COMPETENCY BASED DYNAMIC CURRICULUM FOR

FIRST BHMS PROFESSIONAL COURSE

(Applicable from Batch 2022-2023 onwards for 5 years or until further notification by National Commission for Homoeopathy whichever is earlier)

(Human physiology & Biochemistry)



HOMOEOPATHY EDUCATION BOARD NATIONAL COMMISSION FOR HOMOEOPATHY MINISTRY OF AYUSH, GOVERNMENT OF INDIA

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Course- Human physiology & Biochemistry

Course code: Hom UG - PB

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1. PREAMBLE

Physiology studies the functional organization of man at several levels like atom, chemical, cells, tissues, organ systems and the whole body to understand fundamental mechanisms that operate in a living organism. The underlying goal is to explain the operations in a living organism.

Besides satisfying a natural curiosity about how humans function, the study of physiology is of central importance in medicine and related health sciences, as it underpins advances in our understanding of disease and our ability to treat it more effectively. It is also important from psychological and philosophical viewpoints, helping us to understand the different systems. Homoeopathic Philosophy postulates the force animating every cell as the Vital Force which helps in homoeostasis. When it is deranged due to web of causes, disease develops.

Homoeopath must understand Man in a holistic way which would help him to deliver the therapeutic action for the purpose of bringing about a cure. Understanding the structural organisation i.e., Anatomy along with psychological organisation go hand in hand. Their interplay maintains health and delivers optimum function for healthy living and progressing towards higher purpose as per Hahnemannian guidelines. Hence physiology needs to be integrated horizontally with Anatomy, Materia Medica, Organon of Medicine, Psychology & Pharmacy as well as vertically with Pathology, Surgery, Obstetrics & Gynaecology, Community Medicine, Practice of Medicine & Repertory for better grasp of health, disease and process of cure.

Advances in biochemical processes have been occurring at an astonishing pace. The action of homoeopathic medicines does occur at sub-cellular levels. Hence an in-depth understanding and correlation of the processes in health and disease can open up a whole new way of understanding Homoeopathic drugs and their far-reaching effects.

2.PROGRAMME OUTCOMES:

At the end of the course of the undergraduate studies, the homoeopathic physician must

- 1) Develop the knowledge, skills, abilities and confidence as a primary care homoeopathic practitioner to attend to the health needs of the community in a holistic manner
- Correctly assess and clinically diagnose common clinical conditions prevalent in the community from time to time
- 3) Identify and incorporate the socio-demographic, psychological, cultural, environmental & economic factors affecting health and disease in clinical work
- Recognize the scope and limitation of homoeopathy in order to apply Homoeopathic principles for curative, prophylactic, promotive, palliative, and rehabilitative primary health care for the benefit of the individual and community
- 5) Be willing and able to practice homoeopathy as per medical ethics and professionalism.
- 6) Discern the scope and relevance of other systems of medical practice for rational use of cross referrals and role of life saving measures to address clinical emergencies
- 7) Develop the capacity for critical thinking, self reflection and a research orientation as required for developing evidence based homoeopathic practice.
- Develop an aptitude for lifelong learning to be able to meet the changing demands of clinical practice
- 9) Develop the necessary communication skills and enabling attitudes to work as a responsible team member in various healthcare settings and contribute towards the larger goals of national health policies such as school health, community health and environmental conservation.

3. Course Outcomes (COs):

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

- 1. Discuss the Homoeopathic concept of health in relation to integrated body structure and functions.
- 2. Explain the normal functioning of the human body at all levels of organization.
- 3. Relate the concept of homoeostasis with relevant ideas in Anatomy, Materia medica and Organon of Medicine at BHMS I level .
- 4. Elucidate the physiological aspects of normal growth and development with focus on evolution.
- 5. Correlate micro functions at cellular level with macro functions at organ-system level.
- 6. Use necessary communication skills required for history-taking of the patient & relating various clinical findings in the patient.
- 7. Perform experiments in haematology, clinical physiology & biochemistry as required for the study of physiological phenomena and for assessment of normal function.
- 8. Identify the normal values of haematology, clinical physiology & biochemistry.
- 9. Perform clinical physiological examination under supervision.
- 10. Correlate knowledge of Organon & Materia Medica with Physiology.
- 11. Explain the integrated responses of the organ systems of the body to physiological and pathological stresses.

4. TEACHING HOURS

Sr No.	Subject	Theoretical Lecture	Practical / Tutorial / Seminar / Clinical Posting
01	PHYSIOLOGY & BIOCHEMISTRY	325 hrs.	330 hrs.

Theory Wise Teaching Hours Distribution – 325 Hours

Sr. No	Paper-I	
	List of System	Teaching Hours
1	General Physiology	20
2	Bio Physics Science	15
3	Skin & The Integumentary System	15
4	Body fluids & Immune mechanism	35
5	Nerve Muscle physiology	15
6	Cardiovascular system	20
7	Respiratory and Environmental Physiology	25
8	Renal Physiology	20
	Total	165
Sr. No	Total Paper-II	165
Sr. No	Total Paper-II List of System	165 Teaching Hours
Sr. No	Total Paper-II List of System Central Nervous System	165 Teaching Hours 35
Sr. No	Total Paper-II List of System Central Nervous System Endocrinology	165 Teaching Hours 35 30
Sr. No 1 2 3	Total Paper-II List of System Central Nervous System Endocrinology Reproduction	165 Teaching Hours 35 30 15
Sr. No 1 2 3 4	Total Paper-II List of System Central Nervous System Endocrinology Reproduction Special Senses	165 Teaching Hours 35 30 15 20
Sr. No 1 2 3 4 5	TotalPaper-IIList of SystemCentral Nervous SystemEndocrinologyReproductionSpecial SensesDigestion and Nutrition	165 Teaching Hours 35 30 15 20 35
Sr. No 1 2 3 4 5 6	TotalPaper-IIList of SystemCentral Nervous SystemEndocrinologyReproductionSpecial SensesDigestion and NutritionBiochemistry	165 Teaching Hours 35 30 15 20 35 25

Phy	Physiology – Practical – lab work		
No	Dractical	Demonstration	Number of
NU	/ Perf		Teaching Hours
HAE	MATOLOGY		
1	Study of the Compound Microscope	Performance	05
2.	Collection of Blood Samples	Performance	05
3	Estimation of Haemoglobin Concentration	Performance	05
4	Determination of Haematocrit	Demonstration	05
5	Hemocytometry	Performance	05
6	Total RBC Count	Performance	10
7	Determination of RBC Indices	Demonstration	05
8	Total Leucocytes Count (TLC)	Performance	10
9	Preparation And Examination Of Blood Smear	Performance	10
10	Differential Leucocyte Count (DLC)	Performance	10
11	Absolute Eosinophil Count	Demonstration	05
12	Determination of Erythrocyte Sedimentation Rate	Demonstration	05
13	Determination of Blood Groups	Performance	05
14	Determination of Bleeding Time and Coagulation Time	Performance	05
BIO	CHEMISTRY		
1	Demonstration of Uses Of Instruments Or Equipment	Demonstration	05
2	Qualitative Analysis of Carbohydrates, Proteins And Lipids	Performance	10
3	Normal Characteristics of Urine	Performance	04
4	Abnormal Constituents of Urine	Performance	10
5	Quantitative Estimation of Glucose, Total Proteins, Uric Acid in Blood	Performance	05
6	Liver Function Tests	Demonstration	04
7	Kidney Function Tests	Demonstration	04
8	Lipid Profile	Demonstration	04
9	Interpretation and Discussion of Results of Biochemical Tests	Demonstration	04
	Total		140

Practical / Clinical Physiology / OPD Wise Teaching Hours Distribution – 330 Hours

CLIN	IICAL PHYSIOLOGY		
1	Case Taking & Approach to pt	Performance	05
2	General Concept Of Examination	Performance	10
3	Examination of muscles, joints,	Performance	10
4	Cardio-Vascular System – Blood Pressure Recording, Radial Pulse, ECG, Clinical Examination	Performance	15
5	Nervous System- Clinical Examination	Performance	15
6	Respiratory System- Clinical Examination, Spirometry, Stethography	Performance	15
7	Special Senses- Clinical Examination	Performance	15
8	Reproductive System- Diagnosis of Pregnancy	Performance	05
9	Gastrointestinal System- Clinical Examination	Performance	10
	Total		100
OP	– APPLIED PHYSIOLOGY		
1	OPD (Applied Physiology)	Demonstration	90
		& Performance	
	TOTAL		90

Semester Wise Distribution of Theory, Practical, Clinical Physiology & OPDs

Sr. No	Theory, Practical, Clinical Physiology & OPDs
	SEMESTER - 1
Module 1.	Theory :
Organization of the human body	General physiology
	Bio Physics Science
	Skin & The integumentary System
	Clinical Physiology :
	Case Taking & Approach to Patient
	General concept of examination.
Module 2	Theory :
Principals of Support System &	Body Fluid & Immune Mechanism
Movements with transportation	Nerve Muscles Physiology

	Practical :
	Study of the Compound Microscope
	Collection of Blood Samples
	Estimation of Haemoglobin Concentration
	Determination of Haematocrit
	Total PRC Count
	Total RBC Coulit Determination of BBC Indians
	Determination of RBC indices
	Total Leucocytes Count (TLC)
	Preparation And Examination Of Blood Smear
	Differential Leucocyte Count (DLC)
	Absolute Eosinophil Count
	Determination of Erythrocyte Sedimentation Rate
	Determination of Blood Groups
	 Determination of Bleeding Time and Coagulation Time
	Clinical Physiology :
	Examination of muscles, joints,
4 th Month – 5 days PA	
6 th Month – 10 days TT – including Viva Vo	ce
	SEMESTER – 2
Module 3.	Theory :
Vital Maintenance of the human body	Cardiovascular System
	Respiratory & Environmental Physiology
	Clinical Physiology :-
	Cardio-Vascular System – Blood Pressure Recording, Radial Pulse, ECG, Clinical
	Examination
	Respiratory System- Clinical Examination, Spirometry, Stethography
	OPD (Applied Physiology)

Module 4	Theory :
Control system of the human body with	Central Nervous System
continuity	Endocrinology
continuity	
	Chinical Physiology .
	Nervous System- Clinical Examination
	Special Senses- Clinical Examination
	Reproductive System – Diagnosis of pregnancy
	• OPD
9 th Month – 5 days PA	
12 ¹¹ Month – 10 days TT – including Viva V	/oce
	SEMESTER - 3
Module 5.	Theory :
Energy maintenance of human body	Reproductive System
	Special Senses
	Digestion System & Nutrition
	Renal Physiology
	Bio-Chemistry
	Practical : -
	 Demonstration of Uses Of Instruments Or Equipment
	 Qualitative Analysis of Carbohydrates, Proteins And Lipids
	Normal Characteristics of Urine
	Abnormal Constituents of Urine
	Quantitative Estimation of Glucose, Total Proteins, Uric Acid in Blood
	Liver Function Tests
	Kidney Function Tests
	Lipid Profile
	 Interpretation and Discussion of Results of Biochemical Tests
	Clinical Physiology :-

	Gastrointestinal System- Clinical Examination
	• OPD
14 th Month – 5 days P	A
18 th Month – 12 days	TT – including Viva Voce – University exam

5.COURSE CONTENT

- 1. The purpose of a course in physiology is to enable the students to learn the functions, processes and inter-relationship of the different organs and systems of the normal disturbance in disease so that the student is familiar with normal standards of reference while diagnosing deviations from the normal, and while treating the patients.
- 2. There can be no symptoms of disease without vital force animating the human organism and it is primarily the vital force which is maintaining state of health
- 3. Physiology shall be taught from the stand point of describing physical processes underlying them in health;
- 4. Applied aspect of every system including the organs is to be stressed upon while teaching the subject.
- 5. Correlation with Organon and philosophy especially the concept of health and its derangement the interplay of different cell, tissue organ and system, their representation in repertory and integration in HMM
- 6. There should be close co-operation between the various departments while teaching the different systems;

- 7. There should be joint courses between the two departments of anatomy and physiology so that there is maximum co-ordination in the teaching of these subjects;
- 8. Seminars should be arranged periodically and lecturers of anatomy, physiology and bio-chemistry should bring home the point to the students that the integrated approach is more meaningful.

THEORY:-

1. GENERAL PHYSIOLOGY:

- Introduction to cellular physiology
- Cell Junctions
- Transport through cell membrane and resting membrane potential Body fluids compartments
- Homeostasis

2. BIO-PHYSICAL SCIENCES

- Filtration Ultra-filtration Osmosis
- Diffusion Adsorption Hydrotropy, Colloid
- Donnan Equilibrium Tracer elements Dialysis
- Absorption Assimilation Surface tension

3. SKIN & THE INTEGUMENTARY SYSTEM

- Skin & Integumentary System
- Layers of Skin
- Function of Skin
- Sweat
- Body temperature and its regulation

4. BODY FLUID & IMMUNE MECHANISM

- Blood
- Plasma Proteins
- Red Blood Cells
- Erythropoiesis
- Haemoglobin and Iron Metabolism

- Erythrocyte Sedimentation Rate
- Packed Cell Volume and Blood Indices
- Haemolysis and Fragility of Red Blood Cells
- White Blood Cell
- Immunity
- Platelets
- Haemostasis
- Coagulation of Blood
- Blood groups
- Blood Transfusion
- Blood volume
- Reticulo-endothelial System and Tissue Macrophage Lymphatic System and Lymph
- Tissue Fluid and Oedema

5. NERVE MUSCLE PHYSIOLOGY

- Physiological properties of nerve fibres
- Nerve fibre- types, classification, function, Degeneration and regeneration of peripheral nerves
- Neuro-Muscular junction
- Physiology of Skeletal muscle
- Physiology of Cardiac muscle
- Physiology of Smooth muscle
- EMG

6. CARDIO-VASCULAR SYSTEM

- Introduction to cardiovascular system Properties of cardiac muscle
- Cardiac cycle
- General principles of circulation Heart sounds
- Regulation of cardiovascular system
- Normal and abnormal Electrocardiogram (ECG)
- Cardiac output

- Heart rate
- Arterial blood pressure
- Radial Pulse
- Regional circulation- Cerebral, Splanchnic, Capillary, Cutaneous & skeletal muscle circulation.
- Cardiovascular adjustments during exercise

7. RESPIRATORY SYSTEM AND ENVIRONMENTAL PHYSIOLOGY

- Physiological anatomy of respiratory tract
- Mechanism of respiration: Ventilation, diffusion of gases
- Transport of respiratory gases Regulation of respiration Pulmonary Function Test
- High altitude and space physiology Deep sea physiology
- Artificial respiration
- Effects of exercise on respiration

8. CENTRAL NERVOUS SYSTEM

- Introduction to nervous system Neuron
- Neuroglia
- Receptors
- Synapse
- Neurotransmitters
- Reflex
- Spinal cord
- Somato-sensory system and somato-motor system Physiology of pain
- Brain stem, Vestibular apparatus
- Cerebral cortex
- Thalamus
- Hypothalamus
- Internal capsule
- Basal ganglia
- Limbic system

- Cerebellum Posture and equilibrium
- Reticular formation
- Proprioceptors
- Higher intellectual function Electroencephalogram (EEG)
- Physiology of sleep
- Cerebro-spinal fluid (CSF) Autonomic Nervous System (ANS)
- 9. ENDOCRINOLOGY
 - Introduction of endocrinology and importance of PNEI axis Hormones and hypothalamo- hypophyseal axis
 - Pituitary gland
 - Thyroid gland
 - Parathyroid
 - Endocrine functions of pancreas Adrenal cortex
 - Adrenal medulla
 - Endocrine functions of other organs

10. REPRODUCTIVE SYSTEM

- Male reproductive system-testis and its hormones; seminal vesicles, prostate gland, semen.
- Introduction to female reproductive system
- Menstrual cycle
- Ovulation
- Menopause
- Infertility
- Pregnancy and parturition Placenta
- Pregnancy tests
- Mammary glands and lactation Fertility
- Foetal circulation

11. SPECIAL SENSES

- Eye: Photochemistry of vision, Visual pathway, Pupillary reflexes, Colour vision, Errors of refraction
- Ear: Auditory pathway, Mechanism of hearing, Auditory defects

- Sensation of taste: Taste receptors, Taste pathways
- Sensation of smell: Olfactory receptors, olfactory, pathways Sensation of touch

12. DIGESTIVE SYSTEM & NUTRITION

- Introduction to digestive system
- Composition and functions of digestive juices
- Physiological anatomy of Stomach, Pancreas, Liver and Gall bladder, Small intestine, Large intestine
- Movements of gastrointestinal tract
- Gastrointestinal hormones
- Digestion and absorption of carbohydrates, proteins and lipids

13. RENAL PHYSIOLOGY

- Physiological anatomy of kidneys and urinary tract
- Fluid & electrolyte with acid base balance need to be include
- Renal circulation
- Urine formation: Renal clearance, glomerular filtration, tubular reabsorption, selective secretion, concentration of urine, acidification of urine
- Renal functions tests
- Micturition

14. BIO-CHEMISTRY THEORY

- Carbohydrates: (Chemistry, Metabolism, Glycolysis, TCA, HMP, Glycogen synthesis and degradation, Blood glucose regulation)
- Lipids: (Chemistry, Metabolism, Intestinal uptake, Fat transport, Utilization of stored fat, Activation of fatty acids, Beta oxidation and synthesis of fatty acids)
- Proteins: (Chemistry, Metabolism, Digestion of protein, Transamination, Deamination Fate of Ammonia, Urea cycle, End products of each amino acid and their entry into TCA cycle
- Enzymes: (Definition, Classification, Biological Importance, Diagnostic use, Inhibition)
- Vitamins: (Daily requirements, Dietary source, Disorders and physiological role)
- Minerals (Daily requirement, Dietary Sources, Disorders and physiological role) mineral metabolism
- Organ function tests

PRACTICAL & CLINICAL PHYSIOLOGY:-

No	Practical	Demonstration / Performance	
	Haematology		
1	Study of the Compound Microscope	Performance	
2.	Collection of Blood Samples	Performance	
3	Estimation of Haemoglobin Concentration	Performance	
4	Determination of Haematocrit	Demonstration	
5	Hemocytometry	Performance	
6	Total RBC Count	Performance	
7	Determination of RBC Indices	Demonstration	
8	Total Leucocytes Count (TLC)	Performance	
9	Preparation And Examination Of Blood Smear	Performance	
10	Differential Leucocyte Count (DLC)	Performance	
11	Absolute Eosinophil Count	Demonstration	
12	Determination of Erythrocyte Sedimentation Rate	Demonstration	
13	Determination of Blood Groups	Performance	
14	Determination of Bleeding Time and Coagulation Time	Performance	
	Biochemistry		
1	Demonstration of Uses Of Instruments Or Equipment	Demonstration	
2	Qualitative Analysis of Carbohydrates, Proteins And Lipids	Performance	
3	Normal Characteristics of Urine	Performance	
4	Abnormal Constituents of Urine	Performance	
5	Quantitative Estimation of Glucose, Total Proteins, Uric Acid in Blood	Performance	
6	Liver Function Tests	Demonstration	
7	Kidney Function Tests	Demonstration	
8	Lipid Profile	Demonstration	
9	Interpretation and Discussion of Results of Biochemical Tests	Demonstration	
	Clinical Physiology & OPD		
1	Case Taking & Approach to pt	Performance	
2	General Concept Of Examination	Performance	

3	Examination of muscles, joints,	Performance
4	Cardio-Vascular System – Blood Pressure Recording, Radial Pulse, ECG, Clinical Examination	Performance
5	Respiratory System- Clinical Examination, Spirometry, Stethography	Performance
6	Nervous System- Clinical Examination	Performance
7	Special Senses- Clinical Examination	Performance
8	Reproductive System- Diagnosis of Pregnancy	Performance
9	Gastrointestinal System- Clinical Examination	Performance
10	OPD	Demonstration & Performance

6. TEACHING LEARNING METHODS

Different teaching-learning methods must be apply for understanding holistic and integrated way of physiology. There has to be classroom lectures, small group discussions, case discussion where case based learning (CBL) and problem based learning (PBL). In the applied physiology, Case discussion (CBL-PBL) methods are helpful for students. AV – Methods for demonstration of physiological processes will be very helpful. In process of Clinical Physiology – DOAP (Demonstration – Observation – Assistance – Performance) is very well applicable.

Practical & Clinics are the best medium to demonstrate all physiological processes in objective ways. They help us to understand and explain the physiological signs. Haematological & Biochemistry practical are done in laboratory, where one can apply the DOAP (Demonstration – Observation – Assistance – Performance) & OSPE (Objective Structured Practical Examination) methods. All this should be recorded in the journal.

In the clinics / OPD / IPD / Bed side there shall be exposure of Clinical & Applied Physiology. These can be demonstrated by DOAP (Demonstration – Observation – Assistance – Performance) & OSCE (Objective Structured Clinical Examination) methods. These methods are more objective, and t will help students to develop the attitude as clinicians. In these type of exposure students has to observe the teachers or consultants and able to corelate what they have learned in clinical physiology classes. They do not have to examine the patient by themselves but only observe the teachers. They can keep the record of all physiological function which are disturbed.

Other Innovative methods include preparation of charts and models.

7.CONTENT MAPPING (COMPETENCY TABLE)

SEMESTER – 1

Topic No	1
Theory	General Physiology
Practical	-
Clinical Physiology	Case Taking & Approach to Patient

Learning Outcome: -

At the end of the chapter General Physiology, the student must be able to -

- Discuss the principles of cellular physiology.
- Classify cell junctions.
- Explain the process of transport through cell membrane
- Describe the resting membrane potential.
- Categorise body fluids compartments.
- Explain the concept of homeostasis

S.No	Generic	Subject	Miller'	Specific	Specific Learning	Bloom's	Guilbert's	Must know/	TL method /	Format	Summ	Integration -
	competency	area	s Level	competency	Objectives /	domain	level	desirable to	media	ive	ative	Horizontal /
					outcomes			know /		Assess	Assess	Vertical /
								nice to know		ment	ment	Spiral
Hom	Integration Of	Introducti	Knows	Definition &	Define	Cognitive	Level 1	Must know	Lecture,	MCQs	_	
UG-PB	Information	on & Cell		general	Physiology.		(Remember		Small group			
1.1	(K-1)			introduction			/ recall)		discussion			
Hom			Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	Viva	Organon
UG-PB			How		importance of		Understand		Small group		Voce	
1.2					learning		/ interpret		discussion			
					physiology in a							
					homoeopathic							
					course							
Hom			Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB			How		Internal &		Understand	Know	Small group		Viva	
1.3					external		/ interpret		discussion		Voce	

					environment of							
					Body							
									-			
Hom	Integration Of	Homeosta	Knows	Describe and	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB	Information	sis	How	discuss the	regulation of		Understand	know	Small group		Viva	Pathology
1.4	(K-1)		W	principles of	internal		/ interpret		discussion		Voce	Organon
				homeostasis	environment							
Hom			Knows		Explain	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	
UG-PB			How		homoeostasis &		Understand		Small group		Viva	
1.5					it's control		/ interpret		discussion		Voce	
	late graties of	The	Kaavua	Describeths	Describeths	Comitivo		N 4. set lue es s	Lootuno	6400	1400	Anatana
HOM	Integration Of	rne Callular	Knows	Describe the	Describe the	Cognitive	Level 2	WUST KNOW	Lecture,	SAUS	LAQS,	Anatomy
UG-PB	Information	Cellular	HOW	structure and	structure of cell		Understand		Small group		viva	Pathology
1.6	(K-1)	Level		functions of a			/ interpret		discussion		Voce	
		Organisati		mammalian cell								
Hom		on	Knows		Describe the	Cognitive		Mustknow	Lecture	SAOs	SAOs	Pathology
			How		functions of cell	cognitive	Linderstand	in ase know	Small group	5/105	Viva	Organon
17			110 W		Tunctions of cen		/ interpret		discussion		Viva	Organon
1.7							/ interpret		uiscussion		VUCE	
Hom			Knows		List the	Cognitivo	Loval 1	Must know	Locturo	MCOs	SAOc.	
			KIIUWS		organellos	Cognitive	(Romombor	IVIUST KITOW	Small group	wicus	Vivo	
1.0									discussion		Viva	
1.8			Kasara		present in cell	Caracitica	/ recall)	NA	discussion	64.0-	voce	Dethele are
Hom			KNOWS		Enumerate the	Cognitive	Level 1	IVIUST KNOW	Lecture,	SAUS	LAQS,	Pathology
UG-PB					functions of		(Remember		Small group		viva	
1.9					organelles	a	/ recall)		discussion		Voce	
Hom			Knows		List the name of	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB					intracellular		(Remember	Know	Small group		Viva	
1.10					junction		/ recall)		discussion		Voce	
<u> </u>						o		N12 1 1		1466	10	. .
Hom			Knows		Discuss the	Cognitive	Level 2	NICE to know	Lecture,	MCQs	Viva	Anatomy
UG-PB			How		importance of		Understand		Small group		Voce	
1.11					intracellular		/ interpret		discussion			
					Junction							

Hom	Integration Of		Knows	To understand	Explain Passive	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB	Information		How	transport	transportation		Understand	Know	Small group		Viva	
1.12	(K-1)			mechanisms			/ interpret		discussion		Voce	
				across cell								
				membranes								
Hom			Knows		Explain Active	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB			How		Transportation		Understand	Know	Small group		Viva	
1.13							/ interpret		discussion		Voce	
Hom			Knows		Explain Vesicular	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB			How		Transportation		Understand		Small group		Viva	
1.14							/ interpret		discussion		Voce	
Hom	Information	Clinical &	Shows	To conduct	Demonstrate	Affective	Level 1	Must know	Demonstrati	Observ	DOPS	
UG-PB	Gathering ,	Applied	How	History taking	history taking		Receiving		on, Role	ation		
1.15	Integration Of	Physiolog			process				Play			
	information,	у										
	Problem											
	Integration											
	(K-2)											

Topic No	2
Theory	Bio Physics Science
Practical	-
Clinical Physiology	-

At the end of the chapter Bio Physics Science, the student must be able to -

- Define biophysics.
- Illustrate the biophysical activity across the cell membrane.
- Explain membrane potential.
- Describe the chemical bond & solution.

S.No	Generic	Subject	Miller's	Specific	Specific Learning	Bloom's	Guilbert's	Must know	TL method /	Formati	Summ	Integration -
	competency	area	Level	competency	Objectives /	domain	level	/ desirable	media	ve	ative	Horizontal /
					outcomes			to know /		Assessm	Assess	Vertical /
								nice to		ent	ment	Spiral
								know				
Hom	Integration	Bio	Knows	To understand	Define the terms	Cognitive	Level 1	Nice to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB	Of	Physics		the bio-	Filtration&		(Remember	know	Small group		Viva	
2.1	Information	Science		Physical	Ultrafiltration		/ recall)		discussion		Voce	
Hom	(K-1)		Knows	science of cell	Define intra	Cognitive	Level 1	Nice to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB				membrane	cellular		(Remember	know	Small group		Viva	
2.2					communication		/ recall)		discussion		Voce	
Hom			Knows		Define the terms	Cognitive	Level 1	Nice to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB					adsorption &		(Remember	know	Small group		Viva	
2.3					Absorption		/ recall)		discussion		Voce	
Hom			Knows		Define the terms	Cognitive	Level 1	Nice to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB					Hydro trophy,		(Remember	know	Small group		Viva	Medicine
2.4					Dialysis &		/ recall)		discussion		Voce	
					Assimilation							
Hom			Knows		Define Surface	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB					Tension		(Remember	Know	Small group		Viva	Medicine
2.5							/ recall)		discussion		Voce	
Hom	Integration		Knows	Discuss the	Explain Action	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB	Of		How	Membrane	Potential		Understand		Small group		Viva	
2.6	Information			Physiology			/ interpret		discussion		Voce	
Hom	(K-1)		Knows	&Membrane	Define Donnan	Cognitive	Level 1	Nice to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB				Potential	Equilibrium	-	(Remember	know	Small group		Viva	
2.7							/ recall)		discussion		Voce	

SAQs, Biochemistry Viva Voce SAQs,
Viva Voce SAQs,
Voce SAQs,
SAQs,
Viva
Voce
SAQs,
Viva
Voce
SAQs,
Viva
Voce
SAQs, Biochemistry
Viva
Voce
SAOs Biochemistry
Viva
Voce
Viva Biochemistry
Voce
Vote
SAOs Biochemistry
Viva
Voce
SAOs Biochemistry
Viva
Voce
SAOs. Biochemistry
Viva
Voce

Hom		Knows	Describe the	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Biochemistry
UG-PB		How	maintaining of		Understand		Small group		Viva	
2.18			pH: Buffer		/ interpret		discussion		Voce	
			System							

Topic No	3
Theory	Skin & The Integumentary System
Practical	-
Clinical Physiology	Demonstration of General Examination

At the end of the chapter Skin & the Integumentary System, the student must be able to –

- Discuss the functions of skin, nail, and hair.
- Conduct examination of the Integumentary System under supervision.

C No	Comorio	Cublert	Millow-	Creatitie	Cupatifie Leave in -	Diaguate		NAust Image		Farmat	C	lint a gradi a ra
5.INO	Generic	Subject	iviller's	Specific	Specific Learning	BIOOM'S	Guilbert's	Wust know/	IL method /	Format	Summat	Integration
	competency	area	Level	competency	Objectives /	domain	level	desirable to	media	ive	ive	- Horizontal
					outcomes			know / nice		Assess	Assessm	/ Vertical /
								to know		ment	ent	Spiral
Hom	Integration Of	Skin &	Knows	Understand the	Discuss layers of	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Information	The	How	Structure &	skin with their		Understand		Small group		Viva	Medicine
3.1	(K-1)	Integum		function of Skin	functions		/ interpret		discussion		Voce	Organon
		entary										Materia
		System										Medica
												Pharmacy
Hom			Knows		Relate the	Cognitive	Level 2	Must Know	Lecture,	SAQs	LAQs,	Anatomy
UG-PB			How		structure of hair		Understand		Small group		Viva	
3.2					with its function		/ interpret		discussion		Voce	
Hom			Knows		Relate the	Cognitive	Level 2	Desirable To	Lecture,	SAQs	SAQs,	Anatomy
UG-PB			How		structure of nail		Understand	Know	Small group		Viva	
3.3					with its function		/ interpret		discussion		Voce	
Hom			Knows		Relate the	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB			How		structure of		Understand		Small group		Viva	
3.4					different glands		/ interpret		discussion		Voce	
					of skin with their							
					functions							
Hom			Knows		Describe the	Cognitive	Level 2	Must Know	Lecture,	MCQs	SAQs,	
UG-PB			How		glands of skin		Understand		Small group		Viva	
3.5							/ interpret		discussion		Voce	
Hom	1		Knows]	Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB			How		regulation of		Understand		Small group		Viva	
3.6					body		/ interpret		discussion		Voce	
					temperature							
					through skin							
Hom	Information	Clinical	Shows	To demonstrate	Demonstrate the	Psycho	Level 1	Must know	DOAP	Observ	OSCE	Medicine
UG-PB	Gathering ,	&	How	General	examination of	Motor	Observe /			ation		
3.7	Integration Of	Applied		examination	Skin & Mucus		Imitate					
	information,				Membrane							
	, ,											

Hom	Problem	Physiolo	Shows	[Demonstrate the	Psycho	Level 1	Must know	DOAP	Observ	OSCE	Medicine
UG-PB	Integration	gy	How	e	examination of	Motor	Observe /			ation		
3.8	(K-2)			(Conjunctive, Nail		Imitate					
				8	& Glands							

Topic No	4
Theory	Nerve Muscle Physiology
Practical	-
Clinical Physiology	Demonstrate effect of mild, moderate and severe exercise and record changes in cardiorespiratory parameters
	Perform Ergography, Examination of muscles, joints,

At the end of the chapter Nerve Muscle Physiology, the student must be able to -

- Discuss the properties and functions of neurons.
- Illustrate a neuromuscular junction.
- Classify muscle fibres.
- Describe the properties of skeletal, cardiac, and smooth muscle fibres.
- Demonstrate effect of mild, moderate and severe exercise and record changes in cardiorespiratory parameters.

• Perform Ergography under supervision.

S.No	Generic competency	Subject area	Miller's Level	Specific competency	Specific Learning Objectives / outcomes	Bloom's domain	Guilbert's level	Must know / desirable to know / nice to know	TL method / media	Format ive Assess ment	Summat ive Assessm ent	Integration - Horizontal / Vertical / Spiral		
Hom UG-PB 4.1	Integration Of Information	Nerve Muscle Physiol	Knows	To understand the functional anatomy of	Define Neuron Classify neurons	Cognitive	Level 1 (Remember/ recall)	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy		
Hom UG-PB 4.2	(K-1)	ogy	Knows How	Nerve fibers	Explain structure and function of neuroglia	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Anatomy		
Hom UG-PB 4.3	Integration Of Information (K-1)		Knows	To understand the physiological properties of	Define the terms Excitability & Conductivity	Cognitive	Level 1 (Remember/ recall)	Desirable To Know	Lecture, Small group discussion	SAQs	SAQs Viva Voce			
Hom UG-PB 4.4		K	Knows How	- nerve noers	Discuss graded & action potential	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce			
Hom UG-PB 4.5	Integration Of Information		Knows How	To understand the degeneration	Discuss the causes & grade of injury	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Medicine		
Hom UG-PB 4.6	(К-1)		Knows How	Knows How	nows .ow regeneration of neuron	Identify the stages of degeneration	Cognitive	Level 2 Understand / interpret	Desirable To Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Pathology	
Hom UG-PB 4.7			Knows How		Discuss the stages of regeneration	Cognitive	Level 2 Understand / interpret	Desirable To Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce			
Hom UG-PB 4.8	Integration Of Information (K-1)		Knows How	To describe Neuromuscula r Junction	Illustrate the Structure of Neuro-Muscular Junction	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy		

Hom		Knows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Anatomy	
UG-PB		How		Neuromuscular		Understand		Small group		Voce		
4.9				Transmission		/ interpret		discussion				1
Hom		Knows		Discuss	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Medicine	
UG-PB		How		Disorders of		Understand		Small group		Viva		
4.10				neuromuscular		/ interpret		discussion,		Voce		
				Junction				CBL, PBL				
Hom	Integration	Knows	To understand	Illustrate the	Cognitive	Level 2	Desirable To	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB	Of	How	the	mechanism of		Understand	Know	Small group		Viva		
4.11	Information		physiological	skeletal muscle		/ interpret		discussion		Voce		
	(K-1)		properties of	contraction.								
			Skeletal	Describe the								
			Muscle	general								
				mechanism of								
				muscle								
				contraction.								
Hom		Knows		Discuss	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva		
UG-PB		How		Molecular		Understand		Small group		Voce		
4.12				mechanism		/ interpret		discussion				1
Hom		Knows		Discuss	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Anatomy	
UG-PB		How		Energetic of		Understand		Small group		Voce		
4.13				muscle		/ interpret		discussion				
				contraction								
Hom		Knows		Discuss	Cognitive	Level 2	Desirable To	Lecture,	SAQs	SAQs,		
UG-PB		How		Excitation of		Understand	Know	Small group		Viva		
4.14				skeletal muscle		/ interpret		discussion		Voce		
Hom	Integration	Knows	To understand	Explain	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB	Of	How	the	Contraction of		Understand		Small group		Viva		
4.15	Information		physiological	smooth muscle		/ interpret		discussion		Voce		
	(K-1)		properties of									
			Smooth		A		D · · · · -		646			
Hom		Knows	Muscle	Explain Nervous	Cognitive	Level 2	Desirable To	Lecture,	SAUS	SAQS,	Medicine	
UG-PB		How		& normonal		Understand	кпоw	Small group		Viva		
4.16				control of		/ interpret		discussion		Voce		
				smooth muscle								
				contraction								

Hom	Integration		Knows	To understand	Illustrate	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB	Of		How	the	Functional		Understand		Small group		Viva		
4.17	Information			physiological	Anatomy of		/ interpret		discussion		Voce		
	(K-1)			properties of	cardiac Muscle								
Hom			Knows		Explain process	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Anatomy	
UG-PB			How	Widdele	of excitability &		Understand		Small group		Viva		
4.18					contractility		/ interpret		discussion		Voce		
							-						
Hom			Knows		Explain	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Medicine	
UG-PB			How		properties of		Understand		Small group		Viva		
4.19					cardiac muscle		/ interpret		discussion		Voce		
Hom			Knows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	Medicine	
UG-PB			How		disorders of		Understand		Small group		Viva		
4.20					Skeletal		/ interpret		discussion		Voce		
					Muscles								
Hom	Information	Clinical	Shows	Demonstrate	Measure the	Psycho	Level 2	Must Know	Demonstrati	Observ	OSCE	Medicine	
UG-PB	Gathering,	&	How	effect of mild,	parameters of	Motor	Control		on	ation			
4.21	Integration	Applied		moderate and	cardio-								
	Of	Physiol		severe	pulmonary								
	information.	, ogv Of		exercise and	changes during								
	Problem	Muscle		record	exercise								
	Integration			changes in									
	(K-2)			cardio -									
	(1(2)			respiratory									
				narameters									
Hom			Shows	Perform	Demonstrate	Psycho		Nice to know	Demonstrati	Observ	OSCE	Medicine	
				Feriorin	the sequence of	Motor			Demonstrati	ation	USCL	Wedicine	
1 22			1000	LIBOBIAPILY	nerforming	WOLU	Imitate			ation			
4.22					orgography		minate						
					ergographiy.								

Topic No	5
Theory	Body Fluid& Immune Mechanism
Practical	Hematology
Clinical Physiology	

At the end of the chapter on Body Fluid & Immune System & Hematology, the student must be able to -

- Describe the composition and functions of blood components
- Describe the origin, Forms, Variations and functions of plasma Protein
- Illustrate the synthesis of Haemoglobin
- Describe RBC formation (erythropoiesis) and its regulation
- Describe WBC formation (granulopoiesis) and its regulation
- Classify Anaemias & Jaundice
- Explain the role of lymphoid tissues in immune responses
- Classify different types of immunity
- Describe the development and regulation of immunity.
- Explain the formation and functions of platelets.
- Illustrate the physiological basis of haemostasis
- Describe different blood groups
- Discuss the clinical importance of blood grouping

- Describe blood transfusion
- Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups, BT/CT

S.No	Generic competenc y	Subject area	Miller's Level	Specific competency	Specific Learning Objectives / outcomes	Bloom's domain	Guilbert's level	Must know / desirable to know / nice to know	TL method / media	Format ive Assess ment	Summa tive Assess ment	Integration - Horizontal / Vertical / Spiral
Hom UG-PB 5.1	Integration Of Information (K-1)	Blood Fluid and It's Constitue	Knows How	Describe the composition and functions of blood	Discuss the composition of Blood	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	LAQs, Viva Voce	Anatomy
Hom UG-PB 5.2		nts	Knows How	- components	Describe the function of blood	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Anatomy Pathology Medicine
Hom UG-PB 5.3			Knows		Define serum	Cognitive	Level 1 recall	Must Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Pathology Medicine
Hom UG-PB 5.4			Knows How		Explain the difference between serum & Plasma	Cognitive	Level 2 Understand / interpret	Desirable to Know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Biochemistry
Hom UG-PB 5.5	Integration Of Information (K-1)		Knows How	Describe the origin, Forms, Variations and functions of	Discuss the origin of plasma protein	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry
Hom UG-PB 5.6			Knows How		Explain the forms and functions of plasma proteins	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Pathology

Hom		Kr	nows		Identify the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB		He	low		relation of diet		Understand	Know	Small group		Viva	
5.7					to plasma		/ interpret		discussion		Voce	
					protein							
Hom	Integration	Kr	nows	Describe and	Illustrate the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB	Of	Н	low	discuss the	structure of		Understand	Know	Small group		Viva	
5.8	Information			synthesis and	Haemoglobin		/ interpret		discussion		Voce	
	(K-1)			functions of								
llana	-			Haemoglobin	Discuss the	Consitius		Must Kasur	Lastura	6406	6405	Diashamiatra
HOM		Kr	nows		Discuss the	Cognitive	Level 2	WUST KNOW	Lecture,	SAUS	SAUS,	Biochemistry
UG-PB		H	low		synthesis of		Understand		Small group		viva	
5.9		14			Haemoglobin	Constitutions	/ Interpret	N Asset Luc asso	discussion	64.0-	voce	Diashawiatay
Hom		Kr	nows		Define Normal	Cognitive	Level 1	Must know	Lecture,	SAQS	LAQS,	Biochemistry
UG-PB					function of		recall		Small group		viva	Materia
5.10		14			Haemoglobin	Constitutions	1	N Asset Luc asso	discussion	MCO	voce	Medica
HOM		Kr	nows		State normal	Cognitive		Must know	Lecture,	INICUS	SAQS,	wedicine
UG-PB					value of		recall		Small group		Viva	
5.11					umerent				discussion		voce	
					Varieties of							
Hom	-	Kr.	nows		Explain Iron	Cognitivo		Dosirable to	Locturo	SAOc	SAOc.	Riochomistry
					metabolism	Cognitive	Level 2 Understand	Know	Small group	SAUS	Viva	вюспетнізсту
5 12			10 **		metabolism		/ interpret	KIIOW	discussion		Viva	
Hom	Integration	Kr.	nows	Doscribo PBC	Discuss the	Cognitivo		Dosiro to	Locturo	SAOc	SAOc	Anatomy
	Of			formation	pormal structure	Cognitive	Level 2 Understand	Know	Small group	SAUS	Viva	Pathology
5 13	Information		000	(erythronoiesis	of RBC with its		/ interpret	KIIOW	discussion		Voce	Medicine
5.15	(K_1)			& ite	morphology		/ interpret		01300331011		VOCE	Wedlenie
Hom	(((1)))	Kr	nows	regulation) and	discuss stages	Cognitive	Level 2	Must know	Lecture	SAOs	LAOs	
LIG-PB				its functions	and regulation of	cognitive	Understand	Wast know	Small group	3703	Viva	
5 14			0.00		erythronoiesis		/ interpret		discussion		Voce	
5.14					ci y tin oporesis		/ merpret		alseassion		VOCC	
Hom	1	Kr	nows		Discuss the fate	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB		н	low		of RBC		Understand	Know	Small group		Viva	
5.15							/ interpret		discussion		Voce	
Hom	1	Kr	nows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		Н	low		hemolysis		Understand	Know	Small group	- •-	Viva	FMT
5.16					, -		/ interpret		0		Voce	

								discussion,			
								CBL			
Hom	Information	Knov	/s Describe	Classify the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Medicine,
UG-PB	Gathering	How	different types	anemia		Understand		Small group		Viva	Pathology
5.17	,Integration		of anemia &	according to		/ interpret		discussion,		Voce	
	Of		Jaundice	their morphology				CBL, PBL			
	information			& etiology				,			
Hom	Problem	Knov	/5	Discuss the	Cognitive		Desirable to	Lecture	MCOs	LAOs	Medicine
	Integration	How	15	different anomia	cognitive	Understand	know	Small group	WICQ3	Viva	Pathology
5 1 Q	(K_2)	11000		unici ent anemia		/ interpret	KIIOW	discussion		Viva	Matoria
5.10	(1(-2)					/ interpret				VULE	Madica
								CDL, PDL			Dependence
					C		D 11 1		64.0	64.0	Repertory
Hom		Knov	/S	Enumerate the	Cognitive	Level 2	Desirable to	Lecture,	SAQS	SAQS,	Medicine
UG-PB		How		different		Understand	know	Small group		Viva	
5.19				abnormal		/ interpret		discussion,		Voce	
				functions in				CBL, PBL			
				anaemia							
Hom		Knov	/S	Discuss the fate	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine,
UG-PB		How		of bilirubin		Understand	Know	Small group		Viva	Pathology
5.20						/ interpret		discussion,		Voce	Materia
								CBL			Medica
											Repertory
Hom		Knov	/S	Explain	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Materia
UG-PB		How		Physiological		Understand	Know	Small group		Viva	Medica
5.21				Jaundice		/ interpret		discussion,		Voce	Repertory
								CBL			
Hom		Knov	/S	Explain Jaundice	Cognitive	Level 2	Nice to Know	Lecture.	SAQs	SAQs.	Medicine
UG-PB		How		in new-born		Understand		Small group		Viva	Materia
5 22						/ interpret		discussion		Voce	Medica
5.22						, merpree		CBI			Repertory
Hom	Integration	Knov	s Describe WBC	Explain different	Cognitive		Must know	Lecture	MCOs	SAOs	Medicine
LIG-PR	Of	How	formation	condition of	SoBurine	Understand	Muse know	Small group	111003	Viva	Pathology
5 22	Information	11000	(granulonoiosis			/ interpret		discussion		Voce	1 athology
5.25			(Brandiopolesis	in our body		, interpret		01300331011		vole	
	([]-1)			in our body							

Hom		К	۲nows) and its	Classify different	Cognitive	Level 2	Must Know	Lecture,	SAQs	LAQs,	Pathology	
UG-PB		F	low	regulation	type of WBCs		Understand		Small group		Viva		
5.24				_			/ interpret		discussion		Voce		
Hom		К	knows		Discuss the	Cognitive	Level 2	Must know	Lecture.	SAOs	LAOs.	Pathology	
UG-PB			How		function of WBCs	0080	Understand		Small group	0.100	Viva	Medicine	
5 25					as ner their		/ interpret		discussion		Voce		
5.25					classification		, merpret		uiseussion		1000		
Hom	-	ĸ	nows		Discuss the	Cognitive		Desirable to	Lecture	SAOs	SAOs	Pathology	
					phagocytosis	cognitive	Understand	Know	Small group	3743	Viva	rathology	
5 26		· · ·	10 W		phagocytosis		/ interpret	KIIOW	discussion		Viva		
5.20							/ interpret		uiscussion		VOLE		
Hom		K	nows		Discuss the	Cognitive		Must Know	Lecture	SAOs	SAOs		
					stages of	cognitive	Understand	WIGST KITOW	Small group	JAQS	Viva		
5 27		· · ·	10 W		loucopoiosis with		/ interpret		discussion		Viva		
5.27					its regulation		/ interpret		uiscussion		vole		
11	-		/		Ris regulation	Caractelia	Laural D	Desirable to	l a atuma	640-	640-		
HOM		K	Chows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAUS	SAUS,	Niedicine	
UG-PB			HOW		conditions that		Understand	KNOW	Small group		viva	Surgery	
5.28					cause abnormal		/ Interpret		discussion		voce	Pathology	
					value of								
			-		leucocyte								
Hom	Integration	К	Knows	Describe the	Discuss the	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,	Medicine	
UG-PB	Of		low	formation of	structure &		Understand		Small group		Viva	Pathology	
5.29	Information			platelets,	function of		/ interpret		discussion		Voce		
	(K-1)			functions and	Platelets								
Hom		к	(nows	variations.	Describe the	Cognitive	Level 2	Must Know	Lecture	SAOs	SAOs		
UG-PB			How		Thrombopoiesis	Cobinitie	Understand	indst hillow	Small group	0,100	Viva		
5 30							/ interpret		discussion		Voce		
5.50							, meerpree		uiseussien				
Hom	1	к	knows		Discuss its count	Cognitive	Level 2	Must know	Lecture.	MCOs	SAOs.	Medicine	
UG-PB			How		& variation of	Cobinitie	Understand	indise know	Small group	meds	Viva	inculonic	
5 31					nlatelets		/ interpret		discussion		Voce		
0.01					Placeco								
Hom	Integration	к	Knows	Describe the	Describe the	Cognitive	Level 2	Must know	Lecture.	SAOs	LAOs.	Pathology	
UG-PB	Of		How	physiological	process of		(Understand		Small group		Viva	Materia	
5.32				1- 1	coagulation		/ interpret)		discussion		Voce	Medica	
5.52					ee againtion		,						
· · · · · · · · · · · · · · · · · · ·													

Hom	Information	Knows	basis of	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,		
UG-PB	(K-1)	How	haemostasis	mechanism of		Understand	Know	Small group		Viva		
5.33				haemostasis		/ interpret		discussion		Voce		
Hom		Knows		Explain stages of	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Pathology	
UG-PB		How		clotting		Understand		Small group		Viva	Medicine	
5.34				mechanism		/ interpret		discussion		Voce		
llom	Integration	Knows	Deceribe the	Disques	Cognitivo		Desirable to	Locturo	MCOc	5405	Madiaina	
	integration	Knows	Describe the	Discuss	Cognitive	Level 2	Desirable to	Lecture,	IVICUS	SAUS,	weatche	
	Ul	поw		diagradar		/interstand	KNOW	Small group		Viva		
5.35	(K 1)		importance of	aisoraer		/ interpret		discussion,		voce		
	(K-1)							CBL				
L			coagulation		A				64.0			
Hom	Integration	Knows	Describe	Classify the ABO	Cognitive	Level 1	Must Know	Lecture,	SAQS	LAQS	Pathology	
UG-PB	Of		different blood	blood group		Recall		Small group		Viva		
5.36	Information		groups	system				discussion		Voce		
Hom	(K-1)	Knows		Discuss	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Pathology	
UG-PB		How		Landsteiner's		Understand	Know	Small group		Viva	Medicine	
5.37				Law		/ interpret		discussion		Voce		
Hom	Integration	Knows	Discuss the	Describe Rhesus	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,		
UG-PB	Of	How	clinical	Blood Group		Understand		Small group		Viva		
5.38	Information		importance of			/ interpret		discussion		Voce		
	(K-1)		blood grouping									
Hom		Knows		Discuss Rh	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine,	
UG-PB		How		Incompatibility		Understand		Small group		Viva	Pathology	
5.39						/ interpret		discussion		Voce	Obstetrics &	
											Gynaecology	
Hom	Integration	Knows	Describe blood	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Surgery	
UG-PB	Of	How	transfusion	importance of		Understand		Small group		Viva	Medicine	
5.40	Information			Blood		/ interpret		discussion		Voce		
	(K-1)			transfusion								
Hom	1	Knows		List causes for	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Pathology	
UG-PB				Blood		Recall		Small group		Viva	Medicine	
5.41				transfusion				discussion		Voce		
				reaction								
Hom	Integration	Immune	Knows	Explain the role	Discuss Tissue	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Pathology
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UG-PB	Of	Mechanis	How	of lymphoid	Macrophage		Understand	Know	Small group		Viva	Medicine
5.42	Information	m		tissues in	system		/ interpret		discussion		Voce	
	(K-1)			immune								
Hom			Knows	responses	Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Pathology
UG-PB			How		morphology and		Understand	Know	Small group		Viva	
5.43					functions of		/ interpret		discussion		Voce	
					Lymphocytes &							
					Plasma cell							
Hom			Knows	-	Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB			How		functions of		Understand		Small group		Viva	
5.44					spleen		/ interpret		discussion		Voce	
Hom			Knows	-	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB			How		formation and		Understand	Know	Small group		Viva	
5.45					functions of		/ interpret		discussion		Voce	
					Lymph							
Hom	Integration		Knows	Define and	Define Immunity	Cognitive	Level 1	Must know	Lecture,	MCQs	SAQs,	Pathology
UG-PB	Of			classify			(Remember,		Small group		Viva	Medicine
5.46	Information			different types			recall)		discussion		Voce	Organon
Hom	(K-1)		Knows	of immunity.	Explain different	Cognitive	Level 2	Desirable to	Lecture,	MCQs	LAQs,	Pathology
UG-PB			How		type of immunity		Understand	Know	Small group		Viva	Medicine
5.47							/ interpret		discussion		Voce	
Hom	Integration		Knows	Describe the	Discuss	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,	Pathology
UG-PB	Of		How	development	development of		Understand		Small group		Viva	
5.48	Information			of immunity	immune		/ interpret		discussion		Voce	
	(K-1)			and its	response							
Hom			Knows	regulation	Discuss Auto -	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Pathology
UG-PB			How		immunity &		Understand		Small group		Viva	Medicine
5.49					Hypersensitivity		/ interpret		discussion		Voce	
Hom	1		Knows		Discuss	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Pathology
UG-PB			How		Immunodeficienc		Understand	know	Small group		Viva	Medicine
5.50					y Diseases		/ interpret		discussion		Voce	
Hom	Information	Hematolo	Shows	Estimate Hb,	Estimate Hb in	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB	Gathering	gy	How	RBC, TLC, RBC	the given sample	Motor	(Control)			ation	st	Medicine
5.51	,Integration	Practical		indices, DLC,								
										1	1	I

Hom	Of		Knows	Blood groups,	Interpret results	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB	information	1	How	BT/CT	of Hb estimation		Understand			ation	st	Medicine	
5.52	, Problem						/ interpret						
Hom	Integration		Shows		Perform RBC	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB	(K-2)		How		Total Count	Motor	(Control)			ation	st		
5.53					Estimation								
Hom			Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB			How		results of RBC	•	Understand			ation	st		
5.54					Total Count		/ interpret						
					Estimation								
Hom			Shows		Perform WBC	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB			How		Total Count	Motor	(Control)			ation	st	Medicine	
5.55					Estimation		· · · · ·						
Hom			Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB			How		results of WBC		Understand		_	ation	st	Medicine	
5.56					Total Count		/ interpret						
0.00					Estimation		,e. p. et						
Hom			Shows		Perform WBC DC	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
LIG-PB			How		estimation	Motor	(Control)			ation	st		
5 57					countration	motor	(00111101)			acion	50		
Hom			Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
LIG-PB			How		results of WBC	coginare	Understand	indst latent	2071	ation	st	i utilology	
5 58			11011		DC estimation		/ interpret			ation	50		
Hom	-		Shows		Becord BBC	Psycho	level 2	Must know		Ohserv	Checkli	Pathology	
LIG-PB			How		indices	Motor	(Control)	WIGSt KHOW	DOAI	ation	st	Medicine	
5 59			110 00		malees	Wiotor	(control)			ation	50	Wiedlenie	
Hom	-		Knows		Evaluate RBC	Cognitive	Level 2	Must know	DOAP	Ohserv	Checkli	Pathology	
			How		indices	cognitive	Linderstand	Widst Know	DOAI	ation	ct	Medicine	
5.60			110 00		mules		/ interpret			ation	50	Wedlenie	
Hom			Shows		Perform Blood	Psycho		Mustknow		Observ	Chackli	Pathology	
			How		Group	Motor	(Control)		DUAF	ation	ct	ratiology	
5 61			HOW		identification	WOLU	(Control)			ation	SL		
5.01 Hom	-		Shows			Baycho		Mustknow		Obcorv	Chock	Dathology	
			JIOWS		Periorin BI / CI	PSycho	(Control)	IVIUST KNOW	DUAP	observ	checkli	ratiology	
		'	пом			wotor	(Control)			ation	st		
5.62													

ſ	Hom		К	Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
	UG-PB		F	low		results of BT / CT		Understand			ation	st		
	5.63							/ interpret						
I	Hom		S	shows		Record ESR	Psycho	Level 2	Must know	Demonstrati	Observ	Checkli	Pathology	
	UG-PB		F	low			Motor	(Control)		on	ation	st		
	5.64													
ľ	Hom		К	Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
	UG-PB		F	low		results of ESR		Understand			ation	st		
	5.65					estimation		/ interpret						
I	Hom	Information	S	shows	Describe steps	Record	Psycho	Level 1	Nice to know	Demonstrati	Observ	Observ	Pathology	
	UG-PB	Gathering	F	low	for reticulocyte	Reticulocyte	Motor	(Observe /		on	ation	ation		
	5.66	,Integration			and platelet	count		Imitate)						
	Hom	Of	К	Knows	count	Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
	UG-PB	information	F	low		results of		Understand			ation	st	Medicine	
	5.67	, Problem				Reticulocyte		/ interpret						
		Integration				count								
I	Hom	(K-2)	S	Shows		Record Platelet	Psycho	Level 1	Nice to know	Demonstrati	Observ	Observ	Pathology	
	UG-PB		F	low		Count	Motor	(Observe /		on	ation	ation		
	5.68							Imitate)						
I	Hom		К	Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
	UG-PB			low		results of		Understand			ation	st	Medicine	
	5.69					Platelet Count		/ interpret						

SEMESTER – 2

Topic No	6
Theory	Cardio Vascular System
Practical	
Clinical Physiology	Cardio-Vascular System – Blood Pressure Recording, Radial Pulse, ECG, Clinical Examination

At the end of chapter on Cardio Vascular System & its examination, the student must be able to -

- Describe the functional anatomy of the heart, with respect to its chambers, valves, input and output vessels, AV ring and electrical discontinuity, Conducting system, Coronary supply.
- Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions.
- Discuss the events occurring during the cardiac cycle
- Illustrate the haemo-dynamics of circulatory system
- Explain the regulation of cardiac output
- Describe the normal mode of conduction of the cardiac impulse
- Explain coronary, cerebral, capillary, pulmonary& splanchnic circulation
- List the major diseases of cardiovascular system,
- Record Pulse, blood pressure, and ECG
- Perform the clinical examination of cardiovascular system

S.No	Generic competency	Subject area	Miller's Level	Specific competency	Specific Learning Objectives / outcomes	Bloom's domain	Guilbert's level	Must know / desirable to know / nice	TL method / media	Format ive Assess	Summat ive Assessm	Integration · Horizontal / Vertical /	-
								to know		ment	ent	Spiral	
Hom	Integration	Cardio	Knows	Describe the	Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Human	_
UG-PB	Of	Vascular	How	functional	chambers of		Understand		Small group		Viva	Anatomy	
6.1	Information	System		anatomy of	heart		/ interpret		discussion		Voce		
	(K-1)			heart including									
Hom			Knows	chambers,	Discuss the	Cognitive	Level	Must know	Lecture,	SAQs	SAQs,	Human	
UG-PB			How	Sounds	valves & the		2Understan		Small group		Viva	Anatomy	
6.2					walls of heart		d /		discussion		Voce		
							interpret						
Hom	Integration		Knows	Describe	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine –	
UG-PB	Of		How	Pacemaker	pacemaker of		Understand	know	Small group		Viva	Cardiology	
6.3	Information			tissue and	heart.		/ interpret		discussion		Voce		
Hom	(K-1)		Knows	conducting	Describe the	Cognitive	Level 2	Must Know	Lecture.	SAOs	LAOs.	Anatomy	_
UG-PB			How	system.	conducting		Understand		Small group		Viva	,	
6.4					system		/ interpret		discussion		Voce		

Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB	Of	How	properties of	Morphological		Understand	Know	Small group		Viva		
6.5	Information		cardiac muscle	Properties of		/ interpret		discussion		Voce		
	(K-1)		including its	heart								
Hom		Knows	morphology,	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB		How	electrical,	electrical		Understand	Know	Small group		Viva		
6.6			mechanical and	properties of		/ interpret		discussion		Voce		
			metabolic	heart								
Hom		Knows	functions	Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Anatomy	
UG-PB		How		mechanical &		Understand		Small group		Voce		
6.7				metabolic		/ interpret		discussion				
				Properties of								
				heart								
Hom	Integration	Knows	Discuss the	Define Cardiac	Cognitive	Level 1	Must know	Lecture,	MCQs	SAQs,	Medicine	
UG-PB	Of		events	cycle		(Remember		Small group		Viva		
6.8	Information		occurring			/ recall)		discussion		Voce		
Hom	(K-1)	Knows	during the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,		
UG-PB		How	cardiac cycle	events of cardiac		Understand		Small group		Viva		
6.9				cycle		/ interpret		discussion		Voce		
Hom		Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,		
UG-PB		How		pressure changes		Understand		Small group		Viva		
6.10				during cardiac		/ interpret		discussion		Voce		
				cycle								
Hom		Knows		Explain the ECG	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine	
UG-PB		How		changes during		Understand		Small group		Viva		
6.11				each cardiac		/ interpret		discussion		Voce		
				cycle								
Hom	Integration	Knows	Discuss heart	Define Heart	Cognitive	Level 1	Must know	Lecture,	SAQs	LAQs,	Medicine	
UG-PB	Of		sounds	Sound		(Remember		Small group		Viva		
6.12	Information					/ recall)		discussion		Voce		
Hom	(K-1)	Knows		Explain different	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,		
UG-PB		How		heart sounds		Understand		Small group		Viva		
6.13				with their		/ interpret		discussion		Voce		
				measurement								
				technique								

Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		clinical		Understand		PBL, Small		Viva	Surgery
6.14				importance of		/ interpret		group		Voce	
				Murmurs & Triple				discussion			
				heart sound							
Hom	Integration	Knows	Describe the	Discuss normal	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Medicine
UG-PB	Of	How	physiology of	ECG with it's		Understand		Small group		Viva	
6.15	Information		electrocardiogr	waves and		/ interpret		discussion		Voce	
	(K-1)		am (E.C.G),	intervals							
Hom		Knows		Explain in	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB		How		electrocardiograp		Understand		Small group		Viva	
6.16				hy with unipolar		/ interpret		discussion		Voce	
				& bipolar							
				recording.							
Hom	Information	Knows	Discuss	Classify	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB	Gathering	How	arrhythmia,	arrythmias	-	Understand		PBL, Small		Viva	
6.17	,Integration		heart block and			/ interpret		group		Voce	
	Of		myocardial					discussion			
Hom	information	Knows	Infarction	Explain Different	Cognitive	Level 2	Desirable to	Lecture, PBL	SAQs	SAQs,	Medicine
UG-PB	Problem	How		degree of heart	•	Understand	Know	, Small		Viva	Pathology
6.18	Integration			block. Explain		/ interpret		group		Voce	Materia
	(K-2)			Myocardial		· ·		discussion			Medica
				Infarction							Repertory
Hom	Integration	Knows	Describe	List the functions	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of		haemo-	of circulation	•	Recall	know	Small group		Viva	
6.19	Information		dynamics of					discussion		Voce	
	(K-1)		circulatory								
Hom	· · ·	Knows	system	State the	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB			,	functions of heart		Recall	know	Small group		Viva	
6.20								discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	MCQs	Viva	
UG-PB		How		pressure changes		Understand		Small group		Voce	
6.21				in vascular		/ interpret		discussion			
				system							
Hom		Knows		Recall the	Cognitive	Level	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB				structure of the		1Recall	Know	Small group		Viva	
6.22				blood vessels				discussion		Voce	

Hom	Integration	Knows	Describe the	Identify the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB	Of	How	factors	factors affecting		Understand		Small group		Viva	
6.23	Information		affecting heart	heart rate and		/ interpret		discussion		Voce	
	(K-1)		rate,	how it affects							
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB		How		mechanism of		Understand	know	Small group		Viva	
6.24				control of heart		/ interpret		discussion		Voce	
				rate							
Hom	Integration	Knows	Describe the	Define cardiac	Cognitive	Level 1	Must know	Lecture,	SAQs	LAQs	Materia
UG-PB	Of		regulation of	output		(Remember		Small group		Viva	Medica
6.25	Information		cardiac output			· / recall)		discussion		Voce	Repertory
	(K-1)					. ,					. ,
Hom		Knows	-	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	LAQs,	Medicine
UG-PB		How		distribution of	Ū	Understand	Know	Small group	-	Viva	
6.26				cardiac output		/ interpret		discussion		Voce	
						<i>,</i> ,					
Hom		Knows	-	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		factors affecting	U	Understand		Small group	-	Viva	
6.27				cardiac output		/ interpret		discussion		Voce	
						,					
Hom	-	Knows	-	Discuss in detail	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		the Control	0	Understand		Small group		Viva	
6.28				mechanism of		/ interpret		discussion		Voce	
				cardiac output		,					
Hom	Integration	Knows	Understand the	Discuss the	Cognitive	Level 2	Must know	Lecture.	SAOs	LAOs.	Medicine
LIG-PB	Of	How	blood pressure	importance of	000	Understand		PBI Small	0.100	Viva	
6.29	Information		regulation	hlood pressure		/ interpret		group		Voce	
0.25	(K-1)		regulation	biood pressure		/ merpret		discussion		VOCC	
Hom	((1)	Knows	_	State the factors	Cognitive	level 1	Must know	Lecture	SAOs	LAOs	Medicine
		KIIOWS		affecting arterial	cognitive	Recall	Widst Know	Small group	3703	Viva	Wiedienie
6 30				hlood pressure		nccun		discussion		Voce	
Hom	-	Knows	-	Discuss the	Cognitive	Level 2	Must Know	Lecture	SAOs		Medicine
		How		determinants of	Cognitive	Linderstand		Small group	3743	Viva	WEAKINE
6 31		11000		arterial blood		/ interpret		discussion		Voce	
0.51						, interpret				VULE	
				pressure							

Hom		Kn	101/05		Describe	Cognitive		Must know	PRI	SAOs		Medicine
LIG-PB		Ho	0.00		regulation of	cognitive	Understand	WIGST KHOW	l ecture	3403	Viva	Wedlenie
6 32					arterial blood		/ interpret		Small group		Voce	
0.52					nressure		, incorpret		discussion		VOCC	
Hom	Integration	Kn	10.WS	Describe	Discuss the	Cognitive	Level 2	Nice to know	Lecture	SAOs	Viva	
LIG-PB	Of	Ho	0.000	coronary	canillary	cognitive	Understand		Small group	3403	Voce	
6 3 3	Information			cerebral	circulation		/ interpret		discussion		VOCC	
0.55	(K-1)			canillary	circulation		, incorpret		discussion			
Hom	((1)	Kn	าดพร	pulmonary &	Discuss the	Cognitive	Level 2	Desirable to	Lecture	SAOs	SAOs	Medicine
LIG-PB		Ho	0.00	splenic	Coronary	cognitive	Understand	know	Small group	3403	Viva	Pathology
6 34				circulation	circulation		/ interpret	in ow	discussion		Voce	r utilology
Hom		Kn	าดพร		Discuss the	Cognitive	level 2	Desirable to	Lecture	SAOs	SAOs	Medicine
UG-PB		Ho	ow		Cerebral	coginave	Understand	Know	Small group	5/103	Viva	Pathology
6.35					circulation		/ interpret		discussion		Voce	r utilology
Hom		Kn	nows		Discuss the	Cognitive	Level 2	Nice to know	Lecture.	SAOs	Viva	Medicine
UG-PB		Но	ow		Splenic	000	Understand		Small group	0,100	Voce	
6.36					circulation		/ interpret		discussion			
Hom		Kn	nows		Discuss	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		Но	ow		Pulmonary	U	Understand	Know	Small group		Viva	
6.37					circulation		/ interpret		discussion		Voce	
Hom	Information	Kn	nows	Describe the	Explain	Cognitive	Level 2	Must know	CBL,	SAQs	SAQs,	Medicine
UG-PB	Gathering	На	ow	mechanism of	mechanism	_	Understand		Lecture,		Viva	Pathology
6.38	,Integration			shock, syncope	responsible for		/ interpret		Small group		Voce	
	Of			& Hypertension	shock & syncope				discussion			
	information,					a					~ ~ ~	
Hom	Problem	KN	nows		Discuss the	Cognitive	Level 2	Must know	CBL,	SAQS	SAQS,	Medicine
UG-PB	Integration	Но	ow		mechanism of		Understand		Lecture,		Viva	Pathology
6.39	(K-2)				nypertension		/ interpret		Small group		voce	Materia
									aiscussion			Niedica
Hom	Information	Sh	0.000	Record blood	Maacura tha	Davaha		Mustknow	Domonstrati	Obcoru	OSCE	Madicina
	Cathoring	311	iows	Record blood	blood prossure in	PSycho-	(Control)	WIUST KITOW	Demonstrati	otion	USCE	weatchie
6.40	Integration		0 00	and in different	resting & different	motor	(Control)			auon		
0.40				grades of	grade of everyise							
Hom	information	Kn	1014/5	Evercise and	Discuss the	Cognitive		Mustknow	CBI	Observ	OSCE	Medicine
	Problem		0.00	nostures	variation	Cognitive	(Understan		Locture	ation	UJCL	weathe
6/1	riosiem		0 00	postures	hotwoon		ding)		Lecture,	auon		
0.41					Detween		ung/					

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6.42 Integration Of Integration Of <thintegration Of Integrat</thintegration 	UG-PB	Gathering	How	rest and in	rest and in	motor	(Control)		on	ation			
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6.43 Integration Integration Integration Integration Integration Small group	UG-PB	Problem	How	postures	variation		(Understan		Lecture,	ation			
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Image: Moment of Gathering, G.4.4 Moment of Gathering, Gathering, G.4.4 Moment of Gathering, Gathe		(K-2)			different arterial				discussion				
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Hom Information, Problem Shows He cardio Auscultate for heart sound Psycho- heart sound Level 2 Must know Demonstration Observation OSCE Medicine Hom Integration (K-2) Shows Identify different Psycho- heart sounds Level 2 Must know Demonstration Observation OSCE Medicine Hom Identify different Psycho- heart sounds Identify different Psycho- heart sounds Level 2 Must know Demonstration Observation OSCE Medicine UG-PB Identify different Psycho- heart sounds Integration Identify different Psycho- heart sounds Identify different Psycho- heart sounds Identify different Identiferent Iden	0.45	Of		examination of									
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UG-PB Integration (K-2) How How heart sound motor (Control) on ation ation Hom K-2) Shows Identify different Psycho- Level 2 Must know Demonstrati Observ OSCE Medicine UG-PB How How Identify different Psycho- Level 2 Must know Demonstrati Observ OSCE Medicine 6.47 How H	Hom	Problem	Shows	vascular	Auscultate for	Psycho-	Level 2	Must know	Demonstrati	Observ	OSCE	Medicine	
6.46 (K-2) Shows Identify different Psycho- Level 2 Must know Demonstrati Observ OSCE Medicine UG-PB 6.47	UG-PB	Integration	How	system	heart sound	motor	(Control)		on	ation			
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UG-PB How heart sounds motor (Control) on ation 6.47 Image: Control in the sound in the so	Hom	(1) 2)	Shows		Identify different	Psycho-	Level 2	Must know	Demonstrati	Observ	OSCE	Medicine	
6.47	UG-PB		How		heart sounds	motor	(Control)		on	ation			
	6.47												

Topic No	7
Theory	Respiratory & Environmental Physiology
Practical	
Clinical Physiology	Respiratory System- Clinical Examination, Spirometry, Stethography

At the end of the chapter of Respiratory & Environmental Physiology, the student must be able to –

- Describe the functional anatomy of respiratory tract.
- Describe the mechanics of normal respiration
- Describe pressure changes during ventilation
- Describe lung volume and capacities
- Describe the transport of respiratory gases
- Describe the regulation of respiration
- Demonstrate the correct clinical examination of the respiratory system in a normal volunteer.

S.No	Generic competency	Subject area	Miller's Level	Specific competency	Specific Learning Objectives / outcomes	Bloom's domain	Guilbert's level	Must know / desirable to know / nice to know	TL method / media	Format ive Assess ment	Summat ive Assessm ent	Integration - Horizontal / Vertical / Spiral
Hom UG-PB 7.1	Integration Of Information (K-1)	Respirator y & Environme ntal	Knows How	Describe the functional anatomy of respiratory	Identify the different parts of upper respiratory tract	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Anatomy
Hom UG-PB 7.2		FIIISIOIOGY	Knows How	Tract	Describe the importance of different parts of lower respiratory tract	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Anatomy

Hom		Knows		Identify the	Cognitive		Must know	Lecture	SAOs	SAOs	Anatomy
		How		different parts	cognitive	Leverz	IVIUST KIIOW	Small group	JAQS	Viva	Anatomy
72		11000		of tracheo –		/ interpret		discussion		Viva	
7.5				bronchial trop		/ interpret		uiscussion		VULE	
				Pospiratory							
				mombrano &							
Hom	-	Knows	-	Fyrelain the	Cognitivo		Nico to know	Locturo	SAOc	\$406	
		KIIUWS		explain the	Cognitive	Level Z	NICE LO KHOW	Lecture,	SAUS	SAUS,	
0G-PB		now		properties of		/interstand		Small group		Viva	
7.4	-	1/m mun	-	Gases	Comitivo	/ interpret	N4. et lus eux	discussion	6400	voce	Madiaina
HOM		Knows		Discuss non-	Cognitive	Level 2	IVIUST KNOW	Lecture,	SAQS	SAQS,	Medicine
UG-PB		HOW		function		Understand		Small group		viva	
7.5						/ interpret		discussion		voce	
				respiratory							
L				system	o :::				64.0	64.0	
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Nust know	Lecture,	SAQs	SAQS,	Anatomy
UG-PB	Of	How	mechanics of	mechanism of		Understand		Small group		Viva	
7.6	Information		normal	Inspiration		/ interpret		discussion		Voce	-
Hom	(K-1)	Knows	respiration	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		How		mechanism of		Understand		Small group		Viva	
7.7				Expiration		/ interpret		discussion		Voce	
Hom	Integration	Knows	Describe	Discuss intra-	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	Medicine
UG-PB	Of	How	pressure	pulmonary		Understand		Small group		Viva	
7.8	Information		changes during	pressure		/ interpret		discussion		Voce	
Hom	(K-1)	Knows	ventilation	Discuss intra	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		pleural pressure		Understand		Small group		Viva	
7.9						/ interpret		discussion		Voce	
Hom	Integration	Knows	Describe lung	Discuss static	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Medicine
UG-PB	Of	How	volume and	lung volume &		Understand	Know	Small group		Viva	
7.10	Information.		capacities,	capacities		/ interpret		discussion		Voce	
Hom	(K-1)	Knows		Discuss dynamic	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Medicine
UG-PB		How		lung volume		Understand	Know	Small group		Viva	
7.11				and capacities		/ interpret		discussion		Voce	
Hom	Integration	Knows	Describe	Define surface	Cognitive	Level 1	Desirable To	Lecture,	SAQs	SAQs,	Medicine
UG-PB	Of	How	alveolar	tension		(Remember	Know	Small group		Viva	
7.12			surface tension			/ recall)		discussion		Voce	

Hom	Information	Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB	(K-1)	How		significance of		Understand		Small group		Viva	
7.13				lung surfactant		/ interpret		discussion		Voce	
Hom	Integration	Knows	Describe the	Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB	Of	How	transport of	Oxygen		Understand		Small group		Viva	
7.14	Information		respiratory	transportation		/ interpret		discussion		Voce	
Hom	(K-1)	Knows	gases	Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		carbon dioxide		Understand		Small group		Viva	
7.15				transportation		/ interpret		discussion		Voce	
										_	
Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB	Gathering	How	regulation of	nervous		Understand		Small group		Viva	
7.16	,Integration		respiration	regulation of		/ interpret		discussion		Voce	
llem	Ul	Kaanna	-	Discuss the	Consitius		N4. of log over	Lastura	6405	1400	
HOM	Droblom	Knows		Discuss the	Cognitive	Level 2	wust know	Lecture,	SAUS	LAQS,	
UG-PB	Problem	HOW		Chemical		Understand		Small group		viva	
7.17	Integration			regulation of		/ interpret		discussion		voce	
	(K-Z)		_	respiration	a						
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	PBL,	SAQs	SAQs,	Medicine
UG-PB		How		physic clinical		Understand		Lecture,		Viva	
7.18				aspect of Apnea		/ interpret		Small group		Voce	
	-		_					discussion			
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	PBL,	MCQs	SAQs,	Medicine
UG-PB		How		physic clinical		Understand		Lecture,		Viva	FMT
7.19				aspect of		/ interpret		Small group		Voce	Materia
				Dyspnoea,				discussion			Medica
				Asphyxia,							
				Oxygen toxicity							
Hom	Information	Know	Describe the	Define Hypoxia	Cognitive	Level 1	Must know	PBL,	MCQs	LAQs,	Medicine
UG-PB	Gathering		physio clinical			(Recall)		Lecture,		Viva	
7.20	,Integration		aspect of					Small group		Voce	
	Of		hypoxia					discussion			
Hom	information,	Knows		Classify hypoxia.	Cognitive	Level 1	Must know	PBL,	MCQS,	SAQs,	Pathology
UG-PB	Problem			Define Cyanosis		Recall		Lecture,	SAQs	Viva	Medicine
7.21	Integration							Small group		Voce	
	(K-2)							discussion			

												1
Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine	
UG-PB	Gathering	How	principles and	principles of		Understand	Know	Small group		Viva		
7.22	,Integration		methods of	artificial		/ interpret		discussion		Voce		
	Of		artificial	respiration								
Hom	information,	Knows	respiration,	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine	-
UG-PB	Problem	How		Methods of		Understand		Small group		Viva		
7.23	Integration			artificial		/ interpret		discussion		Voce		
	(K-2)			respiration								
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine	
UG-PB	Of	How	physiology of	pressure		Understand	know	Small group		Viva		
7.24	Information		high altitude	changes during		/ interpret		discussion		Voce		
	(K-1)		and deep sea	high altitude								
Hom		Knows	diving	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,		
UG-PB		How		effect during		Understand	know	Small group		Viva		
7.25				Rapid & slow		/ interpret		discussion		Voce		
				ascent on high								
				altitude								
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,		
UG-PB		How		pressure changes		Understand	know	Small group		Viva		
7.26				during Deep sea		/ interpret		discussion		Voce		
				diving								
Hom	Information	Shows	Perform the	Perform the	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Medicine	
UG-PB	Gathering	How	clinical	technique to	motor	(Control)		on	ation			
7.27	,Integration		examination of	assess normal								
	Of		the respiratory	respiratory rate,								
	information,		system in a	expansion of								
	Problem		normal	chest, in resting								
	Integration		volunteer	as well as								
	(K-2)			exercise								
				condition								
				through								
				inspection and								
				palpation								
Hom		Shows		Perform	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Medicine	
UG-PB		How		percussion on	motor	(Control)		on	ation			
7.28				the chest								

Hom		Shows	Perform the	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Medicine	
UG-PB		How	auscultation on	motor	(Control)		on	ation			
7.29			different parts								
			of lungs.								

Topic No	8
Theory	Central Nervous System
Practical	
Clinical Physiology	Nervous System- Clinical Examination

At the end of chapter of Central Nervous System, the student must be able to -

- Map the organization of nervous system.
- State the functions and properties of synapse.
- Explain the functions and properties of receptors

- Describe the functions and properties of reflex.
- Discuss the mechanism of chemical transmission in the nervous system.
- Describe somatic sensations & sensory tracts.
- Describe and discuss motor tracts & mechanism of maintenance of muscle tone.
- Describe the physiology of vestibular apparatus, Control of body movements, posture and equilibrium.
- Describe structure and functions of autonomic nervous system
- Explain the functions, lesion & sensory disturbance of Spinal cord
- Describe functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system
- Describe behavioural and EEG characteristic during Sleep.
- Describe the physiological basis of memory, learning and speech
- Perform the clinical examination of the nervous system in a volunteer or on a simulator.

S.No	Generic	Subject	Miller's	Specific	Specific Learning	Bloom's	Guilbert's	Must know /	TL method /	Format	Summat	Integration -
	competency	area	Level	competency	Objectives /	domain	level	desirable to	media	ive	ive	Horizontal /
					outcomes			know / nice		Assess	Assessm	Vertical /
								to know		ment	ent	Spiral
Hom	Integration	Nervous	Knows	Describe the	Identify the parts	Cognitive	Level 1	Must know	Lecture.	SAQs	SAQs.	Anatomy
UG-PB	Of	System		organization of	of central		(Remember		Small group	MCQs	Viva	,
8.1	Information	,		nervous system	nervous system –		, / recall)		discussion		Voce	
	(K-1)				brain & spinal		. ,					
					cord with its							
					function							
Hom			Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB			How		developmental		Understand	Know	Small group	MCQs	Viva	
8.2					aspect of central		/ interpret		discussion		Voce	
					nervous system							
Hom			Knows		Classify nervous	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB					system		(Remember		Small group	MCQs	Viva	
8.3							/ recall)		discussion		Voce	
Hom	Integration		Knows	Describe the	Illustrate the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of		How	functions and	physiological		Understand		Small group	MCQs	Viva	
8.4	Information			properties of	anatomy of		/ interpret		discussion		Voce	
	(K-1)			synapse.	synapse							

Hom	Integration		Knows	Describe	Define sensory	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,		
UG-PB	Of			somatic	system		(Remember		Small group	MCQs	Viva		
8.16	Information			sensations &			/ recall)		discussion		Voce		
Hom	(K-1)		Knows	sensory tracts	Discuss different	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQ,	Anatomy	
UG-PB			How		sensory tracts of	•	Understand		Small group	MCQs	Viva		
8.17					spinal cord		/ interpret		discussion		Voce		
Hom			Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine	
UG-PB			How		sensory tracts of	0	Understand		Small group	MCQs	Viva		
8.18					spinal cord		/ interpret		discussion		Voce		
Hom		-	Knows		Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs	Anatomy	
UG-PB			How		somato-sensory		Understand	Know	Small group	MCQs	Viva	Medicine	
8.19					cortex		/ interpret		discussion		Voce		
Hom			Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB			How		somatic		Understand		Small group	MCQs	Viva	Medicine	
8.20					sensation –		/ interpret		discussion		Voce	Materia	
					touch, pressure,				Demonstrati			Medica	
					pain,				on			Repertory	
					temperature,								
					proprioception								
Hom	Information		Knows	Describe motor	Discuss motor	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB	Gathering		How	tracts &	areas		Understand		Small group	MCQs	Viva		
8.21	,Integration			mechanism of			/ interpret		discussion		Voce		
Hom	Of		Knows	maintenance of	Discuss different	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB	information,		How	muscle tone	motor tracts of		Understand		Small group	MCQs	Viva	Medicine	
8.22	Problem				spinal cord		/ interpret		discussion		Voce		
Hom	Integration		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB	(K-Z)		How		motor tracts of		Understand		Small group	MCQs	Viva	Medicine	
8.23					spinal cord		/ interpret		discussion		Voce		
Hom			Knows		Discuss the	Cognitive	Level 2	Must know	CBL,	SAQs	LAQs,	Anatomy	
UG-PB			How		clinical		Understand		Lecture,	MCQs	Viva	Medicine	
8.24					significance of		/ interpret		Small group		Voce	Materia	
					Motor tracts of				discussion			Medica	
					spinal cord								

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Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB	Gathering	How	physiology of	physiological		Understand		Small group	MCQs	Viva	Medicine	
8.25	,Integration		vestibular	anatomy of		/ interpret		discussion		Voce		
	Of		apparatus,	vestibular								
	information,		Control of body	apparatus								
Hom	Problem	Knows	movements,	Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine	1
UG-PB	Integration	How	posture and	functions of		Understand		Small group	MCQs	Viva	Materia	
8.26	(K-2)		equilibrium	vestibular		/ interpret		discussion		Voce	Medica	
				apparatus								
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine	
UG-PB		How		common		Understand		Small group	MCQs	Viva	Materia	
8.27				vestibular		/ interpret		discussion		Voce	Medica	
				dysfunctions								
Hom	Integration	Knows	Describe	Differentiate	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Anatomy	-
UG-PB	Of	How	structure and	between somatic	-	Understand		Small group	MCQs	Voce		
8.28	Information		functions of	and autonomic		/ interpret		discussion				
	(K-1)		Autonomic	nervous system								
Hom		Knows	nervous system	, Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy	<u> </u>
UG-PB		How	(ANS)	divisions of	0	Understand		Small group		Viva	,	
8.29			v - v	Autonomic		/ interpret		discussion		Voce		
				nervous system		,						
Hom		Knows		, Discuss the	Cognitive	Level 2	Nice to know	Lecture.	SAOs	Viva		_
UG-PB		How		responses of		Understand		Small group		Voce		
8.30				effector organ to		/ interpret		discussion				
				autonomic nerve		,						
				impulse								
Hom	Information	Knows	Explain the	List the functions	Cognitive	Level 1	Must know	Lecture,	SAQs	LAQs,	Anatomv	-
UG-PB	Gathering		functions.	of Spinal cord		(Remember		Small group		Viva	Medicine	
8.31	.Integration		lesion &			/ recall)		discussion		Voce		
Hom	Of	Knows	sensorv	Illustrate the	Cognitive	Level 2	Must know	Lecture.	SAOs	SAOs.	Medicine.	
UG-PB	information.	How	disturbance of	transection of		Understand		Small group		Viva	Surgery	
8.32	Problem		Spinal cord	spinal cord		/ interpret		discussion		Voce		
Hom	Integration	Knows		Describe the	Cognitive	Level 2	Must know	Lecture.	SAOs	SAOs.	Medicine	
UG-PB	(K-2)	How		sensory	200.000	Understand		Small group	5	Viva		
8.33	. ,			disturbances of		/ interpret		discussion		Voce		
0.00				spinal cord		, incorpret		4.56455.011		1000		
				Spinal Cora								-

Hom	Information		Knows	Describe	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB	Gathering		How	functions of	connections &		Understand		Small group		Viva	Medicine –	
8.34	,Integration			cerebral cortex,	functions of		/ interpret		discussion		Voce	Psychiatry	
	Of			basal ganglia,	cerebral cortex							Repertory	
Hom	information,	-	Knows	thalamus, hypo	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB	Problem		How	- thalamus,	connections&	•	Understand	know	Small group		Viva	Medicine –	
8.35	Integration			cerebellum and	functions of Basal		/ interpret	-	discussion		Voce	Psychiatry	
	(K-2)			limbic system	Ganglia		,					,	
Hom			Knows	abnormalities	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB			How	abriormantics	connections &		Understand	Know	Small group		Viva	Medicine –	
8.36					functions of		/ interpret		discussion		Voce	Psychiatry	
					Thalamus							Repertory	
Hom			Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB			How		connections&		Understand		Small group		Viva	Medicine –	
8.37					functions of		/ interpret		discussion		Voce	Psychiatry	
					Hypothalamus							Materia	
												Medica	
												Repertory	
Hom			Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy,	
UG-PB			How		connections &		Understand		Small group		Viva	Psychology,	
8.38					functions of		/ interpret		discussion		Voce	Medicine –	
					Limbic system							Psychiatry	
												Materia	
												Medica	
Hom			Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB			How		connections&		Understand		Small group		Viva	Medicine –	
8.39					functions of		/ interpret		discussion		Voce	Psychiatry	
					Cerebellum							Materia	
												Medica	
Hom			Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Pathology	
UG-PB			How		cerebellar lesions		Understand		Small group		Viva	Medicine –	
8.40							/ interpret		discussion		Voce	Psychiatry	
												Materia	
												Medica	

Hom	Integration	Kno	ows	Describe	Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	
UG-PB	Of	Ho	w	behavioral and	importance of		Understand		Small group		Voce	
8.41	Information			EEG	EEG		/ interpret		discussion			
Hom	(K-1)	Kno	ows	characteristic	Explain the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	
UG-PB		Но	w	during	Physiological	•	Understand		Small group		Voce	
8.42				Sleep and	Basis of EEG		/ interpret		discussion			
Hom		Kno	IOWS	mechanism	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		Но	w	responsible for	factors affecting		Understand	Know	Small group		Viva	
8.43				its production	sleep		/ interpret		discussion		Voce	
Hom		Kno	ows		Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		Но	w		Physiological		Understand	Know	Small group		Viva	
8.44					changes during		/ interpret		discussion		Voce	
					sleep							
Hom		Kno	ows		Classify the types	Cognitive	Level 1	Nice to know	Lecture,	SAQs	Viva	Medicine
UG-PB					of sleep		(Remember		Small group		Voce	
8.45							/ recall)		discussion			
Hom		Kno	ows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Anatomy
UG-PB		Ho	w		factors		Understand		Small group		Voce	Medicine
8.46					controlling sleep		/ interpret		discussion			
					cycle		-					
Hom	Information	Kno	ows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Gathering	Но	w	physiological	mechanism and		Understand	Know	Small group		Viva	Medicine
8.47	,Integration			basis of	development of		/ interpret		discussion		Voce	
	Of			memory,	speech							
Hom	information,	Kno	ows	learning	Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Problem	Но	w	And speech	physiological		Understand		Small group		Viva	Medicine
8.48	Integration				basis of learning		/ interpret		discussion		Voce	Materia
	(K-2)											Medica
												Repertory
Hom		Kno	ows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB		Ho	w		physiological		Understand		Small group		Viva	
8.49					basis of memory.		/ interpret		discussion		Voce	
Hom		Kno	ows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB		Ho	w		applied		Understand		Small group		Viva	Materia
8.50					physiology of		/ interpret		discussion		Voce	Medica
					memory							Repertory

Hom	Information	Shows	Perform the	Perform	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Anatomy	
UG-PB	Gathering	How	clinical	examination of	motor	(Control)		on	ation	OSCE	Medicine	
8.51	,Integration		examination of	cranial nerves								
Hom	Of	Shows	the nervous	Perform	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Anatomy	
UG-PB	information,	How	System : Higher	examination for	motor	(Control)		on	ation	OSCE	Medicine	
8.52	Problem		functions,	speech								
Hom	Integration	Shows	sensory	Conduct the	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Anatomy	
UG-PB	(K-2)	How	system, motor	assessment of	motor	(Control)		on	ation	OSCE	Medicine	
8.53			system,	muscle tone								
Hom		Shows	reflexes, crania	Conduct the	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Anatomy	
UG-PB		How	nerves in a	assessment of	motor	(Control)		on	ation	OSCE	Medicine	
8.54			normal	muscle power								
Hom		Shows	volunteer or	Perform the	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Anatomy	
UG-PB		How	simulated	clinical	motor	(Control)		on	ation	OSCE	Medicine	
8.55			Environment	examination for								
				reflexes								
Hom		Shows		Perform	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Anatomy	
UG-PB		How		Cutaneous	motor	(Control)		on	ation	OSCE	Medicine	
8.56				sensory								
				examination								
Hom		Shows		Perform the	Psycho-	Level 2	Must know	Demonstrati	Observ	Checklist	Anatomy	
UG-PB		How		clinical	motor	(Control)		on	ation	OSCE	Medicine	
8.57				examination of								
				gait and posture								

Topic No	9
Theory	Endocrine System
Practical	
Clinical Physiology	Reproductive System – Diagnosis of pregnancy

At the end of chapter of Endocrine System& Diagnosis of pregnancy, the student must be able –

- Explain the mechanism of action of steroid, protein and amine hormones.
- Describe the regulation of secretion of hormones by hypothalamus.
- Discuss the synthesis, secretion, Transport, Physiological action, regulation & effect of altered secretion of-Pituitary gland; Thyroid gland; Para Thyroid glands; Adrenal glands; and Pancreatic Gland.
- Explain the physiology of Thymus & Pineal Glands, and the local hormones.

S.No	Generic	Subject	Miller's	Specific	Specific	Bloom's	Guilbert's	Must know /	TL method /	Format	Summat	Integration -
	competenc	area	Level	competency	Learning	domain	level	desirable to	media	ive	ive	Horizontal /
	У				Objectives /			know / nice		Assess	Assessm	Vertical /
					outcomes			to know		ment	ent	Spiral
Hom	Integration	Endocrine	Knows	Describe the	Define	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB	Of	system		mechanism of	hormones		(Remembe	Know	Small group	MCQs	Viva	
9.1	Information			action of			r/ recall)		discussion		Voce	
Hom UG-PB 9.2	- (K-1)		Knows How	steroid, protein And amine hormones	Discuss the characteristic of hormones	Cognitive	Level 2 Understan d / interpret	Desirable to know	Lecture, Small group discussion	SAQs MCQs	SAQs, Viva Voce	Psychology
Hom			Knows		Classify the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB			How		hormones as		Understan	know	Small group	MCQs	Viva	
9.3					per their		d /		discussion		Voce	
					chemistry		interpret					

Nome Integration Knows Describe the regulation of secretion of hormones by hypothalamus Loginities (K-1) Level 2 (K-1) Wold know Level 2 (K-1) Multick is mail group discussion SAGS MCGS MCGS MCGS SAGS Voce Anatomy MCGS Hom (K-1) Knows New finances hypothalamus Discuss the hypothalamus Cognitive interpret Level 2 Multick is mail group discussion MCGS MCGS SAGS, Voce Anatomy Work Hom (K-1) Knows Piscuss the through Cognitive through Cognitive interpret Level 2 Desirable to understan forme Lecture, smail group discussion SAGS, Voce Anatomy Work 9.5 Information (K-1) Knows Discuss the secretion of attered attered attered secretion of thuitary gland Cognitive understan d/ interpret Level 2 Desirable to Understan discussion Lecture, Smail group MCGS SAQS, Voce Anatomy Voce Hom UG-PB 9.10 More 9.1 Knows Picture attered attered attered attered attered secretion of Cognitive interpret Level 2 Must know Lecture, Smail group discussion SAQS, Voce Voce Mom UG-PB 9.10 Mom 9.10 Knows Knows <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>640</th> <th></th>											640	
UG-P8 Information Progulation of hormone for ho	Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	IVIUST KNOW	Lecture,	SAUS	SAQS,	Anatomy
9.4 information (K-1) intermet interpret interpret interpret interpret interpret voce Hom UG-PB 9.5 Knows Knows Knows Nomose trom hypothalamus Cognitive interpret Level 2 Must know Lecture, Small group SAQs, Viva Medicine Hom 9.5 Integration (K-1) Integration (K-1) Knows Discuss the secretion of hormone trom through hypothalamus Cognitive interpret Level 2 Must know Lecture, SAQs SAQs, Viva Nateria Hom 9.6 Information (K-1) Knows Discuss the synthesis, secretion, ransport, How Discuss the physiological action, effect of altered Cognitive interpret Level 2 Desirable to Small group SAQs, Viva Viva Materia UG-PB 9.7 Knows 9.7 Knows 9.7 Explain the secretion of altered Cognitive interpret Level 2 Desirable to Small group MCQs Viva Medica Hom 9.9.9 UG-PB 9.9 Knows 9.8 Knows How For the secretion of pituitary gland Cognitive interpret Level 2 Must know Lecture, SAQs LAQs, Viva Anatomy Medica Hom 9.9.9 Nom Knows 9.1 How 9.1 Level 2 Must know Lecture, SAQs LAQs, Viva Viva Medica Hom 9.9.1 Knows 9.10	UG-PB	Of	How	regulation of	regulation of		Understan		Small group	IVICUS	viva	Medicine
Image:	9.4	Information		secretion of	hormone from		d /		discussion		Voce	
Hom UG-PB 9.5 Integration Of P.5 Integration Of P.5 Integration Of P.5 Integration Of P.5 Integration Of P.5 Integration Of P.5 Integration Of P.5 Discuss the scretion of Normone through Cognitive Hypothalamus Level 2 Understan d / interpret Must know Level 2 Lecture, Small group discussion SAQs. Voce Medicine Medicine Hom UG-PB 9.6 Integration Of P.5 Discuss the sorteston of Knows Discuss the sorteston of through Cognitive physiological anatomy of altered secretion of Physiological tereston of growth Cognitive through Level 2 Understan d / interpret Desirable to Desirable to Understan d / interpret Lecture, Small group discussion SAQs. Voce Anatomy Medica Hom UG-PB 9.7 Knows 9.7 Knows How Knows How Knows How Discuss the scretion of altered secretion of pluitary gland Cognitive interpret Level 2 Understan d / interpret Desirable to discussion Lecture, Small group MCQs SAQs. Voce Anatomy Voce Hom UG-PB 9.9 Knows 9.9 Knows How Knows How Knows How Knows How Cognitive functions of growth hormone Level 2 Understan growth hormone Must know Lecture, Small group MCQs SAQs Voce LAQs, Voce		(K-1)		hormones by	the		interpret					
Hom UG-PB 9.5 Integration 0f Knows How Knows how Discuss the hom extantic mechanism of secretion of hormone Discuss the hormone Cognitive hormone Level 2 understant d / interpret Must know how Lecture, small group discussion SAQs Voce Medicine Voce Hom UG-PB 9.7 Integration 0f Knows 9.7 Discuss the hormone Discus the synthesis, secretion of pituitary gland Discus the physiological anatory of altered secretion of pituitary gland Cognitive interpret Level 2 Understan d / interpret Desirable to besirable to Understan d / interpret Lecture, Small group MCQs SAQs Voce Anatomy Medica Hom UG-PB 9.9 Knows 9.8 Knows How Knows effect of anterior growth hormone Cognitive secretion of pituitary gland Level 2 Understan d / interpret Must know Lecture, Small group discussion SAQs Voce LAQs, Viva Anatomy Voce Hom UG-PB 9.9 Knows 9.9 Knows 9.9 Knows How Knows Knows function of growth hormone Cognitive functions of growth hormone Level 2 Understan d / interpret Must know Lecture, Small group MCQs SAQs Viva LAQs, Viva Hom UG-PB 9.10 Knows 9.10 Knows Knows How Knows Knows How <td></td> <td>-</td> <td></td> <td>hypothalamus</td> <td>hypothalamus</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		-		hypothalamus	hypothalamus							
UG-PB 9.5 Integration (K-1) How Integration (K-1) How Normane	Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Medicine
9.5 Integration Of Information (K-1) Knows Flow Discuss the Bow Discuss the physiological anatomy of physiological anatomy of physiological anaterior physiological anatomy of physiological anatomy of ph	UG-PB		How		homoeostatic		Understan		Small group		Viva	
Hom UG-PB 9.6Integration Of Information (K-1)KnowsDiscuss the synthesis, secretion of mansport, Transport, regulation & effect of altered 9.8Cognitive attered secretion of attered secretion of physiological antemy of physiological antery glandLevel 2 Understan d / unterpretDesirable to Small group MCQsSAQs MCQsSAQs, Viva Materia MedicaHom UG-PB 9.7Knows 9.7Knows HowKnows HowDiscuss the spythiological anterior aftered secretion of alteredCognitive tevel 2 understan afterior physiological anteriorLevel 2 Understan d / interpretDesirable to McosLaQs, Small group MCQsLaQs, Viva VoceAnatomy Materia MedicaHom UG-PB 9.9Knows HowKnows HowKnows HowCognitive Level 2 Understan growth afterior growthMust know d/ understan d/ interpretLevel 2, Must knowMust know Must know Must know McQsLAQs, Viva Viva VivaLAQs, Viva VoceHom UG-PB 9.10Knows HowKnows HowKnows HowCognitive Level 2 Understan d/ interpretMust know Must know Must know Understan d/ discussionLAQs, Viva VoceLAQs, Viva VoceHom UG-PB 9.10Knows HowKnows HowKnows HowCognitive Level 2 Understan d/ interpretLevel 2 Must know Must know Understan d/ Must know Understan d/ Must knowLaQs, <td>9.5</td> <td></td> <td></td> <td></td> <td>mechanism of</td> <td></td> <td>d /</td> <td></td> <td>discussion</td> <td></td> <td>Voce</td> <td></td>	9.5				mechanism of		d /		discussion		Voce	
Hom UG-PB 9.6 Integration (K-1) Knows Discuss the synthesis, secretion, Transport, Physiological action, regulation & effect of altered 9.10 Discuss the physiological action, regulation & effect of altered 9.10 Cognitive (Level 2) Level 2) Desirable to (Knows Lecture, SAQs SAQs, Voce Anatomy Medica Hom UG-PB 9.7 Knows 9.7 Knows Knows Knows Discuss the secretion of altered secretion of pituitary gland Cognitive (Level 2) Level 2) Desirable to (Moderstan d/ interpret Lecture, Small group SAQs Woce Anatomy Medica Hom UG-PB 9.8 Knows Knows Knows Explain the secretion of altered secretion of growth Cognitive (Level 2) Level 2) Desirable to (Know Lecture, Small group SAQs Woce LAQs, Woce Anatomy Medica Hom UG-PB 9.9 Knows Knows Knows Fereino of growth Cognitive (Level 2) Level 2) Must know Lecture, Small group SAQs Woce Voce Hom UG-PB 9.10 Knows Knows Knows Knows Level 2) Must know Lecture, Small group SAQs Woce Voce Hom UG-PB 9.10 Knows Knows Knows Level 2) Must know Lecture, Small group SAQs Woce Voce Hom UG-PB 9.10 Knows Knows Knows Lecture,					secretion of		interpret					
Integration UG-PB 9.6Integration Of Information (K-1)Integration Of Information (K-1)Integration Discuss the synthesis, secretion, Transport, Physiological anatomy of of interpretCognitive Information d / interpretLevel 2 Understan d / Understan d / Understan <b< td=""><td></td><td></td><td></td><td></td><td>hormone</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></b<>					hormone							
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9.28 P.28 Image: Pick of altered	UG-PB			regulation &	formation,		Understan		Small group		Viva		
Hom UG-PB 9.29 Knows How Istered secretion of Adrenal glani functions of Glucocorticoid formation, secretion, and functions of Mineralocortico id hormone Cognitive Interpret Level 2 Understan d / Interpret Must know Lecture, Small group discussion SAQs Viva LAQs, Viva Hom UG-PB 9.30 Knows How	9.28			effect of	secretion, and		d /		discussion		Voce		
Hom UG-PB Knows Secretion of Adrenal gland Glucocorticoid hormone Cognitive UG-PB Level 2 Understan d / interpret Must know Lecture, Small group discussion SAQs. Viva LAQs, Viva Hom UG-PB Frows Fromston, and functions of Mineralocortico id hormone Cognitive Interpret Level 2 Understan d / interpret Must know Lecture, Small group discussion SAQs. Viva LAQs, Viva Hom UG-PB Knows Fromston, formation, and functions of formation, and functions of Sex. Normone Cognitive Interpret Level 2 Understan d / interpret Desirable to know Lecture, Small group discussion SAQs. Viva SAQs. Viva Hom UG-PB Knows Fromation, formation, and functions of Sex. Normone Cognitive interpret Level 2 Understan d / interpret Desirable to know Lecture, Small group discussion SAQs. Viva Viva Voce Medicine Viva Voce 9.31 Fromston, Small group From and function of Adrenal cortex, hormone Cognitive interpret Level 2 Understan d / interpret Desirable to know Lecture, Small group discussion SAQs. Voce SAQs. Voce Voce				altered	functions of		interpret						
Image: Norman biase Material gam Normane Image: Normane Normane Normane Normane Level 2 Must know Lecture, Small group discussion SAQs LAQs, Viva Viva 9.29 9.29 9.29 Mormane Mormane 0/ 10/ Normane 0// Normane 0// Normane Normane <t< td=""><td></td><td></td><td></td><td>secretion of</td><td>Glucocorticoid</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>				secretion of	Glucocorticoid								
Hom UG-PB 9.29 Knows How Knows How Describe the formation, secretion, and functions of Mineralcortic id hormone Cognitive Juderstan Level 2 Understan Must know Juderstan Lecture, Small group discussion SAQs LAQs, Viva Viva Voce Similar group discussion Voce Viva Voce Voce Voce Hom UG-PB 9.30 Knows How Describe the formation, secretion, and functions of Sex hormones Cognitive discussion Level 2 Desirable to formation, functions of Sex hormones Level 2 Desirable to formation, functions of Sex hormone Level 2 Desirable to formation, functions Level 2 Desirable to formation, function Level 2				Adrenal gland	hormone								
UG-PB 9.29 How How formation, secretion, and functions of Mineralocortice id hormone Numeralocortice id hormone Numeral	Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,		
9.29 9.29 Image: secretion, and functions of Mineralocortico id hormone of / interpret of / int	UG-PB		How		formation,		Understan		Small group		Viva		
Hom UG-PB 9.30 Knows How Knows How Knows How Functions of Mineralocortico id hormone Cognitive formation, secretion, and functions of Sex hormones Level 2 Understan d/ interpret Desirable to Knows Lecture, Small group discussion SAQs, Viva Voce SAQs, Viva Voce How Knows Explain the effects of altered secretion of Adrenal cortex hormone Cognitive interpret Level 2 Understan d/ interpret Desirable to Knows Lecture, Small group discussion SAQs, Viva Voce Medicine Viva Voce	9.29				secretion, and		d /		discussion		Voce		
Hom UG-PB 9.30 Knows How Knows How Mineralocortico id hormone Level 2 0 Desirable to hormones Lecture, Small group discussion SAQs, Viva SAQs, Viva SAQs, Viva Mineralocortico id hormone Momeralocortico id hormone 9.30 9.30 Knows Knows Formation, functions of Sex hormones Level 2 Desirable to hormones Lecture, Small group discussion SAQs, Viva Percenter Voce Nove Hom UG-PB 9.31 Knows Knows How Explain the effects of altered secretion of Adrenal cortex hormone Cognitive Understan d / interpret Level 2 Understan d / interpret Desirable to hormone Lecture, Small group discussion SAQs, Voce Medicine Voce					functions of		interpret						
Hom Id hormone					Mineralocortico								
Hom UG-PB How Describe the Cognitive Level 2 Desirable to Lecture, SAQs SAQs, Viva 9.30 9.30 Gognitive Understan Know Small group Viva Viva 9.30 formation, secretion, and functions of Sex interpret interpret d/ Voce Voce Voce Hom Knows How Explain the Cognitive Level 2 Desirable to Lecture, SAQs SAQs, Medicine 9.31 How How effects of Understan know Small group Viva Viva 9.31 Adrenal cortex hormone interpret interpret know Small group Viva Viva					id hormone								
UG-PB How How formation, secretion, and functions of Sex hormones Understan know Small group discussion Viva Voce Voce </td <td>Hom</td> <td></td> <td>Knows</td> <td></td> <td>Describe the</td> <td>Cognitive</td> <td>Level 2</td> <td>Desirable to</td> <td>Lecture,</td> <td>SAQs</td> <td>SAQs,</td> <td></td> <td></td>	Hom		Knows		Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,		
9.30 9.30 Image: secretion, and functions of Sex functions of Sex hormones Image: secretion, and functions of Sex hormone Image: secretion, and funct	UG-PB		How		formation,		Understan	know	Small group		Viva		
Hom Knows functions of Sex interpret interpret level 2 Desirable to Lecture, SAQs SAQs, Medicine UG-PB How How effects of Understan know Small group Viva Viva Hedicine 9.31 Adrenal cortex Adrenal cortex interpret	9.30				secretion, and		d /		discussion		Voce		
Hom Knows hormones Cognitive Level 2 Desirable to Lecture, SAQs SAQs, Medicine UG-PB How effects of Understan know Small group Viva Viva Level 2 besirable to discussion Viva Level 2 Viva Viva Level 2 Desirable to Level 2 Small group Viva Level 2 Viva Level 2 Small group Viva Level 2 Level 2 Level 2 Level 2 Small group Viva Level 2 Viva Level 2 L					functions of Sex		interpret						
Hom Knows Explain the Cognitive Level 2 Desirable to Lecture, SAQs SAQs, Medicine UG-PB How effects of Understan know Small group Viva Viva 9.31 altered d / d / discussion Voce Level 2 Adrenal cortex Adrenal cortex hormone Level 2 Level 2 Desirable to Lecture, SAQs SAQs, Medicine					hormones								
UG-PB How effects of Understan know Small group Viva 9.31 altered d/ d/ discussion Voce secretion of interpret adrenal cortex hormone interpret interpret interpret	Hom		Knows		Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine	
9.31 9.31 altered altered of d/ discussion Voce becretion of altered secretion of Adrenal cortex hormone hormone becretion of the becretion of	UG-PB		How		effects of		Understan	know	Small group		Viva		
secretion of interpret Adrenal cortex hormone	9.31				altered		d /		discussion		Voce		
Adrenal cortex hormone					secretion of		interpret						
hormone hormone					Adrenal cortex								
					hormone								

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Hom		Know	S	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		How		physiological		Understan	know	Small group		Viva	
9.32				anatomy of		d /		discussion		Voce	
				Adrenal		interpret					
				Medullary gland							
Hom	Integration	Know	s Describe the	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	synthesis,	physiological		Understan	Know	Small group		Viva	Materia
9.33	Information		secretion,	anatomy of		d /		discussion		Voce	Medica
	(K-1)		Transport,	Pancreatic gland		interpret					
Hom		Know	s Physiological	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	LAQs,	
UG-PB		How	action,	action and		Understan	Know	Small group		Viva	
9.34			regulation &	regulation of		d/		discussion		Voce	
			effect of	Glucagon		interpret					
Hom		Know	s altered	Discuss the	Cognitive	Level 2	Must know	CBL,	SAQs	LAQs,	Medicine
UG-PB		How	secretion of	action and	_	Understan		Lecture,		Viva	Materia
9.35			Pancreatic	regulation of		d/		Small group		Voce	Medica
			Gland	Insulin		interpret		discussion			
	-					•					
Hom		Know	5	Describe the	Cognitive	Level 2	Must know	CBL,	SAQs	LAQs,	Pathology
UG-PB		How		effects of		Understan		Lecture,	MCQs	Viva	Medicine
9.36				altered		d /		Small group		Voce	
				secretion of		interpret		discussion			
				Pancreatic							
				Hormone							
Hom	Integration	Know	s Describe the	Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB	Of	How	physiology of	functions of		Understan		Small group	MCQs	Viva	
9.37	Information		Thymus &	hormone of		d /		discussion		Voce	
	(K-1)		Pineal Gland	thymus gland		interpret					
Hom		Know	5	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB		How		functions of		Understan		Small group	MCQs	Viva	
9.38				hormone of		d /		discussion		Voce	
				pineal gland		interpret					
Hom	1	Know	s Describe the	State the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	
UG-PB		How	Physiology of	functions of		Understan		Small group	MCQs	Voce	
9.39			Local	Local hormones		d /		discussion			
			hormones			interpret					

Hom	Information	Shows	Describe the	Demonstrate	Psycho	Level 2	Must know	Demonstrati	Observ	Checklist	Obs&Gynec	
UG-PB	Gathering	How	diagnosis of	the diagnosis of	Motor	(Control)		on	ation			
9.40	,Integration		pregnancy	pregnancy								
	Of			through Urine								
	information			pregnancy Strip								
	, Problem											
	Integration											
	(K-2)											

<u>SEMESTER – 3</u>

Topic No	10
Theory	Reproductive System
Practical	
Clinical Physiology	

Learning Outcomes: -

At the end of the chapter on Reproductive System, the student must be able to -

- Describe the onset, progression, and stages puberty.
- Describe the structure and functions of male reproductive system.
- Describe the physiological effects of male sex hormone.
- Describe female reproductive system & functions of ovary and its Control.
- Describe menstrual cycle with hormonal, uterine and ovarian changes.
- Describe the physiological effects of female sex hormones.
- Discuss the contraceptive methods for male and female.
- Discuss the physiology of pregnancy, parturition & lactation.

S.No	Generic competency	Subject area	Miller's Level	Specific competency	Specific Learning Objectives / outcomes	Bloom's domain	Guilbert's level	Must know / desirable to know /	TL method / media	Format ive Assess	Summa tive Assess	Integration Horizontal / Vertical /	-
								nice to		ment	ment	Spiral	
								know					
Hom	Integration	Reproduct	Knows	Describe the	Define puberty	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Psychology	
UG-PB	Of	ive System		onset,			(Remember		Small group		Viva	Obstetrics &	
10.1	Information			progression,			/ recall)		discussion		Voce	Gynaecolog	/
	(K-1)			and stages									
Hom			Knows	puberty.	Discuss the role	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	_
UG-PB			How	List causes and	of LH & FSH in		Understand		Small group		Viva	Psychology	
10.2				expressions of	development of		/ interpret		discussion		Voce	Obstetrics &	
				delayed	puberty							Gynaecolog	1
Hom			Knows	nuberty	Explain puberty	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB			How	publicy	for its onset, and		Understand		Small group		Viva	Psychology	
10.3					stages. Describe		/ interpret		discussion		Voce	Obstetrics &	
					the causes for							Gynaecolog	/
					delayed								
					&precocious								
					puberty.								
Hom	Integration		Knows	Describe the	Describe the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Anatomy	
UG-PB	Of		How	structure and	structure of male		Understand	know	Small group		Voce		
10.4	Information			functions of	reproductive		/ interpret		discussion				
	(K-1)			male	system								

Hom		Knows	reproductive	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How	system.	function of male		Understand	Know	Small group		Viva	
10.5				reproductive		/ interpret		discussion		Voce	
				system.							
Hom	Integration	Knows	Describe the	Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Psychology
UG-PB	Of	How	physiological	functions of testis		Understand		Small group	MCQs	Viva	Medicine
10.6	Information		effects of male	as an endocrine		/ interpret		discussion		Voce	
	(K-1)		sex hormone	gland.							
Hom		Knows		Discuss the role	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB		How		of testosterone		Understand		Small group		Viva	Obstetrics &
10.7						/ interpret		discussion		Voce	Gynaecolog
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy
UG-PB	Of	How	functions of	process of		Understand		Small group		Viva	Medicine
10.8	Information		testis and	spermatogenesis		/ interpret		discussion		Voce	
	(K-1)		control of								
llom	-	Knows	 Spermatogenes 	Discuss the	Cognitivo		Desirable to	Locturo	6406	6406	
		Knows	is & factors	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAUS	SAUS,	
10.0		поw	modifying it	ractors affecting		/interpret	KIIOW	discussion		Viva	
10.9				spermatogenesis		/ interpret		discussion		voce	
Hom	Integration	Knows	Describe	Describe	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	female	structure the		Understand		Small group		Viva	Obstetrics &
10.10	Information		reproductive	female		/ interpret		discussion		Voce	Gynaecolog
	(K-1)		system &	reproductive							
	-		functions of	tract							
Hom		Knows	ovary and its	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Obstetrics &
UG-PB		How	Control.	functions of		Understand	Know	Small group		Viva	Gynaecology
10.11				female		/ interpret		discussion		Voce	
				reproductive							
				tract							
Hom		Knows		Discuss the role	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Obstetrics &
UG-PB		How		of ovary as an		Understand		Small group	MCQs	Viva	Gynaecolog
10.12				endocrine gland.		/ interpret		discussion		Voce	
				List the							
				hormones							
				secreted by							
				ovary.							

Hom	Integration	Knows	Describe	Discuss the	Cognitivo		Mustknow	Locturo	SAOc	1400	Obstatrics 8
	of	Knows	Describe monstrual cyclo	Discuss the	Cognitive	Level Z	IVIUST KNOW	Lecture,	SAUS	LAQS,	Obstetrics &
10 12	UI	now	menstruar cycle	during monstrual		/ interpret		discussion	IVICUS	Viva	Gynaecology
10.15			with normonal,			/ interpret		uiscussion		voce	
	(K-1)	Ka suus	uterine and	Cycle Diasuss the	Caracitica	1	N Asset Luc asso	1 a atuma	64.0-	140-	Obstatuias (
HOM		Knows	ovarian	Discuss the	Cognitive	Level 2	wust know	Lecture,	SAUS	LAQS,	Obstetrics &
UG-PB		HOW	changes	Uterine changes		Understand		Small group	INICUS	viva	Gynaecology
10.14				during menstrual		/ interpret		discussion		voce	
			_	cycle	o				64.0		
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQS,	Obstetrics &
UG-PB		How		Vaginal changes		Understand		Small group		Viva	Gynaecology
10.15				during menstrual		/ interpret		discussion		Voce	
				cycle				_			
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Obstetrics &
UG-PB	Of	How	physiological	Gonadotrophin		Understand	know	Small group		Viva	Gynaecology
10.16	Information		effects of	changes during		/ interpret		discussion		Voce	Materia
	(K-1)		female sex	menstrual cycle							Medica
Hom		Knows	hormones	Discuss the	Cognitive	Level 2	Must know	CBL,	MCQs	SAQs,	Obstetrics &
UG-PB		How		changes during		Understand		Lecture,		Viva	Gynaecology
10.17				menopause		/ interpret		Small group		Voce	
								discussion			
Hom		Knows	Discuss the	Describe the	Cognitive	Level 2	Nice to	Lecture,	MCQs	Viva	Obstetrics &
UG-PB		How	contraceptive	contraceptive		Understand	know	Small group		Voce	Gynaecology
10.18			methods for	methods for male		/ interpret		discussion			Community
			male and								Medicine
Hom		Knows	female.	Describe the	Cognitive	Level 2	Nice to	Lecture,	MCQs	Viva	Obstetrics &
UG-PB		How		contraceptive		Understand	know	Small group		Voce	Gynaecology
10.19				methods for		/ interpret		discussion			Community
				female							Medicine
Hom	Integration	Knows	Discuss the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Obstetrics &
UG-PB	Of	How	physiology of	fertilization &		Understand		Small group		Viva	Gynaecology
10.20	Information		pregnancy,	implantation of		/ interpret		discussion		Voce	
	(K-1)		parturition &	ovum							
Hom		Knows	lactation.	Explain the role	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Obstetrics &
UG-PB		How		of placenta as an		Understand	Know	Small group		Viva	Gynaecology
10.21				endocrine organ.		/ interpret		discussion		Voce	
				List the placental							
				hormones							

Hom	Knows	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Obstetrics &
UG-PB	How	process of		Understand		Small group		Viva	Gynaecology
10.22		parturition		/ interpret		discussion		Voce	Materia
									Medica
Hom	Knows	Describe the role	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Obstetrics &
UG-PB	How	of prolactin		Understand	Know	Small group		Viva	Gynaecology
10.23		Hormone		/ interpret		discussion		Voce	
Hom	Knows	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Obstetrics &
UG-PB	How	process of		Understand	know	Small group		Viva	Gynaecology
10.24		lactation		/ interpret		discussion		Voce	Community
									Medicine
									Materia
									Medica

Topic No	11
Theory	Special Senses
Practical	
Clinical Physiology	Special Senses – Clinical Examination

At the end of the chapter on Special senses, the student must be able to -

- Discuss perception of smell and taste sensation
- Discuss patho-physiology of altered smell and taste sensation
- Discuss functional anatomy of ear and auditory pathways & physiology of hearing
- 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
- Discuss the physiological basis of lesion in visual pathway
- Demonstrate the testing of visual acuity, colour and field of vision; hearing; smell; and taste sensation in volunteer or simulated environment

S.No	Generic competency	Subject area	Miller's Level	Specific Competency	Specific Learning Objectives / outcomes	Bloom's domain	Guilbert's level	Must know / desirable to know / nice to know	TL method / media	Formati ve Assessm ent	Summat ive Assessm ent	Integration - Horizontal / Vertical / Spiral
Hom UG-PB 11.1	Integration Of Information (K-1)	Special Senses	Knows How	Describe the perception of smell sensation	Discuss the sensation of olfaction	Cognitive	Level 2 Understand / interpret	Desirable to Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy Surgery - ENT
Hom UG-PB 11.2			Knows How		Discuss the olfactory receptor, olfactory pathway	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQ, Viva Voce	Anatomy
Hom UG-PB 11.3			Knows How		Discuss the physiology of olfaction	Cognitive	Level 2 Understand / interpret	Desirable to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	
Hom UG-PB 11.4			Knows How		Discuss the altered sensation of smell	Cognitive	Level 2 Understand / interpret	Must know	CBL, Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Medicine
Hom UG-PB 11.5	Integration Of Information (K-1)		Knows How	Describe perception of taste sensation	Discuss the sensation of Taste	Cognitive	Level 2 Understand / interpret	Desirable to Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy Surgery – ENT Materia Medica Repertory
Hom UG-PB 11.6			Knows How		Discuss the taste receptor.	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQ, Viva Voce	Anatomy
			Shows How		Draw the taste pathway	Psycho motor	Level 2. Control	Must Know	Demonstrat ion	Observa tion	DOPS	Anatomy
Hom UG-PB 11.7			Knows How		Discuss the physiology of Taste	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	

							r			1	
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	CBL,	MCQs	SAQs,	Medicine
UG-PB		How		altered sensation		Understand	know	Lecture,		Viva	Materia
11.8				of Taste		/ interpret		Small group		Voce	Medica
								discussion			
Hom	Integration	Knows	Describe the	Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	functional	physiological		Understand	Know	Small group		Viva	Surgery – EINT
11.9	Information		anatomy of ear	anatomy of ear		/ interpret		discussion		Voce	Materia
	(K-1)		& auditory								Medica
Hom		Shows	pathways	Map the Auditory	Psycho	Level 2.	Must Know	Demonstrat	Observa	Checklist	Anatomy
UG-PB		How		Pathway	motor	Control		ion	tion		ENT
11.10											
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Surgery - ENT
UG-PB		How		mechanism of		Understand		Small group		Viva	
11.11				hearing		/ interpret		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	CBL,	MCQs	SAQs,	Medicine
UG-PB		How		altered sensation		Understand		Lecture,		Viva	Surgery – EINT
11.12				of Hearing		/ interpret		Small group		Voce	Materia
								discussion			Medica
Hom	Integration	Knows	Describe the	Explain the	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	functional	structure &		Understand		Small group		Viva	Surgery -
11.13	Information		anatomy of eye	function of eye.		/ interpret		discussion		Voce	Ophthalmolo
	(K-1)										gy
Hom	Integration	Knows	Describe the	Describe the	Cognitivo		Mustknow	Locturo	SAOc	1400	
	Of		physiology of	visual pathway	Cognitive	Level 2	IVIUSE KIIOW	Small group	SAUS	LAQS,	
11 14	Information	HOW	imago	visual patriway		/ interpret		discussion		Viva	
11.14			formation			/ interpret		uiscussion		VULE	
	((- 1)		Tormation								
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Surgery –
UG-PB		How		principles of		Understand		Small group		Viva	Ophthalmolo
11.15				optics, visual		/ interpret		discussion		Voce	gy
				acuity, Visual							
				reflex							
Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Surgery –
UG-PB	Gathering	How	physiology of	photochemistry		Understand	know	Small group		Viva	Ophthalmolo
11.16	,Integration		vision including	of vision		/ interpret		discussion		Voce	gy
	Of		colour vision								

	-											
Hom	information,	Kn	nows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	Surgery –
UG-PB	Problem	Ho	ow		photopic &		Understand		Small group		Viva	Ophthalmolo
11.17	Integration				scotopic vision		/ interpret		discussion		Voce	gy
Hom	(K-2)	Kn	nows	-	Discuss the visual	Cognitive	Level 2	Desirable to	PBL,	SAQs	SAQs,	Surgery –
UG-PB		Ho	ow		adaptation, visual		Understand	know	Lecture,		Viva	Ophthalmolo
11.1.8					accommodation		/ interpret		Small group		Voce	gy
					& night blindness				discussion			Materia
												Medica
Hom	Information	Kn	nows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	LAQs,	Surgery –
UG-PB	Gathering	Ho	ow	refractive	different types of		Understand	know	Small group		Viva	Ophthalmolo
11.19	,Integration			errors and	refractive errors		/ interpret		discussion		Voce	gy
	Of			colour								Materia
	information,			blindness								Medica
	Problem											Repertory
Hom	Integration	Kn	nows	-	Discuss the	Cognitive	Level 2	Desirable to	CBL,	MCQs	SAQs,	Surgery –
UG-PB	(K-2)	Ho	ow		colour blindness		Understand	know	Lecture,		Viva	Ophthalmolo
11.20							/ interpret		Small group		Voce	gy
							-		discussion			Materia
												Medica
Hom		Kn	nows	-	List the causes of	Cognitive	Level	Nice to know	CBL,	SAQs	Viva	Surgery –
UG-PB					Nystagmus		1Recall		Lecture,		Voce	Ophthalmolo
11.21									Small group			gy
									discussion			Materia
												Medica
Hom	Information	Sh	nows	Demonstrate	Perform the	Psycho	Level 2	Desirable to	Demonstrat	Observa	Checklist	Surgery –
UG-PB	Gathering	Ho	ow	Testing of	testing of visual	Motor	(Control)	know	ion	tion		Ophthalmolo
11.22	,Integration			visual acuity,	acuity, colour							gy
	Of			colour and field	and field of vision							
	information,			of vision in a		<u> </u>						
Hom	Problem	Kn	nows	volunteer	Interpret the	Cognitive	Level 2	Nice to know	CBL,	SAQs	Viva	Surgery –
UG-PB	Integration	Ho	ow		testing of visual		Understand		Lecture,		Voce	Ophthalmolo
11.23	(K-2)				acuity, colour		/ interpret		Small group			gy
					and field of vision				discussion			Materia
												Medica
Hom	Information	Sh	nows	Demonstrate	Perform the	Psycho	Level 2	Desirable to	Demonstrat	Observa	Checklist	Surgery – ENT
UG-PB	Gathering	Hc	ow	testing of	testing of hearing	Motor	(Control)	know	ion	tion		
11.24	,Integration			hearing in a	in a volunteer							

Hom	Of	Knows	volunteer	Interpret the	Cognitive	Level 2	Nice to know	CBL,	SAQs	SAQs,	Surgery –	
UG-PB	information,	How		testing of hearing		Understand		Lecture,		Viva	Ophthalmol	כ
11.25	Problem			in a volunteer		/ interpret		Small group		Voce	gy	
	Integration							discussion			Materia	
	(K-2)										Medica	
Hom	Information	Shows	Demonstrate	Perform testing	Psycho	Level 2	Desirable to	Demonstrat	Observa	Checklist	Surgery – El	Т
UG-PB	Gathering	How	testing for	for smell in a	Motor	(Control)	know	ion	tion			
11.26	,Integration		smell in a	volunteer								
	Of		volunteer									
Hom	information,	Knows		Interpret testing	Cognitive	Level 2	Nice to know	CBL,	SAQs	SAQs,	Surgery –	
UG-PB	Problem	How		for smell in a		Understand		Lecture,		Viva	Ophthalmol)
11.27	Integration			volunteer		/ interpret		Small group		Voce	gy	
	(K-2)							discussion			Materia	
											Medica	
Hom	Information	SHOW	Demonstrate	Perform testing	Psycho	Level 2	Must know	Demonstrat	Observa	Checklist	Anatomy	
UG-PB	Gathering,	HOW	testing for	for taste	Motor	(Control)		ion	tion		Surgery – El	Т
11.27	Integration		taste sensation	sensation in								
	Of		in volunteer	volunteer								
Hom	information,	Knows		Interpret testing	Cognitive	Level 2	Nice to know	CBL,	SAQs	SAQs,	Anatomy	
UG-PB	Problem	How		for taste		Understand		Lecture,		Viva	Surgery – El	Т
11.29	Integration			sensation in		/ interpret		Small group		Voce		
	(K-2)			volunteer				discussion				
Topic No	12											
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Theory	Digestive System & Nutrition											
Practical	Liver Function Test											
Clinical Physiology	Gastrointestinal system clinical examination											

Learning Outcomes: -

At the end of the chapter Digestive system & Nutrition, the student must be able to -

- Describe the structure, Function & Innervation of digestive system.
- Describe the composition, mechanism of secretion, function & regulation of saliva.
- Describe the movement of oesophagus.
- Describe the composition, mechanism of secretion, function & regulation of gastric juice.
- Describe the composition, mechanism of secretion, function & regulation of pancreatic juice.
- Describe the structure & function of liver & Gall bladder.
- Describe the composition, mechanism of secretion, function & regulation of Bile.
- Describe the composition, mechanism of secretion, function & regulation of Small Intestine.
- Describe the movement of gastrointestinal tract, it's regulation & function.
- Describe the movement of large intestine & defecation as a process.
- Describe the physiology of digestion and absorption of nutrients.
- Observe the procedure for Liver Function Test.
- Perform examination for gastrointestinal system on a volunteer.

S.No	Generic	Subject	Miller's	Specific	Specific Learning	Bloom's	Guilbert's	Must	TL method /	Format	Summat	Integration	
	competency	area	Level	competency	Objectives /	domain	level	know /	media	ive	ive	- Horizontal	
					outcomes			desirable		Assess	Assessm	/ Vertical /	
								to know /		ment	ent	Spiral	
								nice to					
								know					
Hom	Integration Of	Digestiv	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy	
UG-PB	Information	e System	How	structure,	importance of		Understand		Small group		Viva		
12.1	(K-1)			Function &	digestive system		/ interpret		discussion		Voce		
12.1	(K-1)			Function &	digestive system		/ interpret		discussion		Voce		

Hom UG-PB 12.2 & Knows (without) Innervation of system Recall (gestive system Cognitive (gestive system Level 1 Recall Must know (without) Leture, Small group (without) SAQs Small group (without) SAQs Voce SAQs Small group (without) SAQs Voce													
UG-PB Nutrition digestive system structure of digestive system Recall Small group small group Viva UG-PB Knows Knows Recognize the structure of small Cognitive Recall Level 1 Must know Lecture, small group SAQs SAQ	Hom		&	Knows	Innervation of	Recall the	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
12.2 Nom UG-PB Nows System digestive system Cognitive Recall Must know Lecture, Small group SAQs SAQs, SMQs Anatomy 12.3 Nom Integration Of Integration Of Integration Of Integration Of SaAgs SAQs SAQs SAQs Anatomy 12.5 Information Integration Of Integration Of Integration Of Sinall group Viva Viva 12.5 Information Knows Describe the secretion, function & Cognitive Level 1 Desirable Lecture, silvary glands. SAQs SAQs SAQs SAQs Anatomy 12.6 Knows regulation of secretion, function & Salvary glands. Cognitive Level 2 Must know Lecture, silvary glands. Voce Medica 12.6 Knows regulation of sulvary glands. Discuss Cognitive Level 2 Must know Lecture, silvary glands. Voce Medica 12.7 Knows regulation of salivary glands. Discuss functions Cognitive Level 2 Must know Lecture, silvary glands. Viva Materia 12.7 Knows How Salivary glands. Discuss functions Cognitive Level	UG-PB		Nutrition		digestive	structure of		Recall		Small group		Viva	
Hom UG-P8 12.3 Knows Knows Knows Knows Recapite the structure of small restine Cognitive restructure of small restine Level 1 Recall Must know Lecture, small group SAQs Viva Anatomy Viva UG-PB 12.5 Information (UG-PB 12.7 Knows UG-PB Knows How Knows How Knows How Saliva Cognitive viva Level 2 Understand / interpret Must know Lecture, SAQs SAQs Viva Medica UG-PB 12.9 Indemitive retring Knows Knows Explain the control of salivary scretion / interpret Cognitive Understand / interpret Must know Lecture, SAQs	12.2				system	digestive system				discussion		Voce	
UG-PB 12.3 Nomulastication of UG-PB Knows Knows Structure of small intestine Recall Small group discussion Viva Voce Anatomy Voce UG-PB 12.4 Integration of UG-PB Integration of Secretion, Gradiant 12.5 Knows Describe the composition, secretion, function & secretion, function & secretion, function & salivary glands. Cognitive glands. Level 1 Recall Desirable to know Lecture, SAQs SAQs SAQs, SAQs Anatomy Voce Hom UG-PB 12.6 Knows Describe the composition of salivary 12.7 Cognitive salivary saliva Cognitive salivary saliva Level 1 Recall Desirable to know Lecture, SAQs SAQs SAQs, Voce Viva Materia Medica Hom UG-PB 12.7 Knows How How Saliva Discus functions saliva Cognitive saliva Level 2 Understand /interpret Must know Lecture, SAQs LAQs, Voce Medica Hom UG-PB 12.8 Knows How Knows How Knows How Everlan Cognitive Understand /interpret Level 2 Understand /interpret Must know Lecture, SAQs LAQs, Voce Medica Hom UG-PB 12.9 Integration of Salivary secretion /interpret Cognitive Understand /interpret Level 2 Understand /interpret Must know Lecture, SAQs LAQs, Voce Medica Hom UG-PB 12.10 Integration of Salivary secretion /int	Hom			Knows		Recognize the	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
12.3 Hom UG-PB Knows intestine constitue Level 1 Must know Lecture, Small group SAQs SAQs, Voce Anatomy 12.4 Integration Of UG-PB Integration Of Information Knows Describe the composition, function & regulation of salivary glands. Cassify salivary glands. Level 1 Must know Lecture, Recall SAQs SAQs Natorny 12.5 Knows Describe the composition, function & regulation of salivary glands. Cognitive Level 1 Desirable to know Excurse, Small group discussion SAQs Vace Medica 12.6 Knows regulation of salivary glands. Cognitive understand Level 2 Must know Lecture, Level 2 Must know Lecture, Small group MCQs LAQs, Voce Biochemistri Voce 12.6 Knows How Saliva Cognitive Level 2 Must know Lecture, Small group Viva Materia 12.7 Knows How Salivary scretion Cognitive Level 2 Must know Lecture, Small group SAQs LAQs, Viva Medica 12.9 Knows How Salivary scretion Cognitive Level 2 Must know Lecture, Small group SAQs LAQs, Viva Medica	UG-PB					structure of small		Recall		Small group		Viva	
Hom UG-P8 12.4 Knows Identify the structure of large intestine Cognitive structure of large intestine Level 1 Recall Must know Small group Lecture, SAQs SAQs, Voce Anatomy Voce Hom UG-P8 Information Integration Of (K:1) Knows Describe the secretion, function & saliva Cognitive saliva Level 1 Recall Desirable to know Lecture, Small group SAQs SAQs, Voce Anatomy Voce Hom UG-P8 12.6 (K:1) Knows Describe the function & saliva Cognitive saliva Level 1 Recall Describe to know Medica Voce Medica Hom UG-P8 12.7 Knows regulation of saliva Discuss function & saliva Cognitive saliva Level 2 (Composition of saliva Must know (Integrate (Integrate MCQs LAQs, Medica Medica Hom UG-P8 12.7 Knows UG-P8 Knows How Network How Not know How Describe to saliva's secretion saliva's secretion Cognitive Understand saliva's secretion Must know (Integrate saliva's secretion Must know (Integrate Lecture, Small group SAQS LAQs, Voce Medica Hom UG-P8 12.10 Integration Of UG-P8 Knows How Descr	12.3					intestine				discussion		Voce	
UG-PB and any and any and any and any and any any any any any any and any	Hom			Knows		Identify the	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
12.4	UG-PB					structure of large		Recall		Small group		Viva	
Hom UG-PB 12.5 Integration of Information Knows Describe the composition, function & secretion, function & Classify salivary glands. mechanism of salivary glands. Cognitive Composition of salivary glands. Level 1 Desirable to know Exturne, Small group SAQs SAQs, Viva Matomy Metria Hom UG-PB 12.6 Knows Knows Knows Discuss regulation of salivary Cognitive composition of salivary Level 2 composition of salivar Must know Lecture, Small group MCQs LAQs, Viva Biochemistr Wiva Hom UG-PB 12.7 Knows How Saliva Cognitive of saliva Level 2 Must know Lecture, Small group SAQs Medicine Hom UG-PB 12.2 Knows How Knows Describe mechanism of salivary secretion Cognitive (Level 2) Level 2 Must know Lecture, Small group SAQs, Viva Medicine Hom UG-PB 12.10 Knows How Knows Ecture, salivary secretion Cognitive (lincal relevance of salivary secretion Level 2 Must know Lecture, Small group SAQs, Viva Medicine UG-PB 12.1 Integration of Information UG-PB <td< td=""><td>12.4</td><td></td><td></td><td></td><td></td><td>intestine</td><td></td><td></td><td></td><td>discussion</td><td></td><td>Voce</td><td></td></td<>	12.4					intestine				discussion		Voce	
UG-PB Information (K-1) composition, mechanism of function & secretion, function & secretion, function & secretion, function & salivary glands. Recall to know Small group Viva Materia Hom Knows regulation of Jack Discuss Cognitive Level 2 Must know Leture, Small group WCQs LAQs, Voce Biochemistre 12.6 How salivary glands. Discuss Cognitive Level 2 Must know Lecture, Small group Viva Voce Medica 12.7 Knows How Salivary glands. Cognitive Level 2 Must know Lecture, Small group SAQs LAQs, Medicine 12.7 Knows How Medica Discuss functions Cognitive Level 2 Must know Lecture, Small group Viva Materia 12.7 Knows How Medica Discuss functions Cognitive Level 2 Must know Lecture, Small group Viva Materia 12.9 Knows How Salivary secretion / interpret Must know Lecture, Small group SAQs LAQs, Viva Viva	Hom	Integration Of		Knows	Describe the	Classify salivary	Cognitive	Level 1	Desirable	Lecture,	SAQs	SAQs,	Anatomy
12.5 (K-1) mechanism of secretion, function & UG-PB mechanism of salivary glands. Mention the innervation of salivary glands. discussion Voce Medica Hom UG-PB 12.6 Knows regulation of saliva Discuss Cognitive understand Level 2 Must know Lecture, Small group MCQs LAQs, Biochemistri Viva Medicia Hom UG-PB 12.7 Knows How Knows For saliva Cognitive of saliva Level 2 Must know Lecture, Small group SAQs LAQs, Medicia Hom UG-PB 12.7 Knows How Describe Cognitive salivary secretion Level 2 Must know Lecture, discussion SAQs LAQs, Medicia Hom UG-PB 12.9 Knows How Discuss the control of salivary secretion Cognitive salivary secretion Level 2 Must know Lecture, discussion SAQs LAQs, Viva Viva Medicia Hom UG-PB 12.10 Integration Of Lincar levance of salivary gland scuretion Cognitive secretion Level 2 Must know Lecture, discussion SAQs SAQs SAQs, Medicia Hom UG-PB 12.11 Integration Of LincFrmati	UG-PB	Information			composition,	glands.		Recall	to know	Small group		Viva	Materia
Hom UG-PB 12.6Knows HowKnows regulation of salivarinnervation of salivary glands.Level 2 UnderstandMust know UnderstandLecture, Small groupMCQs VivaLAQs, VivaBiochemistr y12.6HowSalivaCognitive SalivaLevel 2 UnderstandMust knowLecture, UnderstandMCQs Small groupLAQs, VivaMdcline10G-PB 12.7HowHowNowsFegulation of salivaCognitive UnderstandLevel 2 UnderstandMust knowLecture, Small groupSAQsLAQs, VivaMdcline Mdcline10G-PB 12.9KnowsKnowsDescribe salivary secretionCognitive UnderstandLevel 2 UnderstandMust knowLecture, Small groupSAQsLAQs, VivaMdcline Mdcline12.9KnowsKnowsKnowsNowsCognitive salivary secretionLevel 2 UnderstandMust knowLecture, Small groupSAQsLAQs, VivaViva12.9KnowsHowKnowsExplain the salivary glandCognitive (interpretLevel 2 UnderstandDesirable (interpretPBL, SAQsSAQsSAQs, VivaMedicine Mdcline10G-PB 12.11Integration Of (K-1)KnowsDescribe the movement of oesophagusCognitive mastication.Level 2 (interpretDesirable (knowPSAQsSAQs, VivaVivaHom UG-PBIntegration Of (K-1)KnowsDescribe the movement of oesophagus	12.5	(K-1)			mechanism of	Mention the				discussion		Voce	Medica
Hom UG-PB 12.6 Knows How function & regulation of saliva salivary glands. Level 2 Must know Lecture, Small group MCQs Viva LAQs, Viva Biochemistr y Hom UG-PB 12.7 Knows How Knows How Knows How News How News How News Flow					secretion,	innervation of							
Hom UG-PB 12.6Knows Howregulation of salivaDiscuss composition of salivaCognitive understandLevel 2 UnderstandMust know discussionLecture, Small groupMCQs VivaLAQs, VivaBiochemistr yHom UG-PB 12.7HowMowHowDiscuss functions of salivaCognitive of salivaLevel 2 UnderstandMust knowLecture, Small groupSAQs VivaLAQs, MedicineMedicine MedicaHom UG-PB 12.9Knows HowHowDescribe salivary secretionCognitive UnderstandLevel 2 UnderstandMust know Small groupLecture, SAQsSAQs VivaMedicine MedicaHom UG-PB 12.9Knows HowKnows HowKnows HowDescribe salivary secretionCognitive UnderstandLevel 2 UnderstandMust know UnderstandLecture, Small groupSAQs VivaLAQs, VivaViva MedicaHom UG-PB 12.10Knows HowKnows HowDescribe the clinical relevanceCognitive UnderstandLevel 2 UnderstandDesirable UnderstandPBL, Small groupSAQs VivaSAQs, VivaMedicine MedicaHom UG-PB 12.11Integration Of InformationKnows HowDescribe the movement of oesophagusCognitive PBLevel 2 UnderstandDesirable VivaPBL, VivaSAQs, VivaSAQs, VivaMedicaHom UG-PB 12.11Integration Of InformationKnows HowDescrib					function &	salivary glands.							
UG-PB 12.6 How saliva composition of saliva Understand /interpret Small group discussion Viva voce Voce Hom UG-PB 12.7 How SAQs LACs, Medicine Hom UG-PB 12.7 SAQs LACs, Medicine Hom UG-PB 12.8 Froms Froms Saliva Cognitive Level 2 Must know Lecture, discussion SAQs LAQs, Medicine Hom UG-PB 12.8 Froms Salivary secretion Understand Small group Viva Materia Hom UG-PB Integration Of Knows How Salivary secretion Understand Small group Viva Viva <td>Hom</td> <td></td> <td></td> <td>Knows</td> <td>regulation of</td> <td>Discuss</td> <td>Cognitive</td> <td>Level 2</td> <td>Must know</td> <td>Lecture,</td> <td>MCQs</td> <td>LAQs,</td> <td>Biochemistr</td>	Hom			Knows	regulation of	Discuss	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Biochemistr
12.6 Hom Galiva / interpret discussion Voce Medicine UG-PB 12.7 How Discuss functions Cognitive Level 2 Must know Lecture, SAQs LAQs, Medicine 12.7 Hom Understand / interpret discussion Voce Medicine 12.7 Hom Describe Cognitive Level 2 Must know Lecture, SAQs LAQs, Medicine 12.8 How Describe Cognitive Level 2 Must know Lecture, SAQs LAQs, Voce Medicine 12.9 Knows How Salivary secretion / interpret Must know Lecture, SAQs LAQs, Voce	UG-PB			How	saliva	composition of		Understand		Small group		Viva	У
Hom UG-PB 12.7 Knows How Knows How Knows How Discuss functions of saliva Cognitive Level 2 Level 2 Must know Lecture, discussion LAQs, Viva Medicine Materia Hom UG-PB 12.8 Knows How How Describe Cognitive salivary secretion Level 2 Must know Lecture, discussion SAQs LAQs, Viva Medicine Hom UG-PB 12.9 Hom UG-PB Knows How Knows How Knows How Cognitive salivary secretion Level 2 Must know Lecture, discussion SAQs LAQs, Viva Medicine Hom UG-PB Knows L2.10 Knows How Cognitive salivary secretion Level 2 Must know Lecture, discussion SAQs LAQs, Viva Vice Medicine 12.9 Knows How Knows Explain the clinical relevance of salivary gland & salivary secretion Cognitive Level 2 Desirable functors PBL, discussion SAQs SAQs, Viva Medicine 12.10 (K-1) Knows Describe the movement of oesophagus Describe the process of How Cognitive functors Level 2 <td< td=""><td>12.6</td><td></td><td></td><td></td><td></td><td>saliva</td><td></td><td>/ interpret</td><td></td><td>discussion</td><td></td><td>Voce</td><td></td></td<>	12.6					saliva		/ interpret		discussion		Voce	
UG-PB 12.7 How How of saliva Understand Small group Viva Materia Hom UG-PB 12.8 Knows Describe Cognitive Level 2 Must know Lecture, SAQs LAQs, Viva Maderia Hom UG-PB 12.8 Nows How Salivary secretion /interpret Must know Lecture, SAQs LAQs, Viva Materia Hom UG-PB Knows How Discuss the Cognitive Level 2 Must know Lecture, SAQs LAQs, Viva Viva Materia 12.9 How Most Explain the Cognitive Level 2 Must know Lecture, SAQs SAQs, Medicine UG-PB Integration Of Knows How Salivary secretion /interpret Level 2 Desirable PBL, SAQs SAQs, Medicine UG-PB Integration Of Integration Of Boscribe the Describe the Cognitive Level 2 Desirable Lecture, SAQs SAQs, Viva <td>Hom</td> <td></td> <td></td> <td>Knows</td> <td></td> <td>Discuss functions</td> <td>Cognitive</td> <td>Level 2</td> <td>Must know</td> <td>Lecture,</td> <td>SAQs</td> <td>LAQs,</td> <td>Medicine</td>	Hom			Knows		Discuss functions	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
12.7 Hom Medica Voce Medica Hom UG-PB How How Describe Cognitive Level 2 Must know Lecture, SAQs LAQs, Viva Viva 12.8 Hom Modifier Salivary secretion /interpret Must know Lecture, SAQs LAQs, Viva Viva Voce Medica 12.9 Knows How Most know Lecture, SAQs LAQs, Viva Voce Most know Lecture, SAQs LAQs, Voce Most know Lecture, SAQs LAQs, Voce Most know Lecture, SAQs LAQs, Voce Most know Lecture, SAQs KaQs Voce Most know Lecture, SAQs KaQs, Medica Most know Lecture, SAQs SAQs Most know Lecture, SAQs Voce Most know Lecture, Salivary scretion Viva Materia Most know Lecture, Salivary scretion Mist know Lecture, Salivary scretion Salivary scretion Salivary scretion Saliva	UG-PB			How		of saliva		Understand		Small group		Viva	Materia
Hom UG-PB Knows How Knows How Describe salivary secretion Cognitive Jitterpret Level 2 Understand Jitterpret Must know Small group LAQs, Viva LAQs, Viva LAQs, Viva Hom UG-PB Knows How How Discuss the control of salivary secretion Cognitive Understand Level 2 Understand Must know Lecture, Small group SAQs LAQs, Viva LAQs, Viva LAQs, Viva UG-PB 12.9 How Knows Explain the clinical relevance of salivary gland & salivary secretion Cognitive Level 2 Desirable PBL, Small group SAQs SAQs, Viva Medicine Hom Integration Of UG-PB Integration Of Linformation Explain the secretion Cognitive Level 2 Desirable PBL, Small group SAQs SAQs, Viva Medicine Hom Information 12.11 (K-1) Mow Describe the secophagus Describe the process of How Cognitive Level 2 Desirable Understand Jinterpret Lecture, Small group SAQs SAQs, Viva Viva Viva UG-PB Information 12.11 (K-1) Movement of eesophagus Describe the stages of Cognitive Understand Jinterpret Level 2 <td>12.7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>/ interpret</td> <td></td> <td>discussion</td> <td></td> <td>Voce</td> <td>Medica</td>	12.7							/ interpret		discussion		Voce	Medica
UG-PB How mechanism of salivary secretion Understand / interpret Small group discussion Viva Noce Hom Knows How Discuss the control of salivary secretion Cognitive Level 2 Must know Lecture, Small group discussion Voce Viva Noce 12.9 How Nows Knows Explain the clinical relevance of salivary gland & salivary & secretion Integration Of Knows Medicine Hom Information Describe the Describe the Cognitive Level 2 Desirable Lecture, & SAQs SAQs, Viva Viva Hom Information Knows Describe the Describe the Cognitive Level 2 Desirable Lecture, & SAQs SAQs,	Hom			Knows		Describe	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
12.8 Hom Generation / interpret discussion Voce Image: control of salivary secretion Discuss the control of salivary secretion Cognitive Level 2 Must know Lecture, discussion SAQs LAQs, Viva Viva Viva 12.9 Hom Salivary secretion / interpret Discussion / interpret Salivary Salivary Voce	UG-PB			How		mechanism of		Understand		Small group		Viva	
Hom UG-PB 12.9 Knows How Knows How Discuss the control of salivary secretion Cognitive (interpret) Level 2 Understand /interpret Must know Small group discussion LAQs, Viva LAQs, Viva Hom UG-PB 12.10 Knows UG-PB Knows How Fxplain the clinical relevance of salivary gland & salivary secretion Cognitive Understand /interpret Level 2 Desirable Small group discussion PBL, Viva SAQs SAQs, Viva Medicine Materia Hom UG-PB 12.11 Integration Of UG-PB 12.11 Integration Of UG-PB 12.12 Integration Of UG-PB 12.12 Describe the How Describe the movement of oesophagus Describe the process of How Cognitive Fxplain the stages of Stages of Stages of Level 2 Understand /interpret Desirable Lecture, Viva Lecture, Small group Viva SAQs Viva SAQs, Viva Anatomy Medicine Hom UG-PB 12.12 Knows Knows How Knows How Explain the Stages of Stages of Cognitive Vita Level 2 Vita Must know Small group Small group Small group MCQs Viva LAQs, Viva Anatomy Medicine	12.8					salivary secretion		/ interpret		discussion		Voce	
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12.9 Hom Group And Anternation of UG-PB Knows Knows Salivary secretion Level 2 Desirable PBL, SAQs SAQs, Medicine 12.10 How How Cinical relevance Of salivary gland Vinterpret Voce Voce Medicine 12.10 How Netgration of Knows Describe the Operation of Cognitive Level 2 Desirable Lecture, SAQs SAQs, Medicine Hom Integration of Knows Describe the Describe the Cognitive Level 2 Desirable Lecture, SAQs SAQs, Voce Medica Hom Information Information Describe the Describe the Cognitive Level 2 Desirable Lecture, SAQs SAQs, Viva Medicine Viva Viva Viva Viva Viva Viva<	UG-PB			How		control of		Understand		Small group		Viva	
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12.1012.10Integration Of UG-PBKnows Level 2Describe the movement of oesophagusof salivary gland & salivary secretion/ interpretSmall group discussionVoceMedicaHom UG-PBInformation 12.11(K-1)Mow HowDescribe the movement of oesophagusDescribe the movement of stages of swallowingCognitive Level 2Level 2 Understand (interpretDesirable to KnowLecture, Small group discussionSAQs VivaSAQs, VivaAnatomy MedicaMedica	UG-PB			How		clinical relevance		Understand	to Know	Lecture,		Viva	Materia
Image: NormationImage: NormationImage: NormationImage: NormationNorm	12.10					of salivary gland		/ interpret		Small group		Voce	Medica
Image: NormationIntegration Of UG-PBInformationImage: NormationImage: NormationIm						& salivary				discussion			
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12.11(K-1)oesophagusmastication./ interpretdiscussionVoceHomKnowsExplain the HowCognitiveLevel 2Must knowLecture, Small groupMCQsLAQs, VivaAnatomy Medicine12.12LowLowLowSmall groupVoceMedicine	UG-PB	Information		How	movement of	process of		Understand	to Know	Small group		Viva	
Hom UG-PB 12.12Knows HowExplain the stages of swallowingCognitive Level 2Level 2 Understand / interpretMust know Small group discussionLAQs, VivaAnatomy Medicine Medicine	12.11	(K-1)			oesophagus	mastication.		/ interpret		discussion		Voce	
UG-PBHowstages ofUnderstandSmall groupVivaMedicine12.12wallowing/ interpretdiscussionVoceVoce	Hom			Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Anatomy
12.12 swallowing / interpret discussion Voce	UG-PB			How		stages of		Understand		Small group		Viva	Medicine
	12.12					swallowing		/ interpret		discussion		Voce	

Hom		Kn	ows		Discuss the role	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	
UG-PB		Но	w		of upper & lower		Understand	know	Small group		Voce	
12.13					oesophageal		/ interpret		discussion			
					sphincter							
Hom		Kne	ows		List the common	Cognitive	Level 1	Nice to	CBL,	SAQs	Viva	Medicine
UG-PB					oesophageal		Recall	Know	Lecture,		Voce	Surgery
12.14					motility disorders				Small group			
									discussion			
Hom	Integration Of	Kne	ows	Describe the	Recall the macro	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Information			composition,	and micro		Recall		Small group		Viva	
12.15	(K-1)			mechanism of	structure of				discussion		Voce	
				secretion,	stomach							
Hom	-	Kno	ows	function &	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy
UG-PB		Но	w	regulation of	functions of		Understand		Small group		Viva	
12.16				Gastric Juice	stomach		/ interpret		discussion		Voce	
Hom		Kne	ows		Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Biochemistr
UG-PB		Но	w		composition &		Understand		Small group		Viva	У
12.17					functions of		/ interpret		discussion		Voce	
					gastric juice							
Hom	-	Kno	ows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB		Но	w		mechanism &		Understand		Small group		Viva	
12.18					regulation of		/ interpret		discussion		Voce	
					gastric juice							
					secretion							
Hom	-	Kno	ows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		Но	w		process of		Understand		Small group		Viva	
12.19					digestion in		/ interpret		discussion		Voce	
					stomach							
Hom		Kno	ows		Discuss the	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		Ho	w		movements of		Understand	to know	Small group		Viva	
12.20					stomach		/ interpret		discussion		Voce	
Hom		Kno	ows		Mention the	Cognitive	Level 1	Nice to	CBL,	SAQs	Viva	Medicine
UG-PB					three phases of		Recall	know	Lecture,		Voce	Materia
12.21					vomiting				Small group			Medica
									discussion			Repertory

Hom	Integration Of	Knows	Describe the	Recall the macro	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Information		composition,	and micro		Recall		Small group		Viva	
12.22	(K-1)		mechanism of	structure of				discussion		Voce	
			secretion,	Pancreas							
Hom		Knows	function &	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Biochemistr
UG-PB		How	regulation of	composition &		Understand		Small group		Viva	у
12.23			Pancreatic	functions of		/ interpret		discussion		Voce	
			Juice	pancreatic juice							
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB		How		mechanism &		Understand		Small group		Viva	
12.24				regulation of		/ interpret		discussion		Voce	
				pancreatic juice							
				secretion							
Hom		Knows		Describe exocrine	Cognitive	Level 2	Desirable	CBL,	MCQs	SAQs,	Medicine
UG-PB		How		pancreatic		Understand	to Know	Lecture,		Viva	Materia
12.25				insufficiency		/ interpret		Small group		Voce	Medica
								discussion			Repertory
Hom	Integration Of	Knows	Describe the	Discuss the	Cognitive	Level 2	Nice to	Lecture.	SAOs	SAOs.	Anatomy
UG-PB	Information	How	structure &	structure &		Understand	know	Small group	•	Viva	
12.26	(K-1)		function of	functions of Liver		/ interpret		discussion		Voce	
	()		liver & Gall			,					
Hom		Knows	bladder	Explain the signs	Cognitive	Level 2	Desirable	CBL,	MCQs	SAQs,	Medicine
UG-PB		How		of liver		Understand	to Know	Lecture,		Viva	
12.27				insufficiency		/ interpret		Small group		Voce	
			_					discussion			
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		How		structure &		Understand		Small group		Viva	Repertory
12.28				functions of gall		/ interpret		discussion		Voce	
				bladder							
Hom	Integration Of	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Biochemistr
UG-PB	Information	How	composition,	composition &		Understand		Small group		Viva	У
12.29	(K-1)		mechanism of	function of liver		/ interpret		discussion		Voce	
			secretion,	bile							
Hom		Knows	function &	Discuss the	Cognitive	Level 2	Must know	Lecture.	SAOs	LAOs.	Biochemistr
UG-PB		How	regulation of	composition &	200	Understand		Small group	5, 10,5	Viva	v
12.30			Bile	composition of		/ interpret		discussion		Voce	,
						,					

Image: Normal group index													
Image Image <th< td=""><td></td><td></td><td></td><td></td><td>function of gall</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>					function of gall								
Hom UG-PB 12.31 Knows How Knows How Describe the control & mechanism of bile secretion Cognitive Level 2 Level 2 Understand /interpret Desirable to know Ecture, Small group SAQs KAQs, Viva Medicine Hom UG-PB 12.32 Knows How Describe the clinical significance of Gall Bladder functions & Cognitive Level 2 Desirable to know Ecture, Small group SAQs SAQs Medicine Hom UG-PB 12.33 Integration Of Information Knows Describe the composition, secretion, Small group Cognitive Level 2 Desirable Understand /interpret CBL, Small group SAQs SAQs, Viva Medicine Hom UG-PB 12.34 Integration Of Information Integration Of Information Describe the composition, secretion, Small intestine Cognitive Composition & structure of Small Cognitive Intestine Level 1 Recall Desirable to know Lecture, Small group SAQs SAQs, Viva Biochemistri Viva Hom UG-PB 12.35 Integration of Information Exerce in Small intestine Cognitive Intestine Level 1 Recall Must know Lecture, Small group SAQs SAQs, Voce Viva Hom UG-PB 12.36 Knows How How Encure Small intestine					bladder bile								
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12.31 Hom UG-PB 12.32 Knows Knows Nechanism of bile secretion / interpret Desirable Understand / interpret CBL, Lecture, Small group SAQs SAQs, Viva Medicine Materia Medicine 10G-PB 12.33 Integration Of Information UG-PB 12.35 Integration Of Information UG-PB Knows Describe the clinical significance of Gall Bladder functions Cognitive Cognitive Level 2 Understand / interpret Desirable Rnow CBL, Lever 2 SAQs SAQs, Viva Medicine Medicia 10G-PB 12.35 Integration Of Information UG-PB 12.36 Knows Describe the curcions Cognitive functions Level 1 Cognitive Desirable Recail CBL, Knows SAQs SAQs, Viva Medicine Medicia Hom UG-PB 12.35 Integration Of Information UG-PB 12.35 Knows Describe the composition, secretion, How Cognitive functions d saccus Entericus Level 1 Understand / interpret Describe the conposition & screterions Cognitive functions d saccus Entericus Level 2 Understand / interpret Must know Lecture, Small group discussion Must know Lecture, Small group discussion SAQs LAQs, Viva Hom UG-PB 12.36 Knows Knows Knows Discus the regulation of secretions of Succus Entericus Cognitive Understand / interpret Level 2 Understand / interpret Must know Lecture, Small group discussion SAQs LA	UG-PB		How		control &	-	Understand		Small group		Viva		
Hom UG-PB 12.32 Integration Of Information (K-1) Knows How Knows How bile secretion Describe the clinical significance of liver functions. Level 2 Operation Describe the clinical significance of liver functions. Level 2 Understand / interpret Desirable Understand Nonw CRL, CBL, Understand SAQs SAQs SAQs, Medicine Materia Medicia Hom UG-PB 12.33 Integration Of Information (K-1) Knows How Describe the composition A regulation of Small intestine Cognitive Cognitive Level 1 Understand / interpret Desirable Understand / interpret SAQs SAQs, Viva Small group discussion SAQs SAQs, Viva Voce SAQs, Viva Viva Voce SAQs, Viva Voce SAQs, Viva Viva Voce SAQs, Viva Voce SAQs, Viva Voce SAQs, Viva Voce SAQs, Viva Voce SAQs, Viva Voce SAQs, Viva Voce SAQs, Viva Voce SAQs,	12.31				mechanism of		/ interpret		discussion		Voce		
Hom UG-PB 12.32 Integration OF Information UG-PB 12.35 Knows How Bescribe the How Cognitive Inical significance of Inical significance of Gall Bladder functions Level 2 Level 2 Understand /interpret Desirable Useribable Small group CBL, Lecture, Small group SAQs Voce Medicine Medica Hom UG-PB 12.33 Integration OF Information 12.34 Integration OF Information 12.34 Integration OF Information 12.34 Excurse Integration OF Information 12.34 Describe the Information ICR-DB Cognitive Integration OF Information 12.34 Level 2 Integration OF Information 12.34 Describe the Information ICR-DB Cognitive Integration OF Information ICR-DB Level 3 Integration OF Information ICR-DB Knows Integration of Small intestine Cognitive Intestine Level 1 Recall Desirable Information Intestine Level 2 Intestine Must know Lecture, Small group discussion SAQs Viva Voce Level 2 Understand / interpret Must know Lecture, Small group discussion SAQs Viva Voce LAQs, Viva Voce Hom UG-PB 12.37 Knows How Knows How Knows How Cognitive Intestine Cognitive Intestine Level 2 Understand / interpret Must know Lecture, Small group discussion SAQs Viva Voce SAQs Viva Voce </td <td></td> <td></td> <td></td> <td></td> <td>bile secretion</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>					bile secretion								
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12.32 Hom UG-PB 12.33 Integration Of (K1) Knows How Knows How Knows How Knows How Knows How Knows How Knows Fighificance of Gall Bladder functions Cognitive (Cognitive functions Level 2 (Level 2) Desirable (Chu, how CAU, SAQS, Knows SAQS, Viva Medica Hom UG-PB 12.34 Integration Of (K1) Recorrise the composition & secretion, mechanism of secretion, mechanism of secretion of 12.35 Cognitive (K1) Level 1 Recoll Desirable (Level 2) Lecure, Small group discussion SAQS, Viva Anatomy Repertory Hom UG-PB 12.36 Knows How Describe the composition & Small intestine Cognitive composition & Small intestine Cognitive Cognitive Level 1 Level 2 Desirable knows Lecure, Small group discussion SAQS, Viva Anatomy Repertory Hom UG-PB 12.36 Knows How Knows How Knows How Cognitive functions of Succus Entericus Cognitive Discuss the regulation of secretions of Succus Entericus Level 2 Understand / interpret Must know Lecure, Small group discussion SAQS, Viva LAQS, Viva Hom UG-PB 12.37 Knows How Knows How Knows How Cognitive How Level 2 Must know Lecure, Small group discussion SAQS, Viva LAQS, Viva Hom UG-PB 12.37 Knows How Knows How Knows How Knows How Cognitive How	UG-PB		How		clinical		Understand	to know	Lecture,		Viva	Materia	
Image: Normation of UG-PB 12.33Integration of UG-PB Information (K-1)Knows HowDescribe the composition, mechanism of secretionsCognitive composition, mechanism of structure of Small integration of UG-PB 12.34Integration Of Information (K-1)Knows Function & function & function & function & function & secretion of UG-PB 12.34Integration Of information (K-1)Knows function & function function fun	12.32				significance of		/ interpret		Small group		Voce	Medica	
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12.34 (K-1) mechanism of secretion, function & regulation of Small intestine Situation of secretion, function & function & function & function & regulation of Small intestine Discuss the composition & function & funct	UG-PB	Information		composition,	macro and micro		Recall	to know	Small group		Viva	Repertory	
Image: Log PBImage:	12.34	(K-1)		mechanism of	structure of Small				discussion		Voce		
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12.37 Syndrome / interpret Small group Voce Medica	UG-PB		How		Malabsorption		Understand	Know	Lecture,		Viva	Materia	
discussion	12.37				Syndrome		/ interpret		Small group		Voce	Medica	
									discussion				

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UG-PB Information How movement of movements of Understand Know Small group Viva	
12.42 (K-1) large intestine large intestine / interpret discussion Voce	
Hom Knows & defecation as Describe the Cognitive Level 2 Must know Lecture, SAQs SAQs, Materia	
UG-PB How a process. process of Understand Small group Viva Medica	
12.43 absorption / interpret discussion Voce	
&secretion in	
large intestine	
Hom Knows Discuss the Cognitive Level 2 Must know Lecture, SAQs SAQs, Repertory	
UG-PB How process of Understand Small group Viva	
12.44 defecation / interpret discussion Voce	
Hom Knows Discuss the Cognitive Level 2 Desirable CBL, SAQs SAQs, Medicine	
UG-PB How clinical Understand to know Lecture, Viva	
12.45 significance of / interpret Small group Voce	
large intestine discussion	
Hom Integration Of Knows Describe the Discuss the Cognitive Level 2 Must Lecture, SAQs LAQs,	
UG-PB Information How physiology of digestion & Understand Know Small group Viva	
12.46 (K-1) digestion and absorption of / interpret discussion Voce	
absorption of carbohydrates	
Hom Knows nutrients Discuss the Cognitive Level 2 Must Lecture, SAQs LAQs,	
UG-PB How digestion & Understand Know Small group Viva	
12.47 absorption of / interpret discussion Voce	
Fats	
Hom Knows Discuss the Cognitive Level 2 Must know Lecture, MCQs LAQs,	
UG-PB How digestion & Understand Small group SAQs Viva	
12.48 / interpret discussion Voce	

			1		r	•	r				
				absorption of							
				Proteins							
Hom		Knows		Discuss	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	
UG-PB		How		absorption of		Understand		Small group		Viva	
12.49				water.		/ interpret		discussion		Voce	
				electrolytes		, I					
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	
UG-PB		How		absorption of		Understand		Small group		Viva	
12.50				vitamins &		/ interpret		discussion		Voce	
				minerals							
Hom	Information	Shows	Observe the	Observe the liver	Psycho	Level 1	Nice to	Demonstrati	Observ	Checklist	Medicine
UG-PB	Gathering	How	process of	function test	Motor	(Observe /	know	on	ation		
12.51	,Integration		conducting			Imitate)					
	Of		liver function								
	information,		test								
	Problem										
	Integration										
	(K-2)										
Hom	Information	Shows	Demonstrate	Perform the	Psycho	Level 2	Desirable	Demonstrati	Observ	Checklist	Anatomy
UG-PB	Gathering	How	the	inspection of	Motor	(Control)	to know	on	ation		Medicine
12.52	,Integration		Gastrointestina	gastrointestinal							
	Of		l system	system in the							
	information,		examination	clinical							
	Problem			examination							
Hom	Integration	Knows		Interpret the	Cognitive	Level 2	Nice to	Lecture,	MCQs	SAQs,	Anatomy
UG-PB	(K-2)	How		findings of		Understand	know	Small group		Viva	Medicine
12.53				inspection of		/ interpret		discussion		Voce	
				gastrointestinal							
				system in clinical							
				examination							
Hom		Shows		Perform the	Psycho	Level 2	Desirable	Demonstrati	Observ	Checklist	Anatomy
UG-PB		How		palpation of	Motor	(Control)	to know	on	ation		Medicine
12.54				gastrointestinal							
				system in the							
				clinical							
1				examination							

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Hom	Kn	nows He	Interpret the	Cognitive	Level 2	Nice to	Lecture,	MCQs	SAQs,	Anatomy
UG-PB			findings of		Understand	know	Small group		Viva	Medicine
12.55			palpation of		/ interpret		discussion		Voce	
			gastrointestinal							
			system in clinical							
			examination							
Hom	Sh	nows	Perform the	Psycho	Level 2	Desirable	Demonstrati	Observ	Checklist	Anatomy
UG-PB	Hc	ow	percussion of	Motor	(Control)	to know	on	ation		Medicine
12.56			gastrointestinal							
			system in the							
			clinical							
			examination							
Hom	Kn	nows He	Interpret the	Cognitive	Level 2	Nice to	Lecture,	MCQs	SAQs,	Anatomy
UG-PB			findings of		Understand	know	Small group		Viva	Medicine
12.57			percussion of		/ interpret		discussion		Voce	
			gastrointestinal							
			system in clinical							
			examination							
Hom	Sh	nows	Perform the	Psycho	Level 2	Desirable	Demonstrati	Observ	Checklist	Anatomy
UG-PB	Hc	ow	auscultation of	Motor	(Control)	to know	on	ation		Medicine
12.58			gastrointestinal							
			system in the							
			clinical							
			examination							
Hom	Kn	nows	Interpret the	Cognitive	Level 2	Nice to	Lecture,	MCQs	SAQs,	Anatomy
UG-PB	Hc	ow	findings of		Understand	know	Small group		Viva	Medicine
12.59			auscultation of		/ interpret		discussion		Voce	
			gastrointestinal							
			system in clinical							
			examination							

Topic No	13
Theory	Renal Physiology
Practical	Kidney Function Test
Clinical Physiology	

Learning Outcomes: -

At the end of the chapter Renal Physiology, the student must be able to -

- Describe structure & functions of the kidneys.
- Explain the role of renin-angiotensin system.
- Describe the mechanism of urine formation.
- Describe the process of filtration, secretion & reabsorption in kidney.
- Describe the concentration and diluting mechanism in the kidney.
- Describe the renal regulation of acid-base balance.
- Describe the physiology of micturition.
- Describe the Renal Function Tests.

S.No	Generic competency	Subject area	Miller's Level	Specific Competency	Specific Learning Objectives / outcomes	Bloom's domain	Guilbert's level	Must know / desirable to know / nice to know	TL method / media	Format ive Assess ment	Summat ive Assessm ent	Integration - Horizontal / Vertical / Spiral
Hom UG-PB 13.1	Integration Of Information (K-1)	Renal Physiol ogy	Knows	Describe structure & functions of the kidneys.	Recognize the structure of kidney & nephron	Cognitive	Level 1 Recall	Must Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy Materia Medica
Hom UG-PB 13.2			Knows How		Discuss the functions of kidney	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	
Hom UG-PB 13.3			Knows How		Discuss the organization and function of glomerulus	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy Medicine
Hom UG-PB 13.4			Knows		Classify the type of nephrons	Cognitive	Level 1 Recall	Must Know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Anatomy
Hom UG-PB 13.5			Knows How		Describe the structure and functions of juxtaglomerular apparatus	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Anatomy
Hom UG-PB 13.6	Integration Of Information (K-1)		Knows How	Explain the role of renin – angiotensin system	Explain the secretions from juxtaglomerular apparatus & their regulation	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Medicine
Hom UG-PB 13.7	Integration Of Information (K-1)		Knows How	Describe the mechanism of urine formation	Explain the process of glomerular filtration	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	
Hom UG-PB 13.8			Knows How		Describe the regulation of Glomerular Filtration Rate	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	

Hom UG-PB 13.9 Integration UG-PB 13.10 Integration UG-PB 13.10 Integration UG-PB 13.10 Integration UG-PB 13.11 Integration UG-PB 13.11 Integration UG-PB 13.12 Knows For Parabolic			 									
UG-PB Integration How How mechanism of GFR Understand (interpret) Small group (interpret) Woa Vioa Hom Integration (K-1) Integration (K-1) Integration (K-1) Nows Describe the mechanism secretion & infiration, secretion & individual Discuss the general considerations of reabsorption Cognitive (Interpret) Level 2 Understand (Interpret) Musk know Lecture, Small group discussion MCQs LAQs, Voce Medicine Biochemistr Voce How Process of general considerations of reabsorption Describe the readsorption Cognitive (Interpret) Level 2 Understand (Interpret) Musk know Lecture, Small group discussion MCQs SAQs, Voce Biochemistr Voce How Nows Knows Knows Nos Level 2 Understand (Interpret) Describe the read transport of individual substances in substances in different segments of renal transport of individual substances in different segments of renal transport of individual substances in different segments of renal transport of individual concentration mechanism of renal transport of individual substances in different segments of renal tubule Nuce to Level 2 Nuck know Lecture, Small group discussion SAQs Voce Voce Hom UG-PB Information (K-1) Mows Describe the tubular Discuss the concentration mechanism Cognitive individual concentration mechanism Level 2 Understand indifferent segments o	Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
13.9 Integration	UG-PB		How		mechanism of		Understand		Small group		Viva	
Hom UG-PB 13.10 13.10 13.10 13.10 Hom UG-PB 13.10 13.10 Hom UG-PB 13.14 Hom UG-PB 13.14 Integration of (K-1) Integration (K-1) Integration (K-1) New Possible the reabsorption (K-1) Describe the filtration, secretion & secretion & secr	13.9				GFR.		/ interpret		discussion		Voce	
Integration UG-PB 13.10 Integration of (K-1) Integration (K-1) Integrati (K-1) <td></td> <td></td> <td></td> <td></td> <td>Explain the</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>					Explain the							
Integration (K-1) Integration (K-1) <thintegratin (K-1) Integratin (K-1) <</thintegratin 					factors affecting							
Hom UG-PB 13.10 Integration (K-1) Knows (K-1) Describe the process of filtration, (K-1) Doscribe the process of reabsorption Cognitive ascretion, secretion, reabsorption Level 2 process of filtration, secretion, reabsorption Must know (Marstand, process of reabsorption Level 2 (Marstand, process of reabsorption Must know (Marstand, process of mechanism Must know (Marstand, process of mechanismprocess of mechanismmechanism					GFR							
UG-PB 13.10 13.10 Of Information (K-1) How Information (K-1) How	Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Medicine
13.10 (K1) Information (K1) Information (K1) Information (K1) Information (K1) Information (K1) Information (K1) Interpret (K1) <	UG-PB	Of	How	process of	general		Understand		Small group		Viva	Biochemistr
Image: Normal Section S	13.10	Information		filtration,	considerations		/ interpret		discussion		Voce	у
Hom UG-PB 13.11 Integration (K-1) Mows How Readsorption in Knows How & secretion Pechanisms throughout the tubular segments Cognitive Cognitive throughout the tubular Level 2 Segments Describe the Understand Now Now Small group Small group discussion MCQs Vice Voce Vice Voce Wice Voce Hom UG-PB 13.12 Integration (K-1) Integration (K-1) News News Small group discussion MCQs Vice Voce Vi		(K-1)		secretion &	of reabsorption							
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UG-PB 13.11 How How renal transport Understand know Small group Viva Y Y 13.11 Integration Knows Knows Describe the Cognitive Level 2 Nice to Lecture, MCQs Viva Y Y Image: Normal group Voce	Hom		Knows	kidney	Describe the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Biochemistr
13.11 Hom UG-PB 13.12Knows HowKnows HowMeschanisms throughout the tubular segments/ interpret/ interpretdiscussionVoceImage: Construction VoceHom UG-PB 13.12Integration (K-1)Knows HowDescribe the transport of individual substances in different segments of renal tubuleCognitive concentration and diluting the kidneyLevel 2 Understand (K-1)Nice to Level 2 Understand (K-1)Level 2 Nice to Level 2Nice to Small group discussionMCQs Small group discussionViva VoceVoceHom UG-PB 13.13Information (K-1)Knows HowDescribe the concentration and diluting the kidneyCognitive urineLevel 2 Understand consideration of urineLevel 2 Understand (Level 2 Understand (InterpretMCQs Small group Small group VoceLAQs, Viva VoceMedicine Viva VoceHom UG-PB 13.14Knows HowKnows HowCognitive urineLevel 2 Understand (InterpretDesirable to McQsLecture, Viva VoceSAQs, Viva VivaBiochemistri Viva VivaHom UG-PB 13.15HowKnows HowDescribe the Cognitive Understand (InterpretLevel 2 Understand KnowDesirable to McQsLecture, Viva VivaSAQs, Viva	UG-PB		How		renal transport		Understand	know	Small group		Viva	у
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Hom UG-PB 13.12 Integration UG-PB 13.13 Integration UG-PB 13.14 Integration UG-PB 13.14 Integration UG-PB 13.14 Integration UG-PB 13.14 Integration UG-PB 13.15 Integration UG-PB 13.14 Integration UG-PB 13.15 Integration UG-PB 13.15 Integration UG-PB 13.15 Integration UG-PB 13.15 Describe the UG-PB 13.15 Cognitive UG-PB 13.15 Level 2 Understand UG-PB 13.15 Must know UG-PB 13.15 Lecture, Vice SAQs Vice LAQs, Vice Medicine Vice Hom UG-PB 13.15 Information (K-1) Knows How Describe the Concentration mechanism in the kidney Cognitive UG-PB 13.15 Level 2 Understand (Knows Must know Vice Lecture, Smail group Vice SAQs Vice LAQs, Vice Medicine Vice Hom UG-PB 13.15 Knows Mow How Level 2 Understand Vice Desirable to Vice Lecture, Vice SAQs Vice Vice Biochemistri y					throughout the							
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13.13Information (K-1)and diluting mechanism in the kidneyconsideration of urine concentration mechanism/ interpretdiscussionVoceImage: Construct on construct on mechanismHom UG-PB 13.14Knows HowKnows HowKnows MowDescribe the counter current multipliersCognitive (C	UG-PB	Of	How	concentration	general	_	Understand		Small group		Viva	
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13.14multipliers/ interpretdiscussionVoceHomKnowsUG-PBHow13.15Level 2UG-PBLevel 2UG-PBUnderstandUG-PBKnowUG-PBVivaUG-PBViv	UG-PB		How		counter current	0	Understand	Know	Small group		Viva	v
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UG-PBHowcounter currentUnderstandKnowSmall groupViva13.15exchangers/ interpretdiscussionVoce	Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	
13.15 exchangers / interpret discussion Voce	UG-PB		How		counter current		Understand	Know	Small group	- •-	Viva	
	13.15				exchangers		/ interpret		discussion		Voce	

Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Biochemistr	_
UG-PB	Gathering	How	renal	renal regulation		Understand		Small group		Viva	У	
13.16	,Integration		regulation of	of acid-base		/ interpret		discussion		Voce		
	Of		acid – base	balance								
Hom	information,	Knows	balance	Describe the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Biochemistr	_
UG-PB	Problem	How		buffer system in		Understand	know	Small group		Voce	У	
13.17	Integration			the kidney		/ interpret		discussion				
	(K-2)											
Hom	Integration	Knows	Describe the	Define	Cognitive	Level 1	Desirable to	Lecture,	SAQs	LAQs,		
UG-PB	Of		physiology of	micturition		(Remember	Know	Small group		Viva		
13.18	Information		micturition			/ recall)		discussion		Voce		
Hom	(K-1)	Knows		Discuss the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Anatomy	
UG-PB		How		nerve supply of		Understand	know	Small group		Voce		
13.19				urinary bladder		/ interpret		discussion				
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy	
UG-PB		How		micturition		Understand		Small group		Viva		
13.20				reflex		/ interpret		discussion		Voce		
Hom	Information	Shows	Describe the	Perform the	Psycho	Level 2	Must know	Demonstrati	Observ	OSCE	Biochemistr	
UG-PB	Gathering	How	Kidney	physical,	Motor	(Control)		on	ation		У	
13.21	,Integration		function teste	chemical, and								
	Of			microscopical								
	information,			examination of								
	Problem			urine								
Hom	Integration	Knows		Recognize the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQ,	Biochemistr	
UG-PB	(K-2)	How		normal values		Understand		Small group		Viva	У	
13.22				of physical,		/ interpret)		discussion		Voce		
				chemical, and								
				microscopical								
				examination of								
				urine								
Hom		Shows		Perform	Psycho	Level 2	Must know	Demonstrati	Observ	Checklist	Biochemistr	
UG-PB		How		examination for	Motor	(Control)		on	ation		У	
13.23				the abnormal							Medicine	
				constituents of								
				urine								

Hom	Knows	Interpret the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQ,	Biochemistr	
UG-PB	How	results of		Understand		Small group		Viva	у	
13.24		examination f	for	/ interpret		discussion		Voce	Medicine	
		the abnormal								
		constituents o	of							
		urine								
Hom	Knows	Interpret the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQ,	Biochemistr	
UG-PB	How	renal clearance	ce	Understand		Small group		Viva	у	
13.25		test for		/ interpret		discussion		Voce	Medicine	
		glomerular								
		function								
Hom	Knows	Interpret the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQ,	Biochemistr	
UG-PB	How	renal clearance	ce	Understand		Small group		Viva	у	
13.26		test for Tubul	ar	/ interpret		discussion		Voce	Medicine	
		function.								

Topic No	14	
Theory	Biochemistry	
Practical	Biochemistry Practical of carbohydrate, lipid, protein, Urine normal & abnormal constituents	
Clinical Physiology		

Learning Outcomes: -

At the end of the chapter Biochemistry, the student must be able to -

- Describe the lipid, carbohydrate, and protein metabolisms.
- Describe the enzymes and their activities.
- Describe the role of Vitamins.
- Perform the quantitative estimation of Glucose, Total Proteins, Uric Acid in Blood.
- Perform the Lipid Profile.

S.No	Generic	Subject	Miller's	Specific	Specific	Bloom's	Guilbert's	Must	TL method	Format	Summa	Integration	
	competency	area	Level	Competency	Learning	domain	level	know /	/ media	ive	tive	- Horizontal	
					Objectives /			desirable		Assess	Assess	/ Vertical /	
					outcomes			to know /		ment	ment	Spiral	
								nice to					
								know					
Hom	Integration	Biochemi	Knows	Describe the	Explain the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva		
UG-PB	Of	stry	How	lipid	biosynthetic		Understand	know	Small		Voce		
14.1	Information			Metabolism.	and catabolic		/ interpret		group				
	(K-1)				pathways				discussion				
Hom			Knows		Explain the	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,		
UG-PB			How		importance of		Understand	to Know	Small		Viva		
14.2					lipids in the		/ interpret		group		Voce		
					body.				discussion				
Hom			Knows		Explain the	Cognitive	Level 2	Must	Lecture,	SAQs	SAQs,		
UG-PB			How		different		Understand	Know	Small		Viva		
14.3							/ interpret				Voce		

				properties of				group			
				lipids.				discussion			
Hom	Integration	Knows	Describe the	Discuss	Cognitive	Level 2	Must know	Lecture.	SAOs	SAOs.	
UG-PB	Of	How	Carbohydrate	different types		Understand		Small		Viva	
14.4	Information		metabolism	of		/ interpret		group		Voce	
	(K-1)			carbohydrates		,		discussion			
Hom	((1)	Knows	-	List major	Cognitive		Must	Lecture	SAOs	SAOs	
		KIIOW3		functions of	cognitive	1Recall	Know	Small	3403	Viva	
1/1 5				carbohydrates		Incedi	KIIOW	group		Voce	
14.5				carbonyurates.				discussion		VULE	
llam		Knows	-	Discuss the feed	Cognitivo		Desirable	Locturo	\$405	SAO6	
		KIIUWS		Discuss the loou	Cognitive	Level 2	to Know	Lecture,	SAUS	SAUS,	
		поw		sources of		/interstand	LO KHOW	Small		Viva	
14.6				carbonydrates.		/ interpret		group		voce	
			_					discussion			
Hom		Knows		Explain the	Cognitive	Level 2	Must	Lecture,	SAQs	LAQs,	
UG-PB		How		processes of		Understand	Know	Small		Viva	
14.7				glycolysis		/ interpret		group		Voce	
			_					discussion			
Hom		Knows		Explain the	Cognitive	Level 2	Must	Lecture,	SAQs	LAQs,	
UG-PB		How		process of		Understand	Know	Small		Viva	
14.8				gluconeogenesi		/ interpret		group		Voce	
				S				discussion			
Hom		Knows		Describe the	Cognitive	Level 2	Must	Lecture,	SAQs	SAQs,	
UG-PB		How		process of ATP		Understand	Know	Small		Viva	
14.9				production		/ interpret		group		Voce	
				through				discussion			
				oxidative							
				phosphorylation							
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must	Lecture,	SAQs	SAQs,	
UG-PB	Of	How	Protein	special features	0	Understand	Know	Small		Viva	
14.10	Information		Metabolism	of protein		/ interpret	_	group		Voce	
	(K-1)			Metabolism		,		discussion			
Hom	`´´	Knows	1	Discuss the	Cognitive	Level 2	Nice to	Lecture.	SAOs	SAOs.	
UG-PB		How		functions of		Understand	know	Small		Viva	
14 11				intact amino		/ interpret		group		Voce	
17.11				acid		, merpret		discussion		VUCC	
			1	uciu				01300331011	1		1

Hom		Knows		Discuss the	Cognitive	Level 2	Must	Lecture,	SAQs	LAQs,	
UG-PB		How		oxidation of		Understand	Know	Small		Viva	
14.12				amino acid		/ interpret		group		Voce	
								discussion			
Hom		Knows		Discuss the	Cognitive	Level 2	Must	Lecture,	SAQs	LAQs,	Physiology
UG-PB		How		synthesis of		Understand	Know	Small		Viva	
14.13				proteins		/ interpret		group		Voce	
								discussion			
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,	
UG-PB		How		function of		Understand	to Know	Small		Viva	
14.14				nitrogenous		/ interpret		group		Voce	
				part				discussion			
Hom		Knows		Discuss the	Cognitive	Level 2	Must	Lecture,	SAQs	SAQs,	
UG-PB		How		exogenous &	_	Understand	Know	Small		Viva	
14.15				endogenous		/ interpret		group		Voce	
				protein				discussion			
				metabolism							
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,	Physiology
UG-PB	Of	How	enzymes and	concept of		Understand	to know	Small		Viva	
14.16	Information		their activities.	enzyme,		/ interpret		group		Voce	
	(K-1)			chemical				discussion			
				reactions,							
				catalyst and							
				substrates.							
Hom		Knows		Mention the	Cognitive	Level	Must	Lecture,	SAQs	LAQs,	Physiology
UG-PB				major functions		1Recall	Know	Small		Viva	
14.17				of enzymes.				group		Voce	
								discussion			
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,	Physiology
UG-PB		How		importance of		Understand	to Know	Small		Viva	
14.18				enzymes in the		/ interpret		group		Voce	
				body.				discussion			
Hom	Integration	Knows	Describe the	Define vitamin	Cognitive	Level 1	Desirable	Lecture,	SAQs	SAQs,	Physiology
UG-PB	Of		role of			(Remember	to Know	Small		Viva	Community
14.19	Information		Vitamins			/ recall)		group		Voce	Medicine
	(K-1)							discussion			

Hom		Knows		Classify vitamins	Cognitive	Level	Desirable	Lecture,	SAQs	SAQs,	
UG-PB						1Recall	to Know	Small		Viva	
14.20								group		Voce	
								discussion			
Hom		Knows		Mention		Level	Desirable	Lecture,	SAQs	SAQs,	Physiology
UG-PB				common		1Recall	to Know	Small		Viva	Medicine
14.21				vitamin				group		Voce	Community
				deficiencies				discussion			Medicine
Hom	Information	Knows	Demonstratio	List the use of	Cognitive	Level 1	Must	Lecture,	SAQs	SAQs,	
UG-PB	Gathering,		n of Uses Of	different	_	Recall	Know	Small		Viva	
14.22	Integration		Instruments	instruments in				group		Voce	
	Of		Or Equipment	biochemistry				discussion			
	information			experiments							
Hom	, Problem	Shows	Demonstrate	Perform the	Psycho	Level 2	Must	Demonstra	Observ	Checkli	Pathology
UG-PB	Integration	How	the Qualitative	qualitative	Motor	(Control)	Know	tion	ation	st	
14.23	(K-2)		Analysis of	analysis of							
			Carbohydrates	carbohydrate							
Hom		Knows	, Proteins And	Interpret the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Pathology
UG-PB		How	Lipids	results of	-	Understand	Know	Small		Voce	
14.24				Qualitative		/ interpret		group			
				analysis of				discussion			
				carbohydrate							
Hom		Shows	-	Observe the	Psycho	Level 1	Desirable	Demonstra	Observ	Checkli	Pathology
UG-PB		How		qualitative	Motor	(Observe /	to Know	tion	ation	st	
14.25				analysis of		Imitate)					
				Protein							
Hom		Knows	-	Interpret the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Pathology
UG-PB		How		results of	-	Understand	Know	Small		Voce	
14.26				Qualitative		/ interpret		group			
				analysis of				discussion			
				Protein							
Hom		Shows		Perform the	Psycho	Level 2	Nice to	Demonstra	Observ	Checkli	Pathology
UG-PB		How		qualitative	Motor	(Control)	Know	tion	ation	st	
14.27				analysis of Lipid		,					
Hom		Knows		Interpret the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Pathology
UG- PB		How		results of	-	Understand	Know	Small		Voce	
14.28						/ interpret					
L			1	1		· ·	1				

					Qualitative				group				
					analysis of Lipid				discussion				
Hom	Information	Sh	ows	Perform the	Perform the	Psycho	Level 3	Must	Demonstra	Observ	Checkli	Pathology	
UG-PB	Gathering	Но	w	quantitative	Quantitative	Motor	(Automatis	Know	tion	ation	st		
14.29	,Integration			estimation of	estimation of		m)						
	Of			Glucose, Total	glucose								
Hom	information	Kn	nows	Proteins, Uric	Interpret the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Pathology	
UG-PB	, Problem	Но	w	Acid in Blood	results of		Understand	Know	Small		Voce		
14.30	Integration				Qualitative		/ interpret		group				
	(K-2)				analysis of				discussion				
					glucose								
Hom		Sh	ows		Perform the	Psycho	Level 3	Must	Demonstra	Observ	Checkli	Pathology	
UG-PB		Но	w		Quantitative	Motor	(Automatis	Know	tion	ation	st		
14.31					estimation of		m)						
					Total proteins								
Hom		Kn	nows		Interpret the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Pathology	
UG-PB		Но	w		results of		Understand	Know	Small		Voce		
14.32					Qualitative		/ interpret		group				
					analysis of total				discussion				
					protein								
Hom		Sh	ows		Observe the	Psycho	Level 1	Nice to	Demonstra	Observ	Checkli	Pathology	
UG-PB		Но	w		Quantitative	Motor	(Observe /	Know	tion	ation	st		
14.33					estimation of		Imitate)						
					Uric Acid								
Hom		Kn	lows		Interpret the	Cognitive	Level 2	Nice to	Lecture,	SAQs	SAQs,	Pathology	
UG-PB		Но	w		results of		Understand	Know	Small		Viva		
14.34					Quantitative		/ interpret		group		Voce		
					estimation of				discussion				
					Uric acid								
Hom		Sh	ows	Perform the	Observe the	Psycho	Level 1	Must	Demonstra	Observ	OSCE	Pathology	
UG-PB		Но	w	Lipid Profile	laboratory	Motor	(Observe /	Know	tion	ation			
14.35					testing for Lipid		Imitate)						
					profile								
Hom		Kn	nows		Interpret the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Pathology	
UG-PB		Но	w		results of Lipid		Understand	Know	Small		Voce		
14.36					profile testing		/ interpret		group				
									discussion				
		•											_

			done in a				7
			laboratory				

8. PRACTICAL TOPICS

PRACTICAL & CLINICAL PHYSIOLOGY:-

No	Practical	Demonstration / Performance
HAE	MATOLOGY	
1	Study of the Compound Microscope	Performance
2.	Collection of Blood Samples	Performance
3	Estimation of Haemoglobin Concentration	Performance
4	Determination of Haematocrit	Demonstration
5	Hemocytometry	Performance
6	Total RBC Count	Performance
7	Determination of RBC Indices	Demonstration
8	Total Leucocytes Count (TLC)	Performance
9	Preparation And Examination Of Blood Smear	Performance
10	Differential Leucocyte Count (DLC)	Performance
11	Absolute Eosinophil Count	Demonstration
12	Determination of Erythrocyte Sedimentation Rate	Demonstration
13	Determination of Blood Groups	Performance
14	Determination of Bleeding Time and Coagulation Time	Performance
BIO	CHEMISTRY	
1	Demonstration of Uses Of Instruments Or Equipment	Demonstration
2	Qualitative Analysis of Carbohydrates, Proteins And Lipids	Performance
3	Normal Characteristics of Urine	Performance
4	Abnormal Constituents of Urine	Performance
5	Quantitative Estimation of Glucose, Total Proteins, Uric Acid in Blood	Performance
6	Liver Function Tests	Demonstration
7	Kidney Function Tests	Demonstration

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8	Linid Profile	Demonstration
9	Interpretation and Discussion of Results of Biochemical Tests	Demonstration
CLIP	NICAL PHYSIOLOGY & OPD	
1	Case Taking & Approach to pt	Performance
2	General Concept Of Examination	Performance
3	Examination of muscles, joints,	Performance
4	Cardio-Vascular System – Blood Pressure Recording, Radial Pulse, ECG, Clinical Examination	Performance
5	Respiratory System- Clinical Examination, Spirometry, Stethography	Performance
6	Nervous System- Clinical Examination	Performance
7	Special Senses- Clinical Examination	Performance
8	Reproductive System- Diagnosis of Pregnancy	Performance
9	Gastrointestinal System- Clinical Examination	Performance
10	OPD (Applied Physiology)	Demonstration & Performance
SPC	TTING	
1	Haematology	
2	Bio-Chemistry	
3	Clinical Physiology	

9. ASSESSMENT

PHYSIOLOGY THEME TABLE

PAPER – 1

Theme*	Topics	Term	Marks	MCQ's	SAQ's	LAQ's
А	General Physiology	1	07	Yes	Yes	No
В	Biophysics Science	1	07	Yes	Yes	No
С	Body fluids& Immune Mechanism	1	26	Yes	Yes	Yes
D	Cardiovascular system	П	16	Yes	Yes	Yes
Е	Respiratory system	П	16	Yes	Yes	Yes
F	Excretory system	Ш	16	Yes	Yes	Yes
G	Skin & The Integumentary System	1	06	Yes	Yes	No
Н	Nerve Muscle physiology system	1	06	Yes	Yes	No

QUESTION PAPER BLUE PRINT

UNIVERSITY EXAM PAPER-I – 100 MARKS

MCQs – 10 Mark	/ICQs – 10 Marks. SAQs – 40 Marks. FAQs – 50 Marks							
Question Serial Number	Type of Question	Question Paper Format (Refer Theme table for themes)						
Q1	Multiple choice Questions (MCQ)	1. Theme A						
	All questions compulsory	2. Theme A						
	1 mark each	3. Theme B						
		4. Theme B						
		5. Theme C						
		6. Theme D						
		7. Theme E						
		8. Theme F						
		9. Theme G						
		10. Theme H						
Q2	Short answer Questions(SAQ)	1. Theme A						

	All questions compulsory	2. Theme B
	5 Marks Each	3. Theme C
		4. Theme D
		5. Theme E
		6. Theme F
		7. Theme G
		8. Theme H
Q3	Long answer Questions (LAQ)	1. Theme C
	All questions compulsory	2. Theme C
	10 marks each	3. Theme D
		4. Theme E
		5. Theme F

PAPER – 2

Theme*	Topics	Term	Marks	MCQ's	SAQ's	LAQ's
А	Endocrine system	П	21	Yes	Yes	Yes
В	Central Nervous System	П	21	Yes	Yes	Yes
С	Digestive system and Nutrition	Ш	16	Yes	Yes	Yes
D	Reproductive system	Ш	17	Yes	Yes	Yes
E	Sense organs	Ш	17	Yes	Yes	Yes
F	Biochemistry	Ш	08	Yes	Yes	No

UNIVERSITY EXAM PAPER-II – 100 MARKS

Question Serial Number	Type of Question	Question Paper Format (Refer Theme table for themes)
01	Multiple choice Questions (MCQ)	1) Theme A
	All questions compulsory	2) Theme B
	1 mark each	3) Theme C
		4) Theme D
		5) Theme D
		6) Theme E
		7) Theme E
		8) Theme F
		9) Theme F
		10) Theme F
Q2	Short answer Questions (SAQ)	1) Theme A
	All questions compulsory	2) Theme A
	5 Marks Each	3) Theme B
		4) Theme B
		5) Theme C
		6) Theme D
		7) Theme E
		8) Theme F
Q3	Long answer Questions (LAQ)	1) Theme A
	All questions compulsory	2) Theme B
	10 marks each	3) Theme C
		4) Theme D
		5) Theme E

Distribution of Marks for Practical Exam:

Practical Exam: 100 Marks				
Haematology	20 marks			
Bio-chemistry	20 marks			
Clinical Physiology	20 marks			
Spotting - 10 Spots	30 marks			
Journal	10 marks			
Viva: 80 Marks				
Viva Voce	80 marks			
Internal Assessment: 20				
ΙΑ	20			

The Pass Marks in Each Component of the Examination shall be 50%.

9B - Scheme of Assessment (formative and Summative)

Sr. No	Professional Course	1 st term (1-6 Months)			2 nd Term (7-12 Months)			3 rd Term (13-18 Months)	
1	First	1 st PA	1 st TT		2 nd PA 2 ND TT		3 rd PA	UE	
	BHMS	20 Marks Practical/Viva	100 Marks Theory	100 Marks Practical/ Viva	20 Marks Practical/Viva	100 Marks Theory	100 Marks Practical/ Viva	20 Marks Practical/Viva	

For Internal assessment, Only Practical/Viva marks will be considered. Theory marks will not be counted)

Method of Calculation of Internal Assessment Marks for Final University Examination:

PA1	PA2	PA3	Periodical	TT1	TT2	Terminal	Final
Practical/Viva	Practical/Viva	Practical/Viva	Assessment	Practical/	Practical/	Test	Internal
(20 Marks)	(20 Marks)	(20 Marks)	Average	Viva	Viva	Average	Assessment
			PA1+PA2+PA3/3	(100 Marks)	(100 Marks)	TT1+	Marks
						TT2/	
						200*20	
Α	В	С	D	E	F	G	D+G/2

PA- Periodical Assessment TT- Terminal Test UE- University Examination

10. LIST OF RECOMMENDED BOOKS

THEORY

TEXT BOOKS

- 1. John N A (2023) Chatterjee C C. Text Book of Physiology 14th Edition. CBS Publication. (CBDC based)
- 2. Tortora G (2020). Principles of Anatomy & Physiology. Wiley Publication.
- 3. Jain A (2021). Text Book of Physiology Vol 1 & 2. Avichal Publishing Company.
- 4. Reddy L P(2023)Fundamentals of Medical Physiology. CBS Publishers and Distributors(CBDC based)

REFERENCE BOOKS

- 1. Hall J. (2020). Guyton & Hall Text book of Medical Physiology. Elsevier Publication.
- 2. Khurana I (2021). Essential Medical Physiology. Elsevier Publication.

PRACTICAL & CLINICAL PHYSIOLOGY:-

- 1. Varshney VP, Bedi M, (2023) Ghai's Textbook of Practical Physiology: 10th Edition. Jaypee Brothers Medical Publisher (CBDC based)
- 2. John N Aet al (2021) C C Chatterjee's Manual of Practical Physiology: CBS Publishers and Distributors (CBDC based)
- 3. Jain A. (2019) Manual of Practical Physiology. 6th ed. Arya Publications.
- 4. Glynn M., William D. (2017). Hutchison's Clinical methods. 24th edition Elsevier Publication

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