	KH	Y	Small group discussion	Viva voce				1
PY 11.12	Discuss the physiological effects of meditation	1.Enumerate different forms of meditation	K	KH	N	Self directed learning	Viva voce				1

		2 .Outline the physiological effects of meditation	K	KH	N	Small group discussion	Viva voce				1
PY 11.13	Obtain history and perform general examination in the volunteer / simulated environment	1.Elicit a detailed history 2 .Perfom a systematic general examination	S	SH	Y	DOAP sessions	Skill assessment / Viva voce				4
PY 11.14	Demonstrate Basic Life Support in a simulated environment	1.Describe Aim of CPR 2 .Outline The ABC of CPR	K /S/C	KH	Y	Lecture	Written		General Medicine, Anaesthesiology		1
		3.Enumerate causes of cardiopulmonary arrest 4.Outline Signs and symptoms of cardiopulmonary arrest	K /S/C	KH	Y	Lecture	Written				1
		5. Describe General plan for cardiopulmonary Resuscitation	K /S	KH	Y	Small group teaching	Viva voce				1
		6.Perform the maneuver in a simulator model	S	SH	Y	DOAP	OSCE				6

PHYSIOLOGY INTEGRATIONS

HORIZONTAL INTEGRATION PHYSIOLOGY TO ANATOMY

Number	Competency The student should be able to	SLO	Domain K/S/A/C	Level K/KH/S/SH /P	Core (Y/N)	Teaching - Learning methods	Assessment methods	Horizontal integration
AN22.3 AN22.4 AN22.7		1. Describe the origin , course , branches and applied anatomy of the Coronary arteries 2. Describe the anatomical basis of Ischaemic heart disease 3. List or enumerate the parts of the conducting system of the heart and describe their location and blood supply	K/S	KH /SH	Y	1. Lecture 2. Small group discussion 3. DOAP	1.Written exam 2.Practical exam 3.Viva	PY5.6
AN75.1 AN75.5		1. Describe the principles of Genetic counselling 2. Describe the structural and numerical chromosomal aberrations 3. Identify and differentiate the sex of an individual by seeing a Karyotype chart	K/S	KH/SH	N	1. Lecture 2. Small group discussion 3. DOAP	1. Written exam 2. Practical viva	PY9.1

AN62.2 AN62.4 AN62.5 AN60.1 AN60.3		1. Identify and locate the functional areas of the Cerebral cortex 2. List or enumerate the parts of Basal ganglia and their connections 3. Describe in detail the Thalamus , its nuclei and their connections 4. Describe the boundaries , relations , nuclei and connections of the Hypothalamus 5. Describe and demonstrate the external and internal features of the Cerebellum and expain the anatomical basis of Cerebellar dysfunction 6. Enumerate parts and major connections of the Limbic system	K/S	KH/SH	Y	1. Lecture 2. Small group discussion	1.Written exam 2.Practical exam 3.Viva	PY10.7
AN7.1		1. Describe the formation , location and connections of the Reticular system 2. Describe the various components of the Autonomic nervous system	K	KH	Y	1. Lecture 2. Small group discussion	1.Written exam 2. Viva	PY10.5
AN7.1		1. Describe the components of Central , Peripheral and Autonomic nervous system	K	KH	Y	1. Lecture 2. Small group discussion	1.Written exam 2. Viva	PY10.1

HORIZONTAL INTEGRATION – PHYSIOLOGY TO BIOCHEMISTRY

No.	COMPETENCY The student should be able to:	Specific learning objectives 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
1.1	Describe the molecular and functional organization of a cell and its subcellular components	1. Describe the different parts of the cell	K	KH	Y	Small group teaching	W			Horizontal
		2.Mention the composition of intracellular fluid								
		3.Mention the functions of cell membrane								
		4.Mention the functions of different organelles								

Physiology topics integrated with Pathology						
Number	COMPETENCY	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Teaching-Learning Methods	Assessment Methods
PY 2.5	Describe different types of Anemias and Jaundice	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
Objectives	**PY 2.5.1** At the end of the session, phase I student must be able to define anemia correctly	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
	PY 2.5.2 At the end of the session, phase I student must be able to know the different types and etiological factors of anemia significantly	k	KH	y	Lecture, Small group discussion	Written/Viva voce
	PY 2.5.3 At the end of the session, phase I student must be able to know the routine diagnostic tests for anemia	K & S	KH & SH	Y	DOAP	skill assessment
	PY 2.5.4 At the end of the session, phase I student must be able to define jaundice correctly	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
	PY 2.5.5 At the end of the session, phase I student must be able to know the different types and etiopathogenesis of jaundice correctly	K	KH	N	Lecture, Small group discussion	Written/Viva voce
PY2.8	Describe physiological basis of hemostasis and anticoagulants, Descibe bleeding and clotting disorder (Hemophilia & purpura)	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
	PY 2.8.1 At the end of the session, phase I student must be able to define hemostasis correctly	K	KH	Y	Lecture, Small group discussion	Written/Viva voce

Objectives	**PY 2.8.2** At the end of the session, phase I student must be able to understand the mechanism of hemostasis perfectly	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
	PY 2.8.3 At the end of the session, phase I student must be able to know what is an anticoagulant correctly	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
	PY 2.8.4 At the end of the session, phase I student must be able to know different types of anticoagulants correctly	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
	PY 2.8.5 At the end of the session, phase I student must be able to know different types of hemophilia correctly	K	KH	N	Lecture, Small group discussion	Written/Viva voce
	PY 2.8.6 At the end of the session, phase I student must be able to know what is purpura correctly	K	KH	N	Lecture, Small group discussion	Written/Viva voce
	PY 2.8.7 At the end of the session, phase I student must be able to know the routine diagnostic tests for bleeding & clotting disorders accurately	K & S	KH & SH	Y	DOAP	skill assessment

VERTICAL INTEGRATION PHYSIOLOGY TO PHRMACOLOGY

No.	OBJECTIVES FOR THE RESPECTIVE COMPETENCY (At the end of the session 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	Hours
3.5	Classify neuro muscular blocking drugs	K	KH	Y	Lecture	Written/Viva				
7.6	A) Classify Diuretics	K	KH	Y	Lecture	Written/Viva				
	B) Classify Antidiuretics	K	KH	Y	Lecture	Written/Viva				
	C) Enumerate Drugs used in hyperactive bladder	K	KH	Y	Lecture	Written/Viva				

VERTICAL INTEGRATION – PHYSIOLOGY TO OTORHINOLARYNGOLOGY

No.	COMPETENCY The student should be able to:	Specific learning objectives 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
10.16	Describe and discuss pathophysiology of deafness. Describe hearing tests	1.Enumerate the causes for the deafness	K	KH	Y	lecture	writing			
		2.Perform the hearing tests with tunning fork.	S	SH	Y	DOAP	Skill assessment /OSPE			

VERTICAL INTEGRATION – PHYSIOLOGY TO OPTHALMOLOGY

No.	COMPETENCY The student should be able to:	Specific learning objectives 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
10.18	Describe and discuss the physiological basis of lesion in visual pathway.	1.Describe the visual pathway 2.Enumerate the normal visual fields 3. Explain the abnormal visual pathway	K	KH	Y	lecture	written		Vertical	

VERTICAL INTEGRATION PHYSIOLOGY TO GENERAL MEDICINE									
No.	Objectives for the respectiveCompetency	Domain	K/KH/SH/P	CORE	T/L Method	Assessment Method	No req to certify P	Vertical Integration	Horizontal Integration
Describe the degeneration and regeneration in peripheral nerves	1.Enumerate the causes of Peripheral neuropathy 2.Mention Signs & Symptoms of Peripheral Neuropathy 3.Write a note on diabetic neuropathy 4.What are the investigations to diagnose peripheral neuropathy 5.A note on management of peripheral neuropathy	K	KH	Y	Lecture	Written			
Describe & discuss the structure and functions of liver and gall bladder	1.Causes of liver diseases 2.Discuss clinical features of liver diseases 3.Causes & features of different types of jaundice 4.A note on investigations &	K	KH	Y	Lecture	Written			

	treatment of liver diseases 5.What are the clinical features of cholecystitis								
Discuss the physiology aspects of: peptic ulcer, gastro- oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease	1.What are the causes of Peptic Ulcer & GERD 2. Clinical features of peptic Ulcer & GERD 3.What are the causes of Vomiting and Constipation 4.A note on causes and clinical features of diarrhea 5.Etiology & Clinical features of adynamic Ileus &Hirschsprung's disease	K	KH	Y	Small group Teaching	Viva - Voce			
Describe abnormal ECG, arrythmias, heart block and myocardial Infarction	1.What are the causes of ST elevation and depression 2.What are the causes of prolonged & short PR 3.What are the types of Heart block, its ECG Changes	K	KH	Y	Lecture	Written			

	4.A note on ECG Changes and types of Tachyarrythmias 5.ECG Changes in Myocardial infarction								
Describe the patho-physiology of shock, syncope and heart failure	1.List the causes and describe the clinical features of shock 2.A note on etiology & clinical features of syncope 3.What are the Causes of clinical features of heart failure 4.Investigations to diagnose shock, syncope and heart failure 5.A note on treatment of shock, syncope and heart failure	K	KH	Y	Lecture	Written			
Describe artificial kidney, dialysis and renal transplantation	1.Enumerate the causes and types of renal failure 2.A note on clinical features of renal failure 3.What are the indications of dialysis 4.What are the	K	KH	Y	Lecture	Written			

	types of dialysis 5.A note on complications of renal transplantation								
Describe The Synthesis,Secretion,Transport,Physiological Actions,Regulation And Affect Of Altered (Hypo Anf Hyper) Secretion Of Pituitary Gland,Thyroid,Parathyroid,Adrenal,Pancreas And Hypothalamus	1. What is the Etiology & Clinical feature of Hypo & Hyperthyroidism 2.What are the causes & Clinical feature of Hypopituitarism 3.A note on Etiology & Clinical feature ofPituitary Adenoma 4.Discuss the Etiology & Clinical feature of Cushings Syndrome & Addison's Disease 5.A note on Etiology & Clinical feature of Exocrine & Endocrine Pancreatic Deficiency	K	KH	Y	Small group Teaching	Written / Viva - Voce			
Demonsrate Basic Life Support In A Simulated Environment	1.What is the Indication of BLS 2.What is CPR 3.What is defibrillation and it's indication 4.What are the Indications and dose of Vasopressors ,Atropine and Adrenaline 5.Interpretation of ECG in Cardiac Arrest.	S	SH	Y	Small group Teaching	Written / Viva - Voce			

Vertical Integration Physiology to Surgery

Number	Competency The student should be able to	Specific learning objectives (SLO)	Domain K/S/A/C	Level K/KH/S/SH/P	CORE (Y/N)	Teaching learning method	Assessment method	Vertical integration	Horizontal integration
8.2	Describe the synthesis, secrection, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid, parathyroid, adrenal, pancreas and hypothalamus.	1. Describe clinical features of hypo function of thyroid gland 2.Describe clinical features of hyper function of thyroid gland 3.Explain the indications for Surgical treatment	k	KH	Y	1. Lecture 2. Small group discussion	1. Written exam 2. Practical exam with viva 3. OSCE	Physiology	

VERTICAL INTEGRATION PHYSIOLOGY TO OBSTETRICS & GYNAECOLOGY

No.	COMPETENCY The student should be able to:	Specific learning objectives 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
9.2	Discuss the common causes of infertility in a couple and role of IVF in managing case of infertility	1.Define infertility 2.Enumerate the causes of infertility in female and male patients 3.Define IVF 4.Describe the various procedures involved in IVF	K	KH	Y	Lecture	Written		Physiology	

VERTICAL INTEGRATION – PHYSIOLOGY TO PAEDIATRICS

No.	COMPETENCY The student should be able to:	Specific learning objectives 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
PY 11.9	Interpret growth charts	1- Define Growth curves	K	KH	N	Lecture	OSCE/Viva Voce		vertical	
		2-Enumerate the uses of growth charts								
		3 - Assess the growth chart								

VERTICAL INTEGRATION PHYSIOLOGY TO ANAESTHESIOLOGY									
NUMBER	**COMPETENCY** *The student should be able to*	**Specific Learning Objectives**	**DOMAIN K/S/A/C**	**LEVEL K/KH/SH/P**	**CORE Y/N**	**Suggested Teaching Learning Method**	**Suggested Assesment Method**	**Number Required To Certify P**	**INTEGRATION V/H**
3.5	Action of NM blocking drugs	By the end of the session phase-i student should be able to i.sites at which NMBS act ii.clinical use of NMBS iii.effects of NMBS iii.dosage of NMBS	K	KH	Y	Lecture	Written test and viva		

6.5	Artificial respiration	By the end of the session phase-i student should be able to 1.Identify the need for artifical respiration ii.justify the need for artifical respiration iii.define the procedure for providing artificial respiration iv.enumerate the uses of artificial respiration iv.list the various modalities for providing artificial respiration v.to define the physiological changes associated with artifical respiration vi.criteria for sedation for artifical respiration	K	KH	Y	Lecture simulation demonstration	Writ ten test and viva		

11.14	Demonstration of basic life support(BLS) in a simulated environment	By the end of the session phase-i student should be able to: i.recognise cardiac arrest ii.identify the person in need of basic life support iii.justify the need of basic life support iv.providebls with high quality cardio pulmonary resuscitation (cpr) v.analyse and interpret the condition of the person while providing the basic life support vi.enumerate the steps to be followed to provide basic life support	K/S	KH	Y	Lecture simulation demonstration training session with workshop	Writ ten test and viva	P	

VERTICAL INTEGRATION – PHYSIOLOGY TO PULMONOARY MEDICINE

No.	COMPETENCY The student should be able to:	Specific learning objectives 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	Hours
6.8	Demonstrate the correct technique to perform and interpret spirometry	1.Know how to perform correctly	K/S	KH	Y	DOAP	Skill assessment	1	Vertical		1
		2.Indentify obstructive airway disease									
		3. Indentify restrictive airway disease									
		4. Indentify mixed airway disease									

VERTICAL INTEGRATION PHYSIOLOGY TO PSYCHIATRY

No.	COMPETENCY The student should be able to:	Specific learning objectives 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	Hours
10.10	Describe and discuss chemical transmission in the nervous system.(outline the psychiatry element)	1.Describe about chemical transmission	K	KH	Y	Lecture	Written		Vertical		1
		2.Mention the list of Neurotransmitters involved in chemical transmission									
		3.Explain the role of chemical transmission in psychiatric disorders									
		4.Diagnosis of Schizophrenia and role of neurotransmitters in its etiology									
		5.Diagnosis of mood disorder and role of neurotransmitters in its etiology									

OBJECTIVES FOR BIOCHEMISTRY COMPETENCIES

SPECIFIC LEARNING OBJECTIVES FOR COMPETENCIES

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
TOPIC --Basic Biochemistry		**Number of competencies: (01)**				**Number of procedures that require certification: (NIL)**			
BI1.1	Describe the molecular and functional organization of a cell and its subcellular components.	*At the end of session, the phase I MBBS student must be able to* Explain the structure and biochemical functions of different cell organelles of a eukaryotic cell. List the Marker enzymes related to each cell organelle. Explain the composition and Fluid mosaic model of Cell Membrane. Discuss the different transport mechanisms across cell membranes with examples.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Physiology (H)
Topic: Enzyme, Number of competencies: (07) Number of procedures that require certification: (NIL)									
BI2.1	Explain fundamental concepts of enzyme, isoenzyme, alloenzyme,	*By the end of Session, the Phase – I students Should be able to:* Define the General properties, IUBMB Classification of Enzymes-. Define Coenzymes and Cofactors. Describe the 6 major enzyme classifications	K	KH	Y	Lecture, case discussion	Written assessment/ Viva voce		

		and the basic type of reaction catalysed, including: oxidoreductases, transferases, hydrolases, lyases, isomerases, and ligases.							
BI2.2	Observe the estimation of SGOT & SGPT	*By the end of Session, the Phase – I students Should be able to* Discuss the Diagnostic Importance of enzymes – SGOT & SGPT	K	KH	N	Demonstration	Viva voce		
BI2.3	Describe and explain the basic principles of enzyme activity	*By the end of Session, the Phase – I students Should be able to* Explain the Factors affecting enzyme activity Analyse the Mechanism of Enzyme action - Concept of activation energy, transition state, binding energy, active site; Substrate binding to active site - Koshlands Induced fit theory. Explain the Effect of substrate concentration - Michaelis - Menton theory, Km value, Vmax and its significance (derivation required). Effect of concentration of enzyme, temperature, time, pH,Metallo-enzymes.	K	KH	N	Lecture, Small Group Discussion	Written/ Viva voce		
BI2.4	Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes	*By the end of Session, the Phase – I students Should be able to* Discuss the Enzyme inhibition - Competitive and Non-competitive inhibition with examples of clinical importance. Differentiate the different types of inhibitors, with examples including transition state inhibitors, suicide inhibitors, and irreversible inhibitors, competitive and non-competitive	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Pathology and General Medicine (V)

		inhibitors. Evaluate the difference between a competitive versus non-competitive drug inhibitor (e.g. using fomepizole and ethanol treatments for methanol poisoning.) Draw a Lineweaver-Burke plot, defining Vmax and Km and use the plot to evaluate types of inhibition, including competitive, non-competitive, and mixed inhibition in drugs.							
BI2.5	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.	*By the end of Session, the Phase – I students Should be able to* Analyse the importance of Clinical Enzymology – Concept of plasma functional and non-functional enzymes. Explain the Diagnostic Importance of enzymes – LDH, CK, AST, ALT, ALP, GGT, Amylase, Lipase Discuss Isoenzymes – Definition Explain the importance of enzymes as Diagnostic and Therapeutic agents	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology and General Medicine (V)
BI2.6	Discuss use of enzymes in laboratory investigations (Enzyme-based assays)	*By the end of Session, the Phase – I students Should be able to* Explain the Diagnostic Importance of enzymes – G6PD, Cholinesterase, ACP, 5'nucleotidase	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology and General Medicine (V)
BI2.7	Interpret laboratory results of enzyme	*By the end of Session, the Phase – I students Should be able to*	K	KH	Y	Lecture, Small Group	Written/ Viva voce		Pathology and General

	activities & describe the clinical utility of various enzymes as markers of pathological conditions.	Discuss the Mechanisms of enzyme catalysis (List)Suicide inhibition, Uncompetitive inhibition. Discuss the Enzymes used in diagnostic assays – ELISA and RIA.				Discussion			Medicine (V)
TOPIC -- Chemistry and Metabolism of Carbohydrates		**Number of competencies: (10)**				**Number of procedures that require certification: (NIL)**			
BI3.1	Discuss and differentiate monosaccharides, di-saccharides and polysaccharides giving examples of main carbohydrates as energy fuel, structural element and storage in the human body	*At the end of session, the phase I MBBS student must be able to* Classify Carbohydrates. Classiify monosaccharides, disaccharides, oligosaccharides and polysaccharides with examples. Discuss the sources and significance of most common monosaccharides. Discuss the derivatives of monosaccharides and their significance. List the Important reactions of Carbohydrates and discuss their importance. Explain the isomerism of Carbohydrates. Discuss the composition, sources and significance of most common disaccharides. Discuss the composition, sources and significance of most common homopolysaccharides.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

		Differentiate between starch and glycogen. Discuss the composition, importance and location of common heteropolysaccharides. Classify Mucopolysaccharidoses and discuss the enzyme defect and related biochemical investigations in each.							
B13.2	Describe the processes involved in digestion and assimilation of carbohydrates and storage.	*At the end of session, the phase I MBBS student must be able to* Enumerate the major monosaccharides, disaccharides, and polysaccharides found in the human body and diet. List the enzymes involved in digestion of carbohydrates. Discuss the hydrolysis of polysaccharides, oligosaccharides and disaccharides. List and discuss the role of glucose transporters (GLUTs) in the transport of glucose into and out of cells. Explain the mechanism of absorption of end products of digestion. Explain the biochemical basis for the symptoms seen in lactose intolerance.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		
B13.3	Describe and discuss the digestion and assimilation of carbohydrates	*At the end of session, the phase I MBBS student must be able to* Enumerate the major monosaccharides,	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

	from food.	disaccharides, and polysaccharides found in the human body and diet. List the enzymes involved in digestion of carbohydrates. Discuss the hydrolysis of polysaccharides, oligosaccharides and disaccharides. List and discuss the role of glucose transporters (GLUTs) in the transport of glucose into and out of cells. Explain the mechanism of absorption of end products of digestion. Explain the biochemical basis for the symptoms seen in lactose intolerance.							
B13.4	Define and differentiate the pathways of carbohydrate metabolism, (glycolysis, gluconeogenesis, glycogen metabolism, HMP shunt).	*At the end of session, the phase I MBBS student must be able to* Discuss the Significance, Site, Subcellular site, reactants and products, enzymes required, energetics, regulation and disorders related to enzyme deficiencies of Glycolysis. Explain the substrate level phosphorylation. Differentiate the roles of hexokinase and glucokinase in blood glucose regulation. Explain the importance of Rapaport leubering cycle in RBC. Differentiate the aerobic and anaerobic	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)

		glycolysis. Discuss the causes, features and parameters altered in Lactic acidosis. Differentiate the aerobic and anaerobic glycolysis. Discuss the Significance, Site, Subcellular site, different substrates required, reactants and products, enzymes required and regulation of Gluconeogenesis. Explain Cori's cycle. Explain the role of gluconeogenesis in blood glucose regulation Differentiate the enzymes involved in glycolysis vs gluconeogenesis. Discuss the Significance, Site, Subcellular site, reactants and products, enzymes required and disorders related to enzyme deficiencies of Pentose Phosphate Pathway. Discuss the biochemical alterations related to Glucose 6- phosphate dehydrogenase deficiency. Explain the role of reduced glutathione in the body, and the contribution of NADPH to its formation. Discuss the Significance, Site, Subcellular							

		site, reactants and products, enzymes required in Glycogenesis and Glycogenolysis. Explain the regulation of glycogen metabolism in liver and skeletal muscle. List the Glycogen storage diseases. Discuss the deficient enzymes, tissues affected, clinical features and biochemical alterations in Glycogen storage diseases.							
BI3.5	Describe and discuss the regulation, functions and integration of carbohydrate along with associated diseases/disorders.	*At the end of session, the phase I MBBS student must be able to* Discuss the regulation of blood glucose levels in well fed condition and fasting. Explain the metabolic changes during starvation. Discuss the related enzyme defects, biochemical alterations and features of glycogen storage disorders, Glucose-6-Phosphate dehydrogenase deficiency, Galactosemia, Essential Fructosuria, Hereditary fructose intolerance and Essential pentosuria	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)
B13.6	Describe and discuss the concept of TCA cycle as a amphibolic pathway and its regulation.	*At the end of session, the phase I MBBS student must be able to* Discuss the Site, Subcellular site, reactants and products, enzymes required, and energetics of Pyruvate dehydrogenase (PDH) complex.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

		Discuss the Significance, Site, Subcellular site, reactants and products, enzymes required, energetics and regulation of TCA Cycle. Explain the anapleurotic role of TCA Cycle. Explain the amphibolic role of TCA Cycle. Explain the biochemical role of thiamine in PDH complex and TCA cycle.							
BI3.7	Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism (eg; fluoride, arsenate)	*At the end of session, the phase I MBBS student must be able to* Discuss the common poisons that inhibit enzymes of Glycolysis. Discuss the common poisons that inhibit enzymes of TCA cycle.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Physiology(H)
B13.8	Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates	*At the end of session, the phase I MBBS student must be able to* Discuss the indications, precautions and procedure of Glucose tolerance test (GTT). Analyse the results of GTT. Explain the different investigations related to carbohydrate metabolism such as Glycosylated Hemoglobin, Fructosamine Benedicts test and urinary dipstick analysis for glucose and ketone bodies. Discuss the normal and abnormal values of	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine,Pathology (V)

		FBS, PPBS and HBA1C.							
BI3.9	Discuss the mechanism and significance of blood glucose regulation in health and disease.	*At the end of session, the phase I MBBS student must be able to* Discuss the significance of blood glucose regulation. Explain the mechanism of maintenance of glucose homeostasis in our body. Explain the role of hormones in blood glucose regulation. Discuss the mechanism of action of hormones glucagon and insulin. Differentiate type 1 and type 2 diabetes mellitus with respect to incidence, age of onset, cause, biochemical alterations, clinical features, complications and related investigations.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)
BI3.10	Interpret the results of blood glucose levels and other laboratory investigations related to disorders of carbohydrate metabolism	*At the end of session, the phase I MBBS student must be able to* List the different investigations done in Diabetes mellitus. Discuss the indications, precautions and procedure of Glucose tolerance test (GTT). Analyse the results of GTT. Explain the different investigations related to carbohydrate metabolism such as Glycosylated Hemoglobin, Fructosamine	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)

		Benedicts test and urinary dipstick analysis for glucose and ketone bodies. Discuss the normal and abnormal values of FBS, PPBS and HBA1C and their role in diagnosis and management of Diabetes mellitus.							
Notes : Competencies 3.2 and 3.3 are almost similar **Competencies 3.8 and 3.10 are almost similar**									
TOPIC -- Chemistry and Metabolism of Lipids		**Number of competencies: (07)**				**Number of procedures that require certification: (NIL)**			
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.	*At the end of the session Phase I student should be able to* Define lipids, Explain Modified Bloor's classification with examples. Explain biomedical importance of lipids Discuss Fatty acids, nomenclature, classification with examples, physical and chemical properties and tests for purity of fats (rancidity, saponification) Enumerate the importance of Essential fatty acids and their deficiency manifestations Discuss Triglycerides, their composition and importance Explain Phospholipids, their classification	K	KH	Y	Lecture, small group discussion	Written/ Viva voce		General Medicine

		and functions with clinical importance Explain Glycolipids their types and importance List the Eicosanoids their Classification and functions Explain Cholesterol its structure and functions							
BI 11.24	Enumerate advantages and /or disadvantages of use of unsaturated, saturated and transfats in foods	*At the end of the session Phase I student should be able to* Differentiate between Mono and Polyunsaturated fatty acids,w3 and w6 fatty acids and their advantages and/or disadvantages. Explain what Trans fatty acids with examples and their disadvantages							General Medicine
NOTE: BI 11.24 is included under topic Biochemistry Laboratory test									
BI4.2	Describe the processes involved in digestion and absorption of dietary lipids and the key features of their metabolism	*At the end of the session Phase I student should be able to* Explain the digestion and absorption of dietary lipids, enzymes and hormones involved in lipid digestion, role of bile salts in digestion and absorption, mechanism of lipid absorption and disorders of digestion and absorption Discuss the synthesis and breakdown of triacylglycerol. Explain the following pathways – Site,	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

		reactions, key steps, significance, energetics and regulation of • Beta oxidation and its disorders • Fatty acid synthesis • Ketogenesis, ketolysis, DKA (Clinical features, lab Investigations) • Cholesterol metabolism							
BI4.3	Explain the regulation of lipoprotein metabolism & associated disorders.	*At the end of the session Phase I student should be able to* Explain the formation and fate of Chylomicrons, VLDL, LDL, HDL, HDL cycle its significance, reverse cholesterol transport, uptake of LDL and its regulation, the role of apoproteins Discuss the normal serum levels of HDL, LDL, Triglycerides, VLDL advantages of elevated HDL and decreased LDL, significance of HDL/LDL Categorize the different hyperlipidaemias (Hyperlipoproteinemias)	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine
BI4.4	Describe the structure and functions of lipoproteins, their functions, interrelations & relations with atherosclerosis and fatty liver	*At the end of the session Phase I student should be able to* Differentiate various lipoprotein particles with respect to their Structure, Composition, Types and Functions. Define Atherosclerosis, role of lipids in atherogenesis (OxLDL, Lpa, Small dense LDL, HDL)	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine

		Enumerate the different biochemical pathways that could potentially be targeted pharmacologically in the management of heart disease i.e. high LDL, low HDL. Discuss the increasing incidence of obesity and diabetes and its impact on atherosclerosis. Discuss the risk factors of the metabolic syndrome and its specific lipid abnormalities. List the statins as the main therapeutic intervention in dyslipidemia/atherosclerosis and interpret their action in terms of the inhibition of HMG CoA reductase. Discuss Fatty Liver types, biochemical changes in lipid content of Liver, lipotropic factors and their biochemical mechanisms							
BI4.5 BI4.7	Interpret laboratory results of analytes associated with metabolism of Lipids Interpret laboratory results of analytes associated with metabolism of lipids	*At the end of the session Phase I student should be able to* Discuss the various Hyperlipoproteinemias Explain Lipid Storage Disorders Explain Lipid profile, it's components, normal serum levels, normal and abnormal patterns, Friedwald's formula and its limitations	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine
NOTE: BI 4.7 is repeat of BI 4.5									
BI 4.6	Describe the therapeutic uses of prostaglandins and	*At the end of the session Phase I student should be able to*	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine

	inhibitors of eicosanoid synthesis	Discuss Prostaglandins – types and their biomedical importance. Differentiate the role of dietary omega-3 versus omega-6 fatty acids in the formation of polyunsaturated fatty acids and the consequences for eicosanoid production.							
TOPIC -- Chemistry and Metabolism of Proteins		**Number of competencies: (05)**					**Number of procedures that require certification: (NIL)**		
BI5.1	Describe and discuss structural organization of proteins.	*At the end of the session Phase I student should be able to* Discuss Amino acids – their classification based on structure, polarity, metabolism and nutritional requirements, general reactions Define Proteins, Classification based (a) chemical nature & solubility (b) functions of proteins (c) Nutritional value Explain structural organisation of proteins (primary, secondary, super secondary structures/ motifs, domains, tertiary and quaternary structures) List the various bonds stabilizing protein structure Discuss Protein folding, chaperones and protein misfolding diseases Explain the structure of Insulin, Hemoglobin and Collagen.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

		Enumerate the structure function relationship of proteins - haemoglobin, myoglobin, collagen and elastin List the biologically important peptides							
BI5.2 BI6.12	Describe and discuss functions of proteins and structure-function relationships in relevant areas eg, hemoglobin and selected hemoglobinopathies Describe major types of Hb and its dervatives found in body and their physiological and pathological relevance	*At the end of the session Phase I student should be able to* Describe and discuss functions of proteins and structure-function relationships in relevant areas eg, hemoglobin, Various types of Hb HbA_1, HbA_2, HbA_3, HbF, Embryonic Hb, HbA_{1C}, derivatives of Hb and selected hemoglobinopathies. *At the end of the session Phase I student should be able to* Analyze the results of hemoglobin composition studies and use them to differentiate between the major hemoglobinopathies (such as sickle cell trait and disease, thalassemia, HbC, etc) Differentiate the aetiology and genetics of the major hemoglobinopathies (such as sickle cell trait and sickle cell disease, alpha and beta thalassemias,HbC, etc.).	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine, Pathology(V), Physiology (H)
NOTE: Competency BI 6.12 is included here									
BI5.3.	Describe the digestion and absorption of dietary proteins.	*At the end of the session Phase I student should be able to* Explain digestion and absorption of Dietary proteins, enzymes and hormones involved in protein digestion, mechanism of absorption,	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pediatrics (V)

		meister cycle and disorders of absorption. Explain the dynamics of the free amino acid pool, including (A) inputs from diet, body protein breakdown, and de novo synthesis (B) outputs to protein synthesis, urea production, synthesis of specialized products and other metabolic processes.							
BI5.4	Describe common disorders associated with protein metabolism.	*At the end of the session Phase I student should be able to* List the common inborn errors of protein metabolism, their enzyme defect, clinical features, various lab tests available for diagnosis of – Phenylketonuria, Tyrosinosis, Alkaptonuria, Albinism, Homocysteinuria, MSUD(Maple syrup urine disease), Glycinuria, Cystinuria. List the causes for hyperammonemia, its consequences, and treatments to reduce blood ammonia levels.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pediatrics (V)
BI5.5	Interpret laboratory results of analytes associated with metabolism of proteins.	*At the end of the session Phase I student should be able to* Analyse laboratory results of analytes associated with metabolism of proteins. Differentiate the following disease states associated with Inborn Errors of protein metabolism, including (A) the deficient enzyme, (B) relation of the deficiency to the build-up of secondary metabolites, and (C) clinically relevant information related to the disease state (vitamin deficiencies,	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine

		symptoms, diagnosis, pathology and treatments - diseases are listed in order of most common to least common). a. Cystinuria b.Histidinemia c. Phenylketonuria (PKU) – knows difference between classical, atypical and maternal PKU. d. Methylmalonyl CoA mutase deficiency e. Albinism (with lesser priority to vitiligo and Menke disease). f. Homocystinuria g. Alkaptonuria h. Maple syrup urine disease (branched chain amino acids; tie in with pyruvate dehydrogenase complex and alpha-ketoglutarate dehydrogenase complex, and the requirement for thiamine, lipoic acid, niacin, riboflavin and pantothenate). i. Cystathioninuria j. Tyrosinemia							
TOPIC -- Metabolism and Homeostasis		**Number of competencies: (15)**				**Number of procedures that require certification: (NIL)**			
BI6.1	Discuss the metabolic Process that take place in specific organ in the body in Fed and Fasting States.	*By the end of Session, the Phase – I students Should be able to:* Discuss the historical background for metabolism. Explain the basic elements of the integration of metabolism Compare and contrast the basic differences between carbohydrate, lipid and protein metabolism.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)

		Describe and identify the main characteristics and classification hormones affecting metabolism such as insulin, adrenaline, and glucagon. Apply the processes of scientific research and experimental design to the diversity of metabolism Distinguish scientific explanations that show the hormonal effects on different types of metabolism. Describe how the hormones control metabolic responds of cells.							
BI6.2	Describe and discuss the metabolic process in which nucleotides are involved	*By the end of Session, the Phase – I students Should be able to:* Name the major purine and pyrimidine bases and identify amino acid and one-carbon metabolites that contribute to the synthesis of these ring structures. Integrate the terminology and defining structural features that distinguish different classes of nucleotide metabolites (such as purine vs. pyrimidine, bases vs. nucleoside vs. nucleotide, and ribo- vs. deoxyribose-). Explain the biosynthesis of the purine and pyrimidine nucleotides with emphasis on the key regulated steps. Connect the pentose phosphate pathway to 5'phosphoribosyl-1-pyrophosphate (PRPP)	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

		synthesis and explain the central role of this metabolite in nucleotide metabolism. Differentiate the interplay and relative contributions of the de novo and salvage pathways in maintaining steady-state purine and pyrimidine nucleotide levels. Explain the role of adenylate kinase in nucleotide interconversion and connect this to adenine nucleotide catabolism during periods of increased demand or reduced supply of ATP. Summarize purine nucleotide catabolism and explain the significance of alternate adenine nucleotide catabolic pathways under physiological (such as intense anaerobic exercise) and pathophysiological (such as myocardial ischemia) conditions.							
BI6.3	Describe the common disorders associated with nucleotide Metabolism.	*By the end of Session, the Phase – I students Should be able to:* Explain the purine salvage pathways and discuss the central role of hypoxanthine phosphoribosyl transferase (HPRT) under physiological (such as steady-state purine nucleotide synthesis) and pathophysiological (such as gout in partial and complete HPRT deficiencies) conditions, and in pharmacotherapy (anti-purine chemotherapy). Explain the salvage pathways for uracil and	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Physiology (H)

		thymine and their relevance to pharmacotherapy (such as for the treatment of cancer or herpes infections). Identify inborn errors of purine metabolism (such as deficiencies of HPRTase and adenosine deaminase) and compare their primary clinical presentations. Describe the ribonucleotide reductase reaction and its regulation and explain its role in cancer chemotherapy and in adenosine deaminase deficiency. Summarize folate metabolism and explain its connection to nucleotide metabolism (such as the synthesis of thymidine and IMP). Compare and contrast the effects of 5-flurouracil (5-FU) and methotrexate (MTX) on the synthesis of thymidine. Explain the mechanisms by which antifolates interfere with bacterial growth. Discuss the roles of antifolates in treating bacterial infections. Describe the synthesis of S-adenosylmethionine and its role in methylation reactions. Explain how a cobalamin deficiency leads to a secondary folate deficiency.							
BI6.4	Discuss the Laboratory results of	*By the end of Session, the Phase – I students Should be able to:*	K	KH	Y	Lecture, Small Group	Written/ Viva voce		General Medicine (V)

	Analytes associated with gout and Lesch Nyhan Syndrome,	Distinguish between hyperuricemia and gout and identify physiological and pathophysiological effectors of circulating uric acid levels. Explain the relationship between uric acid insolubility and gout and discuss the differential diagnosis of this disorder. Distinguish between xanthine dehydrogenase/oxidase and explain how allopurinol and febuxostat inhibit uric acid formation. Compare and contrast the management of acute vs. chronic gout. Compare and contrast the benefits and drawbacks of approved therapies for gout (such as allopurinol vs febuxostat vs pegylated uricase) and ADA-SCD (such as gene therapy vs pegylated ADA). Describe conditions that lead to elevated orotic acid and interpret urine orotic acid concentration for the diagnosis of defects of the urea cycle or pyrimidine biosynthesis. Interpret laboratory data (such as serum folic acid, cobalamin, and methylmalonic acid) to distinguish between primary and secondary folate deficiency. Select lab tests that would contribute to the				Discussion			

		diagnosis of pernicious anemia.							
BI6.5	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency	*At the end of session, the phase I MBBS student must be ableto* Classify Vitamins. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of vitamin A. Explain Wald's visual cycle. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of vitamin D. Explain why Vitamin D is considered as a hormone. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of vitamin E. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of vitamin K. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of Thiamine. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of Riboflavin.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)

		Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of Niacin. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of Pyridoxine. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of Pantothenic acid. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of Biotin. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of Folic acid. Explain Folate Trap. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of vitamin B12. Discuss the Chemistry, Sources, RDA, Metabolism, Biochemical functions and deficiency manifestations of vitamin C.							
BI6.6	Describe Various Biochemical processes involved in generation of energy in cells.	*By the end of Session, the Phase – I students Should be able to:* Compare the mitochondrial content of different tissues and relate this characteristic	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

		to the function of the particular tissue (e.g. parietal cells, which utilize an ATP-requiring proton pump, have high mitochondrial content). Describe the purpose of the electron transport chain (particularly complexes I, III, and IV) and ATP synthase, their substrates and products, their cellular localization, and their tissue distribution. Explain how electron transport and ATP synthase are functionally coupled. Explain how the process of oxidative phosphorylation is influenced by the availability of oxygen and NADH Explain how the cellular ATP:ADP ratio regulates the rate of ATP production by oxidative phosphorylation Discuss how succinate dehydrogenase, mitochondrial glycerol 3-phosphate dehydrogenase and electron-transferring-flavoprotein dehydrogenase transfer electrons to ubiquinone from succinate, cytosolic NADH and fatty acid dehydrogenases, respectively. Explain the biochemical basis for generation of heat by brown fat and discuss the role of brown fat in infants and the possible role in adults							

		Describe the effects of electron transport chain inhibitors, ATP synthase inhibitors, and uncouplers on oxidative phosphorylation, and predict the effects of these agents on glycolysis, the citric acid cycle, and lactate production Describe the biochemical and clinical features associated with ingestion/overdose of electron transport inhibitors (e.g. industrial exposure to cyanide and sodium azide) and uncouplers (e.g. aspirin, phthalate plasticizers) of oxidative phosphorylation List known mutations that cause defects in oxidative phosphorylation which result in myopathies and neuropathies (including exercise intolerance) and explain the pathophysiologic basis and genetics of each mitochondrial disease Compare and contrast the activities of glycolysis and oxidative phosphorylation in cancer cells to those of non-cancerous cells							
BI6.7	Describe the process involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these	*At the end of the session Phase I student should be able to* Discuss water distribution in body, water balance, its regulation and disorders. Explain various electrolytes, their distribution and disorders (Sodium, Potassium, Chloride and Calcium)	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V) Physiology (H)

		Define pH. Discuss the importance of pH maintenance in human body. List the sources of H+ and HCO3- ions. Discuss Henderson and hasselbach equation. Classify buffers. Explain their role in maintenance of pH in human body							
BI6.8	Discuss and Interpret the results of ABG analysis in various disorders	*At the end of the session Phase I student should be able to* Discuss various Acid – Base disorders, compensatory mechanisms (respiratory and renal regulation) and know how to approach to a case of acid – base disorder given a list of parameters correctly	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General medicine (V)
BI6.9	Describe the functions of various minerals in the body, their metabolism and homeostasis	*At the end of session, the phase I MBBS student must be able to* Discuss the Sources, RDA, metabolism, biochemical functions and disorders of Iron. Discuss the Sources, RDA, metabolism, biochemical functions and disorders of Calcium. Discuss the Sources, RDA, metabolism, biochemical functions and disorders of Phosphorus.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V), Physiology (V)

		Discuss the Sources, RDA, metabolism, biochemical functions and deficiency manifestations disorders of Copper. Discuss the Sources, RDA, biochemical functions and disorders of Zinc. Discuss the Sources, RDA, biochemical functions and disorders of Selenium. Discuss the Sources, RDA, biochemical functions and disorders of Fluoride. Discuss the Sources, RDA, biochemical functions and disorders of Iodine. Discuss the Sources, RDA, biochemical functions and disorders of Magnesium. Discuss the Sources, RDA, biochemical functions and disorders of Manganese.							
BI6.10	Enumerate and describe the disorders associated with mineral metabolism	*At the end of session, the phase I MBBS student must be able to* Discuss the biochemical alterations and clinical features of Tetany, Hemosiderosis, Iron deficiency anemia, Hemochromatosis, Wilsons disease, Menke's kinky hair syndrome, Acrodermatitis enteropathica and Fluorosis.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)
BI6.11	Describe the functions of Haem in the body and describe the processes involved	*At the end of the session Phase I student should be able to* Explain Haem structure, types (symmetric and asymmetric), various hemoproteins and	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology, General medicine (V), Physiology (H)

	in its metabolism and describe porphyrin metabolism	their functions Discuss haem metabolism, Haem synthesis – various steps and enzymes and regulation List the Porphyrias, classification and discuss AIP (acute intermittent porphyria), PCT (Porphyria cutanea tarda), CEP (Congenital erythropoietic porphyria) in detail Explain Heme degradation with formation of bilirubin and its metabolism. Define Jaundice, classify them, (Acquired – Hemolytic, Hepatic, Obstructive, physiological Jaundice of newborn, breast milk jaundice and inherited – Criggler Najjar type I and II, Gilbert's disease, Dubin Johnson and rotorsyndrome), biochemical features in each and associated enzyme disorders.							
BI6.12	Describe the major types of Hb and its dervatives found in body and their physiological and pathological relevance	**NOTE: Competency BI 6.12 is included under 5.2**	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology,General Medicine(V)Physiology (H)
BI6.13	Describe the functions of the kidney, liver, thyroid and adrenal glands.	*At the end of session, the phase I MBBS student must be able to* Discuss the functions of the kidney, liver, thyroid and adrenal glands. List the hormones secreted by adrenal cortex	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology,General Medicine(V)Physiology (H), Anatomy (H)

		and medulla. Enumerate the steps and enzymes required during the synthesis of adrenal cortex hormones.							
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).	*At the end of session, the phase I MBBS student must be able to* Classify Liver function tests, Renal function tests, Thyroid function tests and Adrenal Gland function tests. Explain the routinely done tests in detail.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology,General Medicine(V)Physiology,Human Anatomy (H)
BI6.15	Describe the abnormalities of kidney, liver, thyroid and adrenal glands	*At the end of session, the phase I MBBS student must be able to* List the abnormalities of / diseases related to functioning of kidney, liver, thyroid and adrenal glands. Explain the role of biochemical investigations and their alterations in abnormalities of kidney, liver, thyroid and adrenal glands.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology,General Medicine(V)Physiology,Human Anatomy (H)
Notes – Better to write competency for each organ including their functions, related investigations and diseases.									
Topic: Molecular Biology		**Number of competencies: (07))**					**Number of procedures that require certification: (NIL)**		
BI7.1	Describe the Structure and function of DNA	*By the end of Session, the Phase – I students Should be able to*	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

	and RNA and outline the cell cycle	Describe, discuss and Enumerate the central dogma of molecular biology, and cite exceptions to the original model. Compare and contrast the structure of DNA and RNA, explaining the difference between the constituent bases, sugars, nucleosides and nucleotides. Differentiate the different types of RNA prokaryotic and eukaryotic gene structure.							
B17.2	Describe the processes involved in Replication & Repair of DNA and the transcription, translation mechanisms.	*By the end of Session, the Phase – I students Should be able to:* Describe the double-stranded, helical, and antiparallel chain structureofDNAand how it relates tothe processes of DNA replication, transcription, recombination and repair.) Summarize the mechanism of DNA replication and why discontinuous synthesis is required. Explain the process of telomere replication and relate telomere dynamics to aging and disease. Discuss how DNA and DNA processes can be used as therapeutic targets (e.g. anticancer and antibacterial drugs). Explain the universal features of the genetic code and describe its biological relevance. Explain the use of the genetic code to predict	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

		the amino acid sequence of a protein for a given nucleic acid sequence and demonstrate how nucleotide mutations can lead to alterations in the primary structure of a protein. Discuss the initiation, elongation, andtermination of transcription, comparing these processes in eukaryotic and prokaryotic cells. Compare and contrast prokaryotic and eukaryotic gene structure. Enumerate the initiation, elongation, and termination of transcription, comparing these processes in eukaryotic and prokaryotic cells. Discuss the posttranscriptional processing of eukaryotic mRNA and explain how the diseases may result from alterations in the processing steps and cite examples. Discuss the three steps of translation: initiation, elongation, and termination. Compare and contrast these processes and their regulation in eukaryotic and prokaryotic cells. Describe the cis and trans acting elements involved in eukaryotic transcription and summarize their regulation. Explain the effects of various antibiotics on							

		prokaryotic protein synthesis, and potential side-effects of these antibiotics. Describe the cis and trans acting elements involved in eukaryotic transcription and summarize their regulation. Discuss the effect of covalent modification of chromatin on gene transcription (including methylation, histone acetylation and phosphorylation).							
B17.3	Describe Gene Mutation and basic Mechanism of regulation of gene expression	*By the end of Session, the Phase – I students Should be able to:* Compare and contrast polymerase proofreading, direct repair, base excision repair, nucleotide excision repair, mismatch repair, and recombination. List the different types of mutations that occur in DNA. Describe and Discuss why mutations in DNA repair systems can lead to disease, including certain types of cancer.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pediatrics(V)
B17.4	Describe Applications of Molecular Technologies Like rDNA Technology, PCR in the diagnosis and treatment of Diseases with	*By the end of Session, the Phase – I students Should be able to:* Define RNAi and describe its role in regulation of gene expression. Discuss the structure and function of chromatin and summarize the mechanism of	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pediatrics,General Medicine(V)

	genetic basis	remodeling required to make DNA accessible for biological processes. Define epigenetics and describe its role in development, imprinting and disease. Explain the principles, methods, and applications of Northern, Southern, Western blot, microarray, PCR, and DNA sequencing for clinical and forensic sciences. Describe how recombinant DNA technology is used to clone and express genes.							
BI 7.5	Describe the role of Xenobiotics in disease	*At the end of the session Phase I student should be able to* Define detoxification, bio transformation and Xenobiotics. Discuss the compounds to be detoxified, Cytochrome P450 complex and Phase I, II, III reactions in detail	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		
BI 7.6	Describe the anti – oxidant defense systems in the body	*At the end of the session Phase I student should be able to* Discuss the various ROS and Free radicals, how they are generated, and damage caused by them, lipid peroxidation. Discuss various Free radical scavenger systems, their clinical significance. List the Anti- oxidants – types (preventive, chain breaking, therapeutic and others)	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

BI 7.7	Describe the role of oxidative stress in the pathogenesis of conditions such as Cancer, complication of Diabetes mellitus and atherosclerosis					Lecture, Small Group Discussion	Written/ Viva voce		General Medicine and Pathology (V)
NOTE: BI 7.7 is covered in the respective topics									
TOPIC --Nutrition		**Number of competencies: (05)**				**Number of procedures that require certification: (NIL)**			
BI8.1	Discuss the importance of various dietary components and explain importance of dietary fibre.	*At the end of session, the phase I MBBS student must be able to* Define nutrition. List the major components of diet. Discuss the nutritional Importance of Dietary proteins, carbohydrates and fats and state the amount of energy obtained by metabolism of carbohydrates, lipids and proteins. Discuss Nitrogen balance and methods of assessment of nutritive quality of proteins. Explain the nature and beneficial effects of dietary fibres.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine,Pediatrics,Pathology (V)
BI8.2	Describe the types and causes of protein energy	*At the end of session, the phase I MBBS student must be able to*	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine,Pediatrics,Patholog

	malnutrition and its effects	Define the terms Kwashiorkor and Marasmus. Discuss and differentiate Kwashiorkor and Marasmus with respect to age of onset, causes, clinical features and biochemical alterations.							y (V)
BI8.3	Provide dietary advice for optimal health in childhood and adult, in disease conditions like diabetes mellitus, coronary artery disease and in pregnancy.	*At the end of session, the phase I MBBS student must be able to* Discuss the need for energy for maintenance of basal metabolism, physical activity and Specific dynamic action of food. Define Specific Dynamic Action of Food (SDA) and state the SDA values for protein, carbohydrates and fats and mixed diet. Discuss the factors affecting Basal Metabolic Rate (BMR). Calculate Energy Requirement of an adult based on his height, occupation and other activities. Plan a balanced diet based on the energy requirement. Enumerate the modifications while prescribing diets for individuals with Diabetes mellitus, coronary artery disease and in pregnancy.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine(V)
BI8.4	Describe the causes	*At the end of session, the phase I MBBS*	K	KH	Y	Lecture,	Written/		General

	(including dietary habits), effects and health risks associated with being overweight/ obesity.	*student must be able to* Define obesity. Define body mass index (BMI). Discuss the calculation of BMI and explain grading of obesity based on BMI values. List the different methods of assessment of obesity. Explain briefly the regulation of energy intake and energy expenditure and the role of hormonal and neuronal factors related to it. Discuss the causes, effects and health risks of obesity.				Small Group Discussion	Viva voce		Medicine,Pathology (V)
BI8.5	Summarize the nutritional importance of commonly used items of food including fruits and vegetables.(macro-molecules & its importance)	*At the end of session, the phase I MBBS student must be able to* Discuss the RDA of different nutrients including vitamins and minerals. List the different groups of food items and the predominant nutrients present in each group. Explain the steps in planning a balanced diet.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Community Medicine,GeneralMedicine, Pediatrics (V)
Notes ---Can Include 11.23 competency present under topic Biochemistry Laboratory test as it is related to Nutrition. Some objectives of 8.3 competency can be included under practical topic (Biochemistry Laboratory Test)									

TOPIC –Extracellular Matrix			**Number of competencies: (03)**				**Number of procedures that require certification: (NIL)**		
BI9.1	List the functions and components of the extracellular matrix (ECM).	*At the end of session, the phase I MBBS student must be able to* List the Main Components of Extracellular Matrix. Discuss the functions of Extracellular matrix.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		
BI9.2	Discuss the involvement of ECM components in health and disease.	*At the end of session, the phase I MBBS student must be able to* Explain the role of Structural Proteins, Specialised proteins and Mucopolysaccharides in our body List the diseases caused due to abnormalities in Structural Proteins, Specialised proteins and Mucopolysaccharides.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine (V)
BI9.3	Describe protein targeting & sorting along with its associated disorders	*At the end of session, the phase I MBBS student must be able to* Define protein targeting & sorting. Discuss Co-translational and post translational Translocation. List the diseases due to defective protein targeting.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		
Topic: Oncogenesis and Immunity Number of competencies: (05))Number of procedures that require certification: (NIL)									
BI10.1	Describe the Cancer Initiation. Promotion Oncogenes and Oncogene activation. Also	*By the end of Session, the Phase – I students Should be able to:* Discuss basic aspects of cancer pathology.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		OBG, General Surgery and pathology (V)

	Focus on P53 and Apoptosis.	Describe epigenetics, somatic and genetic changes in tumors. Enumerate modern aspects of RNA and protein biology. Describe the cell cycle, angiogenesis and apoptosis. Explain the basic facets of carcinogenesis and methods to study the process. Discuss the basic principles and applications of cell culture and animal models to study cancer. Discuss how genetics contributes to predisposition and progression of cancer. Differentiate cancers by tissue type. Explain how immunotherapy is, and can be, used to treat human illness: strategies, advantages, and hurdles to overcome to realize its potential.							
BI0.2	Describe Various Biochemical tumor markers and biochemical basis of cancer treatment	*By the end of Session, the Phase – I students Should be able to:* Define the Tumor Marker, Clinical Uses of Tumor Marker, Classification of Tumor Marker along with Examples of Specific Tumor Markers.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		OBG, General Surgery and pathology (V)
BI10.3	Describe the cellular and humoral	*At the end of session, the phase I MBBS student must be able to*	K	KH	Y	Lecture, Small Group	Written/ Viva voce		Obstetrics and Gynaecology,

	components of the immune system & describe the types and structure of antibody	Explain the structure of Antibody. Classify Antibodies. Explain in detail about Cell mediated immunity and Humoral immunity.				Discussion			GeneralSurgery,Pathology(V)
BI10.4	Describe & discuss innate and adaptive immune responses, self/non-self recognition and the central role of T-helper cells in immune responses.	*At the end of session, the phase I MBBS student must be able to* Discuss Innate Immunity and Adaptive immunity. Define Self and Non-self antigen. Explain the role of T helper cells in immune responses.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		General Medicine,Pathology (V,)Physiology (H)
BI10.5	Describe antigens and concepts involved in vaccine development	At the end of session, the phase I MBBS student must be able to Discuss the concepts involved in Vaccine development.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Pathology,Pediatrics,Microbiology(V)

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
TOPIC -- Biochemistry laboratory Tests		**Number of competencies: (24)**					**Number of procedures that require certification: (05)**		
BI 11.1	Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal	*At the end of the session Phase I student should be able to* List the commonly used laboratory equipments Explain the principle, components, types, advantages and disadvantages and applications of Pipettes and glassware, burettes, condensers, funnels, test tubes, distillation apparatus and dessicators, different types of balances, centrifuge, hot air oven, Incubator, water bath (constant and variable temperature), hot plate and magnetic stirrer and urinometer Explain safe laboratory practices like identifying safety signs, listing the incompatible chemicals, equipment related hazards, basics of disinfection, decontamination and disposal. Define biomedical waste management, classify and colour code them. Explain the risks associated with improper disposal of waste and discuss the various steps in waste management Enumerate the different waste treatment	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		

		procedures							
BI 11.2	Describe the preparation of buffers and estimation of pH	*At the end of the session Phase I student should be able to* Define pH and Buffers. Discuss the method of preparation of most commonly used buffers in the lab. Explain the various methods of determination of pH	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		
BI 11.3	Describe the chemical components of normal urine.	*At the end of the session Phase I student should be able to* Explain the organic (Nitrogenous, Non nitrogenous) and inorganic constituents of urine.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		
BI 11.4	Perform urine analysis to estimate and determine normal and abnormal constituents	*At the end of the session Phase I student should be able to* Perform the normal organic and inorganic constituents present in urine by various tests Identify the abnormal constituents of urine (Glucose, protein, blood, ketone bodies, bile salts and bile pigments)	S	P	Y	DOAP session	Skill assessment	1	General Medicine(V) Physiology (H)
BI 11.5	Describe screening of urine for inborn errors & describe the use of paper	*At the end of the session Phase I student should be able to* Identify an unknown analyte in a given	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine(V)

	chromatography	sample by performing the reactions for identification of unknown biological substance (reaction of carbohydrates, proteins (precipitation and colour reactions), non-protein nitrogenous substances) Define chromatography and explain the principle, instrumentation, reagents, procedure, types and applications of Paper chromatography							
BI 11.6	Describe the principles of colorimetry	*At the end of the session Phase I student should be able to* Discuss Principles, components, beer-lambert's law, deviations in law, applications, advantages and disadvantages	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		
BI 11.7	Demonstrate the estimation of serum creatinine and creatinine clearance	*At the end of the session Phase I student should be able to* Explain principle, methodology (Jaffe's kinetic test) reagents, apparatus, procedure, interfering substances, other methods of estimation of creatinine in urine and serum Discuss the normal values and abnormal values in physiological and pathological conditions Define clearance, types, formula and how to calculate the clearance from given set of parameters and its significance	S	P	Y	Practical	Skill assessment	1	

BI 11.8	Demonstrate estimation of serum proteins, albumin and A:G ratio	*At the end of the session Phase I student should be able to* Explain principle, methodology (Biuret for proteins, BCG for Albumin) reagents, apparatus, procedure, interfering substances, other methods of estimation of serum protein and albumin Discuss the normal values and abnormal values in physiological and pathological conditions and significance of A:G ratio and conditions where it is reversed	S	P	Y	Practical	Skill assessment	1	
BI 11.9	Demonstrate the estimation of serum total cholesterol and HDLcholesterol	*At the end of the session Phase I student should be able to* Explain principle, methodology (Cholesterol – CHOD POD or Zat,Zlatkis,boyle method, HDL – Phosphotungstate/Mg method -- manual or autoanalyzer) reagents, apparatus, procedure, interfering substances, other methods of estimation of Total cholesterol and HDL cholesterol Discuss the normal values and abnormal values in physiological and pathological conditions	S	P	Y	Practical	Skill assessment		
BI 11.10	Demonstrate the estimation of triglycerides	*At the end of the session Phase I student should be able to* Explain principle, methodology (hantzsch method– manual or autoanalyzer) reagents, apparatus, procedure, interfering substances, other methods of estimation of Triglycerides	S	P	Y	Practical	Skill assessment		

		Discuss the normal values and abnormal values in physiological and pathological conditions							
BI 11.11	Demonstrate estimation of calcium and phosphorous	*At the end of the session Phase I student should be able to* Explain principle, methodology (Calcium – Titration, phosphorous – Reduction method → manual / autoanalyzer method) reagents, apparatus, procedure, interfering substances, other methods of estimation of Calcium and phosphorous. Discuss the normal values and abnormal values in physiological and pathological conditions	S	P	Y	Practical	Skill assessment		
BI 11.12	Demonstrate the estimation of serum bilirubin	*At the end of the session Phase I student should be able to* Explain principle, methodology (Malloy and Evelyn – Diazo reagent method manual or autoanalyzer) reagents, apparatus, procedure, interfering substances, other methods of estimation of bilirubin Discuss the normal values and abnormal values in physiological and pathological conditions	S	P	Y	Practical	Skill assessment		
BI 11.13	Demonstrate the estimation of SGOT/ SGPT	*At the end of the session Phase I student should be able to* Explain principle, methodology (Reitman and Frankel – manual or autoanalyzer method) reagents, apparatus, procedure, interfering substances, other methods of	S	P	Y	Practical	Skill assessment		

		estimation of SGOT and SGPT Discuss the normal values and abnormal values in physiological and pathological conditions							
BI 11.14	Demonstrate the estimation of alkaline phosphatase	*At the end of the session Phase I student should be able to* Explain principle, methodology (King and Kind – manual or autoanalyzer method) reagents, apparatus, procedure, interfering substances, other methods of estimation of Alkaline phosphatase Discuss the normal values and abnormal values in physiological and pathological conditions	S	P	Y	Practical	Skill assessment		
BI 11.15	Describe & discuss the composition of CSF	*At the end of the session Phase I student should be able to* Discuss the composition and Normal values of analytes present in the CSF. Explain the significance of their variations and their role in diagnosing diseases.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		
BI 11.16	Observe use of commonly used equipments/techniques in biochemistry laboratory including: •pHmeter •Paper chromatography of amino acid •Protein	*At the end of the session Phase I student should be able to* Explain the principle, components of the instrument, reagents required, procedure, types, advantages and disadvantages and applications of pH meter, Paper chromatography, protein electrophoresis, TLC, PAGE, ISE, ABG analyser, Auto analyser, DNA isolation, ELISA.	S	KH	Y	Demonstration	Skill assessment		

	electrophoresis •TLC, PAGE •Electrolyte analysis by ISE •ABG analyzer •ELISA •Immunodiffusion •Autoanalyser •Quality control •DNA isolation from blood/ tissue	Discuss the components of quality control, types, materials used and interpretation. Discuss in brief about Levy Jenning's Charts							
BI 11.17	Explain the basis and rationale of biochemical tests done in the following conditions: - diabetes mellitus, - dyslipidemia, - myocardial infarction, - renal failure, gout, - proteinuria, - nephrotic syndrome, - edema, - jaundice, - liver diseases, pancreatitis, disorders of acid-base balance, - thyroid disorders.	*At the end of the session Phase I student should be able to* Enumerate the various biochemical alterations observed, various laboratory investigations done, normal and abnormal serum and urine values of analytes routinely done in Diabetes mellitus, Dyslipidemia, MI, renal failure, gout, Proteinuria, Nephrotic syndrome, Oedema, Jaundice, thyroid disorders, Pancreatitis, Liver diseases and Acid – base disorders. Analyse and interpret the given condition based on the biochemical parameters	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine, Pathology
BI 11.18	Discuss the principles of spectrophotometry	*At the end of the session Phase I student should be able to*	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		

		Discuss the principle, components of the instrument, reagents required, procedure, types, advantages and disadvantages and applications							
BI 11.19	Outline the basic principles involved in the functioning of instruments commonly used in a biochemistry laboratory and their applications.	*At the end of the session Phase I student should be able to* List the commonly used laboratory equipments. Discuss their principle, components of the instrument, types, advantages and disadvantages, applications - Pipettes and glassware, burettes, condensers, funnels, test tubes, distillation apparatus and dessicators, different types of balances, centrifuge, hot air oven, Incubator, water bath (constant and variable temperature), hot plate and magnetic stirrer, urinometer	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		
BI 11.20	Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states.	*At the end of the session Phase I student should be able to* Identify the abnormal constituents of urine performing a battery of tests. Discuss the normal and abnormal serum and urine levels of those analytes Analyse, interpret and correlate with the clinical findings under given set of parameters	S	SH	Y	DOAP session	Skill assessment	1	

BI 11.21	Demonstrate estimation of glucose, creatinine, urea and total protein in serum.	*At the end of the session Phase I student should be able to* Explain principle, methodology (Glucose – GOD/POD method, Creatinine – Jaffe's Kinetic method, Urea – Diacetyl monoxime method, Total protein – Biuret method) reagents, apparatus, procedure, interfering substances, other methods of estimation of glucose, creatinine, urea and total protein in serum. Discuss the normal values and abnormal values in physiological and pathological conditions	S	SH	Y	DOAP session	Skill assessment	1	
BI 11.22	Calculate albumin: globulin (AG) ratio and creatinine clearance	*At the end of the session Phase I student should be able to* Explain the calculation of AG Ratio. Discuss the significance of A:G ratio and conditions where it is reversed. Define clearance. List the different substances used for calculating clearance, their advantages and disadvantages. Discuss the formula for clearance and calculation of clearance from serum and urine creatinine values.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine

BI 11.23	Calculate energy content of different food Items, identify food items with high and low glycemic index and explain the importance of these in the diet	*At the end of the session Phase I student should be able to* Discuss the calorific values of different nutrients. Calculate the energy content of a food item based on its composition. Define Glycemic Index and give examples of food items with high and low glycemic index. Explain the role of Glycemic index in planning a diet.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine
BI 11.24	Enumerate advantages and/or disadvantages of use of unsaturated, saturated and trans fats in food.	*At the end of the session Phase I student should be able to* Differentiate between Mono and Polyunsaturated fatty acids,w3 and w6 fatty acids and their advantages and/or disadvantages. Explain what Trans fatty acids with examples and their disadvantages	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		General Medicine

TOPIC -- Biochemical Laboratory Tests

Notes

Can rearrange the competencies as Lecture/Demonstration/Perform Competencies in order

Lectures/Small group discussions

Competency Number -- 11.1,11.2,11.3,11.5,11.6,11.15,11.17,11.18,11.19.11.22

Demonstrations

Competency Number -- 11.4,11.7,11.8,11.9,11.10,11.11,11.12,11.13,11.14.11.16,11.20,11.21

Perform(5) 0r Procedures requiring certification were given as 5 in number

Competency Number -- 11.4,11.7,11.8,11.20,11.21

All perform experiments have to be included under demonstrations as first we have to do and show to the students.

Under Perform experiments there is a repetition in

A) **11.4 and 11.20**

11.4 – Perform urine analysis to estimate and determine normal and abnormal constituents

11.20 -- Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states

B) **11.7,11.8 and 11.21**

11.7 – Demonstrate the estimation of serum **creatinine** and **creatinine clearance**

11.8 – Demonstrate estimation of serum **proteins**, albumin and **A:G ratio**

11.21 -- Demonstrate estimation of glucose, **creatinine**, urea and **total protein** in serum

Also, Competence (11.22) -- Calculate albumin: globulin **(AG) ratio** and **creatinine clearance** is repeated and given under Lecture/small group discussion

11.23 Competency can be included under Nutrition

11.24 Competency can be included under Lipid Chemistry

Competency (8.3) related to nutrition can be included under practicals .Objectives that can be included under that competency are **Calculation of energy requirement and planning a balanced diet for self / any Patient**

General Notes----
Topics not included are Plasma proteins and Hormones

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
TOPIC -- Plasma Proteins		**Number of competencies: (01)**				**Number of procedures that require certification: (NIL)**			
1	List the major plasma proteins and describe their functions and causes for variations	*At the end of session, the phase I MBBS student must be able to* Enumerate the different plasma proteins. Discuss the physiological functions of plasma proteins . Explain about Acute phase proteins. Discuss the various methods of plasma protein measurement and separation techniques. Analyse the normal values of plasma proteins. Enumerate the various causes for increase and decrease in plasma proteins. Discuss the Clinically significant alterations in plasma protein electrophoresis.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

NUMBER	COMPETENCY ***The student should***	Specific Learning Objectives	DOMAIN	LEVEL K/KH/S	CORE Y/N	Suggested Teaching	Suggested Assessment	Number Required To	INTEGRATION

	be able to		K/S/A /C	H/P		Learning Method	Method	Certify P	V/H
TOPIC -- Hormones		**Number of competencies: (01)**			**Number of procedures that require certification: (NIL)**				
1	Describe the Mechanism of Action of Hormones	*At the end of session, the phase I MBBS student must be able to* Classify Hormones based on chemical composition and mechanism of action. Explain the mechanism of Hormone Action at Cytosolic or Nuclear Level Explain the mechanism of Hormone Action at Cell Membrane level Explain Signal Transduction	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		
2	Discuss the Synthesis, regulation and biochemical functions of Hormones	*At the end of session, the phase I MBBS student must be able to* Discuss the Synthesis, regulation and biochemical functions of Hypothalmic and Pituatary Hormones. Discuss the Synthesis, regulation and biochemical functions of Thyroid and Steroid Hormones. Discuss the Synthesis, regulation and biochemical functions of Peptide Hormones.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		

BIOCHEMISTRY INTEGRATIONS

INTEGRATED TOPICS WITH ANESTHESIA

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
BI 6.8	Discuss and Interpret the results of ABG analysis in various disorders	*At the end of session, the phase I MBBS student must be able to* Justify the need for ABG. List the parameters in ABG analysis. Explain their role in interpreting the acid – base disorder.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		Anesthesia (V)

INTEGRATED TOPICS WITH PHYSIOLOGY

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
BI1.1	Describe the molecular and functional organization of a cell and its subcellular components	*At the end of session, the phase I MBBS student must be able to* Describe the different parts of the cell Mention the composition of intracellular fluid. Mention the functions of cell membrane. Mention the functions of different organelles.	K	KH	Y	Small Group Discussion	Written		Physiology (H)

INTEGRATED TOPICS WITH PATHOLOGY

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
BI6.5	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency	*At the end of session, the phase I MBBS student must be able to* Classify the types of vitamins correctly. Explain the metabolism, functions and manifestations of deficiencies of vitamin B12 accurately. Explain the metabolism, functions and manifestations of deficiencies of Folic acid correctly.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		PATHOLOGY (V)
BI 11.20	Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states	*At the end of session, the phase I MBBS student must be able to* Discuss the normal composition of urine correctly. List the causes of proteinuria and different tests to detect them. List the causes of glucosuria and different tests to detect	S	SH	Y	DOAP Session	Skill Assessment		PATHOLOGY (V)

		them. List the causes of ketonuria and different tests to detect them. List the causes of bilirubinuria and different tests to detect them. List the causes of hematuria and different tests to detect them.							
BI 7.7	Describe the role of oxidative stress in the pathogenesis of conditions such as Cancer, complication of Diabetes mellitus and atherosclerosis	*At the end of session, the phase I MBBS student must be able to* Analyse the pathological effects of free radicals in cancer correctly. Explain the role of free radicals in pathogenesis of diabetes mellitus and its complications correctly. Explain the pathological effects of free radicals in atherosclerosis correctly.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		PATHOLOGY (V)
BI 10.1	Describe the Cancer Initiation. Promotion Oncogenes and	*At the end of session, the phase I MBBS student must be able to* Enumerate the steps	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		PATHOLOGY (V)

	Oncogene activation. Also Focus on P53 and Apoptosis.	involved in chemical carcinogenesis (Initiation & promotion) correctly. Discuss the genes responsible for carcinogenesis and their activation correctly. Explain the role of p53 in maintaining the integrity of genome correctly. Explain how cancer cell evade from apoptosis correctly.							

INTEGRATED TOPICS WITH COMMUNITY MEDICINE

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
BI 8.2	Describe the types and causes of protein energy malnutrition and its effects	*At the end of session, the phase I MBBS student must be able to* List the common types of protein-energy malnutrition correctly. List the common causes of protein-energy malnutrition accurately.	K	KH	Y	Lecture	Written(Short Answer Question)		COMMUNITY MEDICINE (V)
		Describe in detail the effects of protein-energy malnutrition correctly.	K	KH	Y	Lecture	Written(Short Answer Question/Long Answer Question)		
BI 8.3	Provide dietary advice for optimal health in childhood and adult, in disease conditions like diabetes mellitus, coronary artery disease and in pregnancy.	*At the end of session, the phase I MBBS student must be able to* Provide dietary advice for optimal health in childhood correctly. Provide dietary advice for optimal health in adult correctly.	K	SH	Y	Small Group Discussion	Written(Short Answer Question / Exercise)		COMMUNITY MEDICINE (V)

		Provide dietary advice for a patient with diabetes mellitus correctly. Provide dietary advice for a patient with coronary artery disease correctly. Provide dietary advice for a pregnant woman correctly.							
BI 11.23	Calculate energy content of different food Items, identify food items with high and low glycemic index and explain the importance of these in the diet	*At the end of session, the phase I MBBS student must be able to* Calculate the energy content of different food items accurately Identify food items with high and low glycemic index accurately	K	SH	Y	Self Directed Learning	Written(Short Answer Question / Exercise)		COMMUNITY MEDICINE (V)
		Describe in detail the importance of food items with high and low glycemic index	K	KH	Y	Small Group Discussion	Written(Short Answer Question)		

INTEGRATED TOPICS WITH MICROBIOLOGY

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
BI 10.5	Describe antigens and concepts involved in vaccine development	*At the end of session, the phase I MBBS student must be able to* Classify the types of antigen.	K	KH	Y	Lecture	Written		MICROBIOLOGY (V)
		Enumerate the various factors of antigenicity	K	K	Y	Lecture	Written		
		Explain the concept of Superantigen.	K	KH	Y	Small Group Teaching	Viva voce		
		Discuss the active immunity. List out the various concepts involved in vaccine development	K	K	Y	Lecture	Written		
BI 10.3/ BI 10.4	Describe the cellular and humoral components of the immune system & describe the types and structure of antibody	*At the end of session, the phase I MBBS student must be able to* Explain the various components of Humoral immunity.	K	K	Y	Lecture	Written		MICROBIOLOGY (V)
	Describe & discuss innate and adaptive immune responses,	Explain various components of cellular immunity.	K	KH	Y	Lecture	Written		

	self/non-self recognition and the central role of T-helper cells in immune responses.	Analyze the structure of an immunoglobulin with the help of a neat labeled diagram.	K/S	KH	Y	Small Group Teaching	Viva voce		MICROBIOLOGY (V)
		Differentiate the various types of antibodies.	K	KH	Y	Small Group Teaching	Viva voce		
		Discuss about innate and acquired immunity. Enumerate the various cells involved in antigen presentation.	K	KH	Y	Small Group Teaching	Viva voce		
		Explain in detail about MHC.Discuss the humoral immune response.	K	KH	Y	Lecture	Written		
		Discuss the cell mediated immune response.	K	SH	Y	Small Group Teaching	Viva voce		
BI 7.4	Describe Applications of Molecular Technologies Like rDNA Technology, PCR in the diagnosis and treatment of Diseases with genetic basis	*At the end of session, the phase I MBBS student must be able to* Enumerate the various methods of gene transfer in bacteria.	K	KH	Y	Small Group Teaching	Written/ Viva voce		MICROBIOLOGY (V)

		List out applications of rDNA technology in diagnosis and treatment of diseases with genetic basis.	K	KH	Y	Small Group Teaching	Written/ Viva voce		
		List out applications of PCR technology in diagnosis and treatment of diseases with genetic basis.	K	KH	Y	Small Group Teaching	Written/ Viva voce		
BI 11.16	Observe use of commonly used equipments/techniques in biochemistry laboratory including: ELISA	*At the end of session, the phase I MBBS student must be able to* List out the various Ag-Ab reactions.	K	KH	Y	Small Group Teaching	Viva voce		MICROBIOLOGY (V)
		Explain the principle of ELISA.	K	KH	Y	Lecture	Written		
		Enumerate the various types of ELISA.	K	KH	Y	Small Group Teaching	Viva voce		
		Discuss the applications of ELISA in microbiology.	K	KH	Y	Small Group Teaching	Viva voce		

INTEGRATED TOPICS WITH PAEDIATRICS

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
BI 3.8, BI 3.5, BI3.10, BI 11.5	Describe and discuss the regulation, functions and integration of carbohydrate along with associated diseases/disorders. Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates Interpret the results of blood glucose levels and other laboratory investigations related to disorders Describe screening of urine for inborn errors	*At the end of session, the phase I MBBS student must be able to* Define Glycogen storage Disorders Classify Glycogen storage disorders. Explain the patho physiology, clinical features and diagnosis of Glycogen storage disorders. Explain the role of chromatography in management and prognosis of Glycogen storage disorders. Discuss the complications of Glycogen storage disorders. *At the end of session, the phase I MBBS student must be able to*	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		PAEDIATRICS (V)

	& describe the use of paper Chromatography	Discuss the inheritance, biochemical defect, clinical features and diagnosis of Essential Fructosuria, Hereditary fructose intolerance, Essential Pentosuria Interpret the laboratory investigations in Essential Fructosuria, Hereditary fructose intolerance, Essential Pentosuria Explain the role of chromatography in management of Essential Fructosuria, Hereditary fructose intolerance, Essential Pentosuria Discuss the complications of Essential Fructosuria, Hereditary fructose intolerance, Essential Pentosuria							
BI 5.4,11.5	Describe common disorders associated with protein metabolism. Describe	*At the end of session, the phase I MBBS student must be able to* List the common disorders associated with protein metabolism.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		PAEDIATRICS (V)

	screening of urine for inborn errors & describe the use of paper Chromatography	Discuss the inheritance, biochemical defect, clinical features and diagnosis of common inborn errors of protein metabolism. Interpret the common laboratory investigations performed in inborn errors of protein metabolism. Explain the role of chromatography in protein metabolism disorders. Discuss the relevance of screening of urine for protein metabolism disorders. Discuss the management and complications of common inborn errors of protein metabolism.							

INTEGRATED TOPICS WITH GENERAL MEDICINE

NUMBER	COMPETENCY ***The student should be able to***	Specific Learning Objectives	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	INTEGRATION V/H
BI 3.8, BI 3.10	Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates Interpret the results of blood glucose levels and other laboratory investigations related to disorders	*At the end of session, the phase I MBBS student must be able to* Describe symptoms of a suspected patient of diabetes mellitus. Enumerate the other conditions associated with diabetes	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		GENERAL MEDICINE (V)
BI 6.7	Describe the process involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with	*At the end of session, the phase I MBBS student must be able to* Describe the symptoms that reflect the common conditions resulting in loss of fluid from the body and its conscequences.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		GENERAL MEDICINE (V)

	these								
BI 6.7	Describe the process involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these	*At the end of session, the phase I MBBS student must be able to* Describe the symptoms of critical nature as a conscequences of acute or chronic diseases which make the patients bed ridden.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		GENERAL MEDICINE (V)
BI 2.5, BI 2.7	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions. Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions.	*At the end of session, the phase I MBBS student must be able to* List the various enzymes which are markers of pathological conditions. Explain the symptoms and clinical features of those pathological conditions. Enumerate the common therapeutic enzymes used in clinical practice. Describe the broad manifestations of various disorders which result in alterations of appetite, weight, sensorium, bowel habits, etc.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		GENERAL MEDICINE (V)

BI 6.13, 6.14, 6.15	Describe the functions of the kidney, liver, thyroid and adrenal glands. Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands). Describe the abnormalities of kidney, liver, thyroid and adrenal glands	*At the end of session, the phase I MBBS student must be able to* **<u>Adrenal Function Tests</u>** Enumerate the symptoms and situations which are due to alterations in the hormonal status of the adrenal glands related diseases. **<u>Liver Function Tests</u>** Enumerate and identify the symptoms of various liver disorders that can be correlated to liver function tests. **<u>Thyroid Function Tests</u>** Enumerate the conditions which cause hyper thyroidism. Enumerate the conditions which cause hypo thyroidism. Enumerate the conditions which cause pituitary disorders. Describe the symptoms manifested in hyper thyroidism, hypo thyroidism	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		GENERAL MEDICINE (V)

		and pituitary disorders.							
BI 4.4, 7.7	Describe the structure and functions of lipoproteins, their functions, interrelations & relations with atherosclerosis and fatty liver Describe the role of oxidative stress in the pathogenesis of conditions such as Cancer, complication of Diabetes mellitus and atherosclerosis	*At the end of session, the phase I MBBS student must be able to* Discuss Atherosclerosis and its consequences in various organs of the body. Correlate them with laboratory findings so as to take steps of prevention and cure.	K	KH	Y	Lecture, Small Group Discussion	Written/ Viva voce		GENERAL MEDICINE (V)

OBJECTIVES FOR COMMUNITY MEDICINE COMPETENCIES

Topic: Concepts of health and Disease							
SN	Competency	SLO	Domain	Level	T/L method	Assessment Method	Duration
CM1.1	Define and describe the concepts of public health	**At the end of the session the phase I students will be able to** enumerate different concepts of public health and describe each one correctly.	K	K	Lecture	Written	1hr
CM1.2	Define health, describe the concepts of holistic health including concepts of spiritual health and the relativeness and determinants of health.	**At the end of the session the phase I students will be able to** -Define health and discuss in detail different concepts of health. - list different dimensions of health and discuss it in context of spiritual health. -Describe important determinants of health correctly. -Enlist the indicators of health and describe each indicator accurately. -Calculate and interpret the results with the set of given data.	 K K K K K	 KH KH KH KH KH	 Lecture Lecture /Small group discussion Lecture Lecture Lecture / Small group discussion	 Written Written/Viva voce Written Written Written	 1 hr 1hr 1hr 40min 40 min

CM1.3	Describe the characteristics of agent, host and environmental factors in health and diseases and the multifactorial aetiology of diseases	**At the end of the session the phase I students will be able to** -Describe in detail different concepts of disease. -Identify the common characteristics of agent, host and environment. -Discuss multifactorial aetiology of diseases with specific given examples.	 K K K	 KH KH KH	 Lecture Lecture / Small group discussion Lecture / Small group discussion	 Written Written/Viva voice Written/Viva voice	 ½ hr 1 hr ½ hr
CM1.4	Describe and discuss the natural history of diseases	**At the end of the session the phase I students will be able to** - describe in detail the natural history of disease. -Discuss the natural history of disease appropriately in context of present disease prevalent in the area.)	 K K	 KH KH	 Lecture Small group discussion	 Written Viva voce	 1 hr 1 hr
CM1.5	Describe the application of interventions at various level of prevention	**At the end of the session the phase I students will be able to** -Define control, elimination, eradication, prevention properly. -enlist different levels of prevention accurately. -Identify correct interventions in different levels of prevention. - Discuss various levels of prevention along with intervention with appropriate example correctly.	 K K K K	 KH KH KH KH	 Lecture / Small group discussion Lecture Lecture / Small group discussion Small group Discussion	 Written/Viva voce Written Written/ Viva voce Written	 1 hr 1 hr 1 hr 1 hr (1 hr SDL)

Relationship of Social and Behavioural to health and disease							
CM2.1	Describe the steps and perform clinic-socio-cultural and demographic assessment of the individual, family and community	**At the end of the session the phase I students will be able to** -Describe the steps of clinico-social & demographic assessment correctly. -Present the socio-clinical case and discuss it in relation to the individual family and community level. -Perform the socio cultural and demographic assessment independently as per the data provided	 K S S	 KH SH SH	 Lecture Small group discussion DOAP	 Witten/Viva voice Viva voce Skill Assessment (OSCE)	 1 hr 3 hr 3 hr.
CM2.2	Describe the socio-cultural factors, family(types), it's role in health and disease and demonstrate in simulated environment	**At the end of the session the phase I students will be able to** -List different socio-cultural factors and its role in health and disease correctly. -Define what is family ,enumerate different types of family and discuss its role in health & disease appropriately. -Discuss different methods of SES calculation and identify the correct method for correct scenario. -Demonstrate the correct method of socio economic	 K K S S	 KH KH SH SH	 Lecture Lecture Small group discussion DOAP	 Witten/Viva voice Witten/Viva voice Skill Assessment (OSCE) Skill Assessment	 1 hr 1 hr 1 hr 2 hr

	the correct assessment of socio-economic status.	status calculation in a simulated environment.					(1 hr SDL)
CM2.3	Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behaviour	**At the end of the session the phase I students will be able to** -Define what is good health and health seeking behaviour accurately. -Describe most common barriers to good health and health seeking behaviour with examples correctly. -Demonstrate the understanding properly on assessment of barriers to good health and health seeking behaviour in a simulated environment. - Counsel the case correctly on overcoming the barriers .	K S S S	KH SH SH SH	Lecture Small group discussion Small group discussion/ DOAP Small Group Discussion/ DOAP	Witten/Viva voice Witten/Viva voice Skill Assessment (OSCE) Skill Assessment	1 hr 1 hr. 1 hr 1hr
CM2.4	Describe social psychology, community behaviour and community relationship and their impact on health and disease	**At the end of the session the phase I students will be able to** - Describe in detail about social, psychological and community behaviour. - Discuss community relationships and their impact on health and disease with examples.	K K	KH KH	Lecture Small group discussion	Witten/Viva voice Witten/Viva voice	1hr 2hr

CM2.5	Describe poverty and social security measures and its relationship to health and disease	**At the end of the session the phase I students will be able to** -Define poverty as per WHO guidelines. -Enumerate common State/National social security schemes. - Discuss common social security measures and its relation to health and disease appropriately.	 K K K	 KH KH KH	 Lecture Lecture Small group discussion	 Witten/Viva voice Witten/Viva voice Written	 20 min 20 min 2 hr (1 hr SDL)

Demography and Vital Statistics							
SN	**Competency**	**SLO:** At the end of the session the phase I students will be able to	**Domain**	**Level**	**T/L method**	**Assessment Method**	**Duration**
CM 9.1	Define and describe the principles of demography, demographic cycle, vital statistics	At the end of the session the Phase I students will be able to define demography correctly	K	KH	Lecture	Written	30min
		At the end of the session the Phase I students will be able to list common demographic processes correctly	K	KH	Lecture	Written	30min
		At the end of the session the Phase I students will be able to describe the demographic cycle accurately.	K	KH	Lecture	Written	30min
CM 9.2	Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates.	At the end of the session the Phase I students will be able to define birth rate, death rate and other fertility related statistics correctly.	K	KH	Lecture	Written	30min
		At the end of the session the Phase I students will be able to calculate the above rates correctly from a given set of data.	S	SH	Small Group Discussion	Skill assessment	40min
		At the end of the session the Phase I students will be able to explain the significance of each rate in context of our country correctly.	K	KH	Small Group Discussion	Viva	60min
CM 9.3	Enumerate and describe the causes of declining sex ratio and its social and health implications	At the end of the session the Phase I students will be able to define sex ratio accurately and enumerate the most common reasons for low sex ratio in our country correctly.	K	KH	Lecture	Written	45 min
		At the end of the session the Phase I students will be able to describe the social implications of declining sex ratio correctly	K	KH	Small Group Discussion	Viva	30 min
CM 9.4	Enumerate and describe the causes and consequences	At the end of the session the Phase I students will be able to list the most common causes of population explosion correctly.	K	KH	Lecture	Written	15min

	of population explosion and population dynamics of India	At the end of the session the Phase I students will be able to discuss the consequence of population explosion correctly.	K	KH	Small Group Discussion	Written	20 min (1 hr SDL)

Concepts of Health and Diseases contd.							
SN	**Competency**	**SLO: At the end of the session the phase – I students must be able to**	**Domain**	**Level**	**T/L method**	**Assessment Method**	**Duration**
CM1.6	Describe and discuss the concepts, the principles of Health promotion and Education, IEC and Behavioural Change Communication (BCC)	**SLO: At the end of the session the phase – I students must be able to** list all the principles of Health promotion and education accurately	K	KH	Lecture	Written	30min
		SLO: At the end of the session the phase – I students must be able to describe briefly behavioural change communication	K	KH	Small group discussion (seminar)	viva	40min
		SLO: At the end of the session the phase – I students must be able to enumerate commonly used IEC methods.	K	KH	Lecture Cum demonstration	Written	25min
CM1.7	Enumerate and describe health indicators	**SLO: At the end of the session the phase – I students must be able to** describe important characteristics of health indicators	K	KH	Lecture	Written	60 min
		SLO: At the end of the session the phase – I students must be able to calculate accurately various indicators of health with given data	S	SH	Small Group Discussion (seminar)	viva	60min

		SLO: At the end of the session the phase – I students must be able to calculate commonly used disability and utility rates with given data	S	SH	Small Group Discussion	Viva	25min
CM1.8	Describe the demographic profile of India and discuss its impact on health.	**SLO: At the end of the session the phase – I students must be able to** describe important demographic characteristics	K	KH	Small Group Discussion	Viva/ Written	30 min
		SLO: At the end of the session the phase – I students must be able to accurately interpret the age pyramids and draw conclusions from given pictures.	K	KH	Small Group Discussion	Viva/ Written	60min
CM1.9	Demonstrate the role of effective Communication skills in health in a simulated environment	**SLO: At the end of the session the phase – I students must be able to** demonstrate most commonly used methods of Communication	S	SH	Role play	Skill assessment	30 min
		SLO: At the end of the session the phase – I students must be able to demonstrate effective use of major communication methods in Health promotion	S	SH	DOAP	Skill assessment	30 min
CM1.10	Demonstrate the important aspects of the doctor patient relationship in a simulated environment.	**SLO: At the end of the session the phase – I students must be able to** demonstrate the understanding of Doctor Patient relationship precisely in simulated background.	S	SH	DOAP	Skill assessment	60 min. (1 hr SDL)