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

JAWAHAR LAL NEHRU BHARTIYA CHIKITSA AVUM HOMOEOPATHY ANUSANDHAN BHAVAN

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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	Paper-II	
	List of System	Teaching Hours
1	Central Nervous System	35
2	Endocrinology	30
3	Reproduction	15
4	Special Senses	20
5	Digestion and Nutrition	35
6	Biochemistry	25
	Total	160

Physiology – Practical – lab work			
No	Practical	Demonstration	Number of
		/ Performance	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		
Haemocytometry		
	Total RBC Count	
	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 V	oce	
	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
	Clinical Physiology :
	Nervous System- Clinical Examination
	Special Senses- Clinical Examination
	 Reproductive System – Diagnosis of pregnancy
	• OPD
9 th Month – 5 days PA	
12 th 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 :-
	Cillicar i 11/31010-57 .

	Gastrointestinal System- Clinical Examination
	• OPD
14 th Month – 5 days PA	
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 UG-PB 1.4	Integration Of Information (K-1)	Homeosta sis	Knows How W	Describe and discuss the principles of homeostasis	Explain the regulation of internal environment	Cognitive	Level 2 Understand / interpret	Desirable to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Medicine Pathology Organon
Hom UG-PB 1.5			Knows How		Explain homoeostasis & it's control	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	LAQs, Viva Voce	
Hom UG-PB 1.6	Integration Of Information (K-1)	The Cellular Level Organisati on	Knows How	Describe the structure and functions of a mammalian cell	Describe the structure of cell	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Anatomy Pathology
Hom UG-PB 1.7			Knows How		Describe the functions of cell	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Pathology Organon
Hom UG-PB 1.8			Knows		List the organelles present in cell	Cognitive	Level 1 (Remember / recall)	Must know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	
Hom UG-PB 1.9			Knows		Enumerate the functions of organelles	Cognitive	Level 1 (Remember / recall)	Must Know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Pathology
Hom UG-PB 1.10			Knows		List the name of intracellular junction	Cognitive	Level 1 (Remember / recall)	Desirable to Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy
Hom UG-PB 1.11			Knows How		Discuss the importance of intracellular Junction	Cognitive	Level 2 Understand / interpret	Nice to know	Lecture, Small group discussion	MCQs	Viva Voce	Anatomy

Llam	late graties Of		Kaanna	To up do noto o d		Comitivo		Desirable to	Lastura	6404	6406	Die ehemister (
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	
llom	Information	Clinical &	Chours	To conduct	Domonstrato	Affective		Must know	Domonstrati	Observ	DOPS	
Hom			Shows		Demonstrate	Affective	Level 1	WIUST KNOW	Demonstrati		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 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	Summ ative Assess ment	Integration - Horizontal / Vertical / Spiral
Hom UG-PB 2.1	Integration Of Information	Bio Physics Science	Knows	To understand the bio- Physical	Define the terms Filtration& Ultrafiltration	Cognitive	Level 1 (Remember / recall)	Nice to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry
Hom UG-PB 2.2	(К-1)		Knows	science of cell membrane	Define intra cellular communication	Cognitive	Level 1 (Remember / recall)	Nice to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry
Hom UG-PB 2.3			Knows		Define the terms adsorption & Absorption	Cognitive	Level 1 (Remember / recall)	Nice to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry
Hom UG-PB 2.4			Knows		Define the terms Hydro trophy, Dialysis & Assimilation	Cognitive	Level 1 (Remember / recall)	Nice to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry Medicine
Hom UG-PB 2.5			Knows		Define Surface Tension	Cognitive	Level 1 (Remember / recall)	Desirable to Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry Medicine
Hom UG-PB 2.6	Integration Of Information		Knows How	Discuss the Membrane Physiology	Explain Action Potential	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry
Hom UG-PB 2.7	(К-1)		Knows	&Membrane Potential	Define Donnan Equilibrium	Cognitive	Level 1 (Remember / recall)	Nice to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Biochemistry

Hom			Knows		Define	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB					Transmembrane		(Remember	Know	Small group		Viva	
2.8					Potential		/ recall)		discussion		Voce	
Hom			Knows		Explain nerve	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB			How		action potential		Understand		Small group		Viva	
2.9							/ interpret		discussion		Voce	
Hom			Knows		Define Tracer	Cognitive	Level 1	Nice to	Lecture,	SAQs	SAQs,	
UG-PB					Elements		(Remember	know	Small group		Viva	
2.10							/ recall)		discussion		Voce	
Hom			Knows		Define	Cognitive	Level 1	Nice to	Lecture,	SAQs	SAQs,	
UG-PB					Rhythmicity of		(Remember	know	Small group		Viva	
2.11					some excitable		/ recall)		discussion		Voce	
					tissues							
Hom	Integration	The	Knows	Understand	Describe the	Cognitive	Level 2	Nice to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB	Of	Chemica	How	the chemical	Ionic Bond		Understand	know	Small group		Viva	
2.12	Information	l Level		bonds			/ interpret		discussion		Voce	
Hom	- (K-1)	Organis	Knows		Describe the	Cognitive	Level 2	Nice to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB		ation	How		covalent bond		Understand	know	Small group		Viva	
2.13							/ interpret		discussion		Voce	
Hom			Knows		Describe the	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	Biochemistry
UG-PB			How		Hydrogen Bond		Understand	know	Small group		Voce	
2.14							/ interpret		discussion			
Hom	Integration		Knows	Understand	Define the terms	Cognitive	Level 1	Desirable to	Lecture,	MCQs	SAQs,	Biochemistry
UG-PB	Of			the inorganic	Colloid, Solution		(Remember	know	Small group		Viva	
2.15	Information			Compound &	& Suspension		/ recall)		discussion		Voce	
Hom	(K-1)		Knows	Solution	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB			How		characteristics of		Understand	Know	Small group		Viva	
2.16					acids, Base &		/ interpret		discussion		Voce	
					Salts							
Hom			Knows		Discuss acid -	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB			How		base balance &		Understand		Small group		Viva	
2.17					its application to		/ interpret		discussion		Voce	
					the concept of							
					рН							

Hom	K	Knows	Describe the	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Biochemistry
UG-PB	н	low	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.

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	- Horizonta
					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			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	<u> </u>					0.005	
Hom	Information	Clinical	Shows	To demonstrate	Demonstrate the	Psycho	Level 1	Must know	DOAP	Observ	OSCE	Medicine
UG-PB	Gathering,	& Annuliad	How	General	examination of	Motor	Observe /			ation		
3.7	Integration Of information,	Applied		examination	Skin & Mucus Membrane		Imitate					

	-						-	-			
Hom	Problem	Physiolo	Shows	Demonstrate the	Psycho	Level 1	Must know	DOAP	Observ	OSCE	Medicine
UG-PB	Integration	gy	How	examination of	Motor	Observe /			ation		
3.8	(K-2)			Conjunctive, Nail		Imitate					
				& 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				Knows How	nerve fibers	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	& 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 UG-PB 4.9		Knows How		Discuss the Neuromuscular Transmission	Cognitive	Level 2 Understand / interpret	Nice to know	Lecture, Small group discussion	SAQs	Viva Voce	Anatomy
Hom UG-PB 4.10		Knows How		Discuss Disorders of neuromuscular Junction	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion, CBL, PBL	MCQs	SAQs, Viva Voce	Medicine
Hom UG-PB 4.11	Integration Of Information (K-1)	Knows How	To understand the physiological properties of Skeletal Muscle	Illustrate the mechanism of skeletal muscle contraction. Describe the general mechanism of muscle contraction.	Cognitive	Level 2 Understand / interpret	Desirable To Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy
Hom UG-PB 4.12		Knows How		Discuss Molecular mechanism	Cognitive	Level 2 Understand / interpret	Nice to know	Lecture, Small group discussion	SAQs	Viva Voce	
Hom UG-PB 4.13		Knows How		Discuss Energetic of muscle contraction	Cognitive	Level 2 Understand / interpret	Nice to know	Lecture, Small group discussion	SAQs	Viva Voce	Anatomy
Hom UG-PB 4.14		Knows How		Discuss Excitation of skeletal muscle	Cognitive	Level 2 Understand / interpret	Desirable To Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	
Hom UG-PB 4.15	Integration Of Information (K-1)	Knows How	To understand the physiological properties of	Explain Contraction of smooth muscle	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Anatomy
Hom UG-PB 4.16		Knows How	Smooth Muscle	Explain Nervous & hormonal control of smooth muscle contraction	Cognitive	Level 2 Understand / interpret	Desirable To Know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Medicine

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

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	plasma Protein	Explain the forms and functions of plasma proteins	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Pathology

	Knows										
			Identify the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,		
	How		relation of diet		Understand	Know	Small group		Viva		
			to plasma		/ interpret		discussion		Voce		
			protein								
Integration	Knows	Describe and	Illustrate the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry	/
Of	How	discuss the	structure of		Understand	Know	Small group		Viva		
Information		synthesis and	Haemoglobin		/ interpret		discussion		Voce		
(K-1)		functions of									
	Kasawa	Haemoglobin	Discussion	Carritina	Laval 2	NA. st Kasar	I a atuma	640-	64.0-	Die ehenviete	
				Cognitive		MUST KNOW	-	SAUS		Biochemistry	/
	How		•				• •		-		
			-	0	· ·						
	Knows			Cognitive		Must know	,	SAQs	-	[•]	/
					recall						
					-	_					
	Knows			Cognitive		Must know	-	MCQs	-	Medicine	
					recall				-		
							discussion		Voce		
			-								
	Knows		•	Cognitive		Desirable to	-	SAQs	SAQs,	Biochemistry	/
	How		metabolism		Understand	Know	Small group		Viva		
					/ interpret		discussion		Voce		
Integration	Knows	Describe RBC	Discuss the	Cognitive	Level 2	Desire to		SAQs	SAQs,	Anatomy	
Of	How	formation	normal structure		Understand	Know	Small group		Viva	Pathology	
Information		(erythropoiesis	of RBC with its		/ interpret		discussion		Voce	Medicine	
(K-1)		& its	morphology								
	Knows	regulation) and	discuss stages	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,		
	How	its functions	and regulation of		Understand		Small group		Viva		
			erythropoiesis		/ interpret		discussion		Voce		
	Knows		Discuss the fate	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,		
	How		of RBC		Understand	Know	Small group		Viva		
					/ interpret		discussion		Voce		
	Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine	
	How		hemolysis		Understand	Know	Small group		Viva	FMT	
					/ interpret				Voce		
	Of Information (K-1) Integration Of Information	Of Information (K-1) Knows How Knows Knows How Integration Of Information (K-1) Knows How Knows How Knows How Knows How Knows How Knows How Knows How	Of Information (K-1) How Knows How Knows Knows Knows How Integration Of Information (K-1) Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows How Knows Knows How Knows How Knows Knows How Knows How Knows Knows How Knows How Knows Knows How Knows Knows Knows How Knows Knows How Knows Knows Knows How Knows	Integration Of Information (K-1)Knows HowDescribe and discuss the synthesis and functions of HaemoglobinIllustrate the structure of HaemoglobinKnows HowKnows HowDiscuss the synthesis of HaemoglobinDiscuss the synthesis of HaemoglobinKnows HowKnows HowDefine Normal function of HaemoglobinKnows HowKnowsState normal Value of different varieties of HaemoglobinIntegration Of Information (K-1)Knows HowDescribe RBC formation (erythropoiesis & its regulation) and its functionsDiscuss the normal structure of RBC with its morphologyKnows HowKnows HowDescribe RBC formation (erythropoiesis & its morphologyDiscuss the normal structure of RBC with its morphologyKnows HowKnows HowDiscuss the fate of RBCKnows HowKnows HowDiscuss the fate of RBC	Integration Of Information (K-1)Knows HowDescribe and discuss the synthesis and functions of HaemoglobinIllustrate the structure of HaemoglobinCognitiveKnows HowKnows HowDiscuss the synthesis of HaemoglobinCognitive of HaemoglobinKnows HowKnowsDiscuss the synthesis of HaemoglobinCognitive of HaemoglobinKnows HowKnowsState normal different varieties of HaemoglobinCognitive of different varieties of HaemoglobinIntegration Of Information (K-1)Knows HowDescribe RBC formation (erythropoiesis & its functionsDiscuss the normal structure of RBC with its morphologyCognitive of cognitiveKnows HowDescribe RBC formation (erythropoiesis & its functionsDiscuss the normal structure of RBC with its morphologyCognitive of RBC cognitiveKnows HowKnows HowDiscuss the fate of RBCCognitive of RBC	Integration Of Information (K-1)Knows HowDescribe and discuss the synthesis and functions of HaemoglobinIllustrate the structure of HaemoglobinCognitive Understand / interpretKnows HowKnows HowDiscuss the synthesis of HaemoglobinCognitive Level 2 Understand / interpretKnows HowKnowsDiscuss the synthesis of HaemoglobinCognitive Level 2 Understand / interpretKnows HowKnowsState normal Value of different varieties of HaemoglobinCognitive Level 1 recallKnows HowDescribe RBC formation (erythropoiesis & its functionsDiscuss the normal structure of RBC and regulation of erythropoiesisCognitive Level 2 Understand / interpretKnows HowLevel percenter percenterDiscuss the normal structure of RBC and regulation of erythropoiesisCognitive Level 2 Understand / interpretKnows HowKnows HowDiscuss the formation (erythropoiesis w its functionsCognitive of RBC and regulation of erythropoiesisLevel 2 Understand / interpretKnows HowKnows HowDiscuss the fate of RBCCognitive Understand / interpret	Integration Of Information (K-1) Knows How Describe and discuss the synthesis and functions of Haemoglobin illustrate the structure of Haemoglobin Cognitive Level 2 Understand / interpret Desirable to Know Knows How Knows Describe and discuss the synthesis and functions of Discuss the synthesis of Haemoglobin Cognitive Understand / interpret Level 2 Understand / interpret Must Know Knows Knows Desirable to Synthesis of Haemoglobin Cognitive function of Haemoglobin Cognitive Cognitive Level 1 Level 1 Must know Knows Knows Describe RBC formation (K-1) Cognitive How Level 2 Discuss the formation (K-1) Must know Knows How Describe RBC formation (K-1) Discuss the avits functions Cognitive function of Haemoglobin Level 2 Understand / interpret Desire to Understand / interpret Knows How Knows How Pescribe RBC formation (K-1) Discuss the avits functions Cognitive and regulation of erythropolesis Cognitive functions Level 2 Understand / interpret Desire to Understand / interpret Knows How Knows How Knows Discuss the fate of RBC Cognitive Level 2 Understand Level 2 Understand / interpret Desirable to Understand	Integration Of Information (K-1) Knows How Describe and discuss the synthesis and functions of Haemoglobin Illustrate the structure of Haemoglobin Cognitive Cognitive Haemoglobin Level 2 Understand / interpret Desirable to Knows Lecture, Small group discussion Knows How Haemoglobin Discuss the synthesis of Haemoglobin Cognitive Haemoglobin Level 2 Understand / interpret Must Know Must Know Lecture, Small group discussion Knows How Knows Fill Define Normal function of Haemoglobin Cognitive Haemoglobin Level 1 Understand / interpret Must know Must know Lecture, Small group discussion Knows How Describe RBC formation (K-1) Describe RBC How Discuss the regulation) and its functions Cognitive Rous Ris Level 2 Understand / interpret Desirable to Must know Lecture, Small group discussion Knows How Describe RBC formation (K-1) Discuss the norphology Cognitive Rous Ris Level 2 Understand / interpret Desirable to Must know Lecture, Small group discussion Knows How Moss Rous Ris Discuss the fare of RBC Cognitive RBC Level 2 Understand / interpret Desirable to Roow Lecture, Small group discussion Knows How Knows How Discuss the fate of RBC Cognitive Room Level	Integration Of Information (K-1) Knows How Describe and discuss the synthesis and functions of Haemoglobin Illustrate the structure of Haemoglobin Cognitive Cognitive Level 2 Understand / interpret Desirable to Knows Lecture, Small group discussion SAQs Knows How Knows Nows Discuss the synthesis of Haemoglobin Cognitive Haemoglobin Level 2 Understand / interpret Must Know Lecture, Small group discussion SAQs Knows How Knows Knows Fine Normal Haemoglobin Cognitive Haemoglobin Level 1 recall Must know Lecture, Small group discussion SAQs Knows How Knows How Describe RBC formation (erythropolesis Discuss the normal structure of RBC with its morphology Cognitive How Level 1 recall Must know Lecture, Small group discussion SAQs Knows How Describe RBC formation (k*1) Discuss the normal structure of RBC with its morphology Cognitive How Level 2 Understand / interpret Desirable to Must know Lecture, Small group discussion SAQs Knows How Knows How Discuss the fate of RBC Cognitive Morphology Level 2 Understand / interpret Desirable to Must know Lecture, Small group discussion SAQs Knows How Fegulat	Knows Information (K-1) Describe and discuss the synthesis and functions of Haemoglobin Illustrate the structure of Haemoglobin Cognitive Level 2 Level 2 Describe to Mow Lecture, Small group SAQs SAQs, Viva Viva Voce Knows How Knows Nows Discuss the synthesis of Haemoglobin Cognitive Haemoglobin Level 2 Describe to Understand / interpret Must Know Lecture, Small group SAQs Viva Voce Knows Nows Nows Discuss the synthesis of Haemoglobin Cognitive Haemoglobin Level 1 Must Know Lecture, Small group SAQs Viva Voce Knows Knows Describe RBC How Describe RBC How Cognitive Haemoglobin Level 1 Must know Lecture, Small group discussion SAQs Viva Voce Knows Describe RBC How Describe RBC regulation) and How Discuss the regulation) and How Discuss the formation (K-1) Discuss the formation (K-1) Cognitive k its Level 2 Desirable to Understand / interpret Lecture, Small group SAQs Viva Voce Knows How Discuss the fate of RBC Cognitive Homolysis Level 2 Desirable	Knows Describe and discuss the synthesis and functions of Haemoglobin Lillustrate the structure of functions of Haemoglobin Cognitive (k-1) Level 2 Understand / interpret Desirable to Know Lecture, SAQs SAQs SAQs, Vica SAQs, Vica <th< td=""></th<>

								discussion, CBL			
Hom UG-PB 5.17	Information Gathering ,Integration Of information	Knows How	Describe different types of anemia & Jaundice	Classify the anemia according to their morphology & etiology	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion, CBL, PBL	MCQs	LAQs, Viva Voce	Medicine, Pathology
Hom UG-PB 5.18	, Problem Integration (K-2)	Knows How		Discuss the different anemia	Cognitive	Level 2 Understand / interpret	Desirable to know	Lecture, Small group discussion, CBL, PBL	MCQs	LAQs, Viva Voce	Medicine, Pathology Materia Medica Repertory
Hom UG-PB 5.19		Knows How		Enumerate the different abnormal functions in anaemia	Cognitive	Level 2 Understand / interpret	Desirable to know	Lecture, Small group discussion, CBL, PBL	SAQs	SAQs, Viva Voce	Medicine
Hom UG-PB 5.20		Knows How		Discuss the fate of bilirubin	Cognitive	Level 2 Understand / interpret	Desirable to Know	Lecture, Small group discussion, CBL	SAQs	SAQs, Viva Voce	Medicine, Pathology Materia Medica Repertory
Hom UG-PB 5.21		Knows How		Explain Physiological Jaundice	Cognitive	Level 2 Understand / interpret	Desirable to Know	Lecture, Small group discussion, CBL	SAQs	SAQs, Viva Voce	Materia Medica Repertory
Hom UG-PB 5.22		Knows How		Explain Jaundice in new-born	Cognitive	Level 2 Understand / interpret	Nice to Know	Lecture, Small group discussion, CBL	SAQs	SAQs, Viva Voce	Medicine Materia Medica Repertory
Hom UG-PB 5.23	Integration Of Information (K-1)	Knows How	Describe WBC formation (granulopoiesis	Explain different condition of leucocyte count in our body	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	MCQs	SAQs, Viva Voce	Medicine Pathology

Hom		Knows) and its	Classify different	Cognitive	Level 2	Must Know	Lecture,	SAQs	LAQs,	Pathology
UG-PB		How	regulation	type of WBCs		Understand		Small group		Viva	
5.24						/ interpret		discussion		Voce	
Hom	-	Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Pathology
UG-PB		How		function of WBCs		Understand		Small group		Viva	Medicine
5.25				as per their classification		/ interpret		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Pathology
UG-PB		How		phagocytosis		Understand	Know	Small group		Viva	
5.26						/ interpret		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,	
UG-PB		How		stages of		Understand		Small group		Viva	
5.27				leucopoiesis with		/ interpret		discussion		Voce	
				its regulation							
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		conditions that		Understand	Know	Small group		Viva	Surgery
5.28				cause abnormal		/ interpret		discussion		Voce	Pathology
				value of							
				leucocyte							
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,	Medicine
UG-PB	Of	How	formation of	structure &		Understand		Small group		Viva	Pathology
5.29	Information		platelets,	function of		/ interpret		discussion		Voce	
	(K-1)		functions and	Platelets							
Hom		Knows	variations.	Describe the	Cognitive	Level 2	Must Know	Lecture,	SAQs	SAQs,	
UG-PB		How		Thrombopoiesis	-	Understand		Small group		Viva	
5.30						/ interpret		discussion		Voce	
Hom		Knows		Discuss its count	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Medicine
UG-PB		How		& variation of		Understand		Small group		Viva	
5.31				platelets		/ interpret		discussion		Voce	
Hom	Integration	Knows	Describe the	Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Pathology
UG-PB	Of	How	physiological	process of		(Understand		Small group		Viva	Materia
5.32				coagulation		/ interpret)		discussion		Voce	Medica

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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		
Hom	Integration	Knows	Describe the	Discuss	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Medicine	
UG-PB	Of	How	clinical	hemorrhagic		Understand	Know	Small group		Viva		
5.35	Information		importance of	disorder		/ interpret		discussion,		Voce		
	(K-1)		blood					CBL				
			coagulation									
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	(К-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		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	coginave	Understand	Know	Small group	5/105	Viva	Medicine
5.42	Information	m		tissues in	system		/ interpret		discussion		Voce	
0	(K-1)			immune	5,555		,					
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	-		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		I	
Hom	Of	Knows	Blood groups,	Interpret results	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB	information	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					
				Estimation							
Hom		Shows		Perform WBC DC	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB		How		estimation	Motor	(Control)			ation	st	
5.57											
Hom		Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB		How		results of WBC		Understand			ation	st	
5.58				DC estimation		/ interpret					
Hom		Shows		Record RBC	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB		How		indices	Motor	(Control)			ation	st	Medicine
5.59											
Hom		Knows		Evaluate RBC	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB		How		indices	-	Understand			ation	st	Medicine
5.60						/ interpret					
Hom		Shows		Perform Blood	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB		How		Group	Motor	(Control)			ation	st	
5.61				identification		·					
Hom	1	Shows	1	Perform BT / CT	Psycho	Level 2	Must know	DOAP	Observ	Checkli	Pathology
UG-PB		How			Motor	(Control)			ation	st	
5.62						(
5.62											<u> </u>

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Hom		Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB		How		results of BT / CT		Understand			ation	st		
5.63						/ interpret						
Hom		Shows		Record ESR	Psycho	Level 2	Must know	Demonstrati	Observ	Checkli	Pathology	
UG-PB		How			Motor	(Control)		on	ation	st		
5.64												
Hom		Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB		How		results of ESR		Understand			ation	st		
5.65				estimation		/ interpret						
Hom	Information	Shows	Describe steps	Record	Psycho	Level 1	Nice to know	Demonstrati	Observ	Observ	Pathology	
UG-PB	Gathering	How	for reticulocyte	Reticulocyte	Motor	(Observe /		on	ation	ation		
5.66	,Integration		and platelet	count		Imitate)						
Hom	Of	Knows	count	Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB	information	How		results of		Understand			ation	st	Medicine	
5.67	, Problem			Reticulocyte		/ interpret						
	Integration			count								
Hom	(K-2)	Shows		Record Platelet	Psycho	Level 1	Nice to know	Demonstrati	Observ	Observ	Pathology	
UG-PB		How		Count	Motor	(Observe /		on	ation	ation		
5.68						Imitate)						
Hom		Knows		Interpret the	Cognitive	Level 2	Must know	DOAP	Observ	Checkli	Pathology	
UG-PB		How		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	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	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,	SAQs	LAQs,	Anatomy
UG-PB			How	system.	conducting		Understand		Small group		Viva	
6.4					system		/ interpret		discussion		Voce	

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

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	
Hom	(K-1)	Knows	circulatory system	State the	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB			system	functions of heart	U	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	U	Understand		Small group		Voce	
6.21				in vascular		/ interpret		discussion			
				system		<i>,</i> ,					
Hom	1	Knows		Recall the	Cognitive	Level	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
								-		-	
UG-PB				structure of the		1Recall	Know	Small group		Viva	

Hom UG-PB 6.23	Integration Of Information	Knows How	Describe the factors affecting heart	Identify the factors affecting heart rate and	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Medicine
	(K-1)		rate,	how it affects		,					
Hom UG-PB 6.24		Knows How	,	Discuss the mechanism of control of heart rate	Cognitive	Level 2 Understand / interpret	Desirable to know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	
Hom UG-PB 6.25	Integration Of Information (K-1)	Knows	Describe the regulation of cardiac output	Define cardiac output	Cognitive	Level 1 (Remember / recall)	Must know	Lecture, Small group discussion	SAQs	LAQs Viva Voce	Materia Medica Repertory
Hom UG-PB 6.26		Knows How		Discuss the distribution of cardiac output	Cognitive	Level 2 Understand / interpret	Desirable to Know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Medicine
Hom UG-PB 6.27		Knows How		Discuss the factors affecting cardiac output	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	
Hom UG-PB 6.28		Knows How		Discuss in detail the Control mechanism of cardiac output	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	
Hom UG-PB 6.29	Integration Of Information (K-1)	Knows How	Understand the blood pressure regulation		Cognitive	Level 2 Understand / interpret	Must know	Lecture, PBL, Small group discussion	SAQs	LAQs, Viva Voce	Medicine
Hom UG-PB 6.30		Knows		State the factors affecting arterial blood pressure	Cognitive	Level 1 Recall	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Medicine
Hom UG-PB 6.31		Knows How		Discuss the determinants of arterial blood pressure	Cognitive	Level 2 Understand / interpret	Must Know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Medicine

Hom		Knows		Describe	Cognitive	Level 2	Must know	PBL,	SAQs	LAQs,	Medicine
UG-PB		How		regulation of		Understand		Lecture,		Viva	
6.32				arterial blood		/ interpret		Small group		Voce	
				pressure				discussion			
Hom	Integration	Knows	Describe	Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	
UG-PB	Of	How	coronary,	capillary		Understand		Small group		Voce	
6.33	Information		cerebral,	circulation		/ interpret		discussion			
	(K-1)		capillary,								
Hom		Knows	pulmonary &	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How	splenic	Coronary		Understand	know	Small group		Viva	Pathology
6.34			circulation	circulation		/ interpret		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		Cerebral		Understand	Know	Small group		Viva	Pathology
6.35				circulation		/ interpret		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Medicine
UG-PB		How		Splenic		Understand		Small group		Voce	
6.36				circulation		/ interpret		discussion			
Hom		Knows		Discuss	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		Pulmonary		Understand	Know	Small group		Viva	
6.37				circulation		/ interpret		discussion		Voce	
Hom	Information	Knows	Describe the	Explain	Cognitive	Level 2	Must know	CBL,	SAQs	SAQs,	Medicine
UG-PB	Gathering	How	mechanism of	mechanism		Understand		Lecture,		Viva	Pathology
6.38	,Integration		shock, syncope	responsible for		/ interpret		Small group		Voce	
	Of		& Hypertension	shock & syncope				discussion			
	information,				o			601		64.0	
Hom	Problem	Knows		Discuss the	Cognitive	Level 2	Must know	CBL,	SAQs	SAQs,	Medicine
UG-PB 6.39	Integration	How		mechanism of		Understand		Lecture,		Viva	Pathology
6.39	(K-2)			hypertension		/ interpret		Small group		Voce	Materia
								discussion			Medica
	Information	Chause	Record blood	Measure the	Davaha	Level 2	N4. of longue	Downortwoti	Observ	OSCE	Organon Medicine
Hom		Shows			Psycho-		Must know	Demonstrati		USCE	weatche
UG-PB	Gathering	How	pressure at rest	•	motor	(Control)		on	ation		
6.40	,Integration Of		and in different	•							
110.00	0.	Kasuus	grades of	grade of exercise	Comitivo	Laval 2	N4. of longue	CDI	Ohaamu	0505	Madiaina
Hom	information,	Knows	Exercise and	Discuss the	Cognitive	Level 2	Must know	CBL,	Observ	OSCE	Medicine
UG-PB	Problem	How	postures	variation		(Understan		Lecture,	ation		
6.41				between		ding)					

	<u> </u>										
	Integration			different blood				Small group			
	(K-2)			pressure values				discussion			
				after							
				measurement							
Hom	Information	Shows	Record pulse at	Measure pulse at	Psycho-	Level 2	Must know	Demonstrati	Observ	OSCE	Medicine
UG-PB	Gathering	How	rest and in	rest and in	motor	(Control)		on	ation		
6.42	,Integration		different	different grades							
	Of		grades of	of exercise							
Hom	information,	Knows	Exercise and	Discuss the	Cognitive	Level 2	Must know	CBL,	Observ	OSCE	Medicine
UG-PB	Problem	How	postures	variation		(Understan		Lecture,	ation		
6.43	Integration			between		d)		Small group			
01.10	(K-2)			different arterial				discussion			
	(pulse value after				0.000.001011			
				measurement							
Hom	Information	Shows	Record ECG	Record ECG in a	Psycho-	Level 2	Desirable to	Demonstrati	Observ	OSCE	Medicine
UG-PB	Gathering,	How	Record LCO	volunteer.	motor	(Control)	know	on	ation	USCL	Wedleffle
6.44	Integration	11000		volunteer.	motor	(control)	KIIOW	on	ation		
0.44	of										
	information,										
	Problem	Knows		Identify the	Cognitive	Level 1	Nice to Know	CBL,		OSCE	
				features of a		(Recall)		Lecture,			
	Integration			normal ECG.				Small group			
	(K-2)							discussion			
Hom	Information	Shows	Demonstrate	Locate the Apex	Psycho-	Level 2	Must know	Demonstrati	Observ	OSCE	Human
UG-PB	Gathering,	How	the correct	beat	motor	(Control)		on	ation		Anatomy
6.45	Integration		clinical								
	Of		examination of								
Hom	information,	Shows	the cardio	Auscultate for	Davaha	Level 2	Must know	Demonstrati	Observ	OSCE	Medicine
UG-PB	Problem		vascular		Psycho-		IVIUST KNOW			USCE	Wedicine
	Integration	How	system	heart sound	motor	(Control)		on	ation		
6.46	(K-2)	C'						<u> </u>		0.005	
Hom		Shows		Identify different	Psycho-	Level 2	Must know	Demonstrati		OSCE	Medicine
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 Physiology		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		FIIYSIOIOGY	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	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		How		different parts		Understand		Small group		Viva	
7.3				of tracheo –		/ interpret		discussion		Voce	
				bronchial tree,							
				Respiratory							
				membrane &							
				pleura							
Hom		Knows		Explain the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	
UG-PB		How		properties of		Understand		Small group		Viva	
7.4				Gases		/ interpret		discussion		Voce	
Hom		Knows		Discuss non-	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		respiratory		Understand		Small group		Viva	
7.5				function of		/ interpret		discussion		Voce	
				respiratory							
				system							
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must 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 Of		respiration	regulation of respiration		/ interpret		discussion		Voce	
Hom	information,	Knows	1	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB	Problem	How		Chemical		Understand		Small group		Viva	
7.17	Integration			regulation of		/ interpret		discussion		Voce	
	(K-2)			respiration							
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	PBL,	SAQs	SAQs,	Medicine
UG-PB		How		physio 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		physio clinical		Understand		Lecture,		Viva	FMT
7.19				aspect of		/ interpret		Small group		Voce	Materia
				Dyspnoea,				discussion			Medica
				Asphyxia,							
				Oxygen toxicity	A						
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 Of		aspect of					Small group		Voce	
llon	information.	Kasura	hypoxia	Closeifu humauia	Cognitive		Muchlinger	discussion	MCOC	<u> </u>	Dathalas
Hom UG-PB	Problem	Knows		Classify hypoxia.	Cognitive	Level 1	Must know	PBL,	MCQS,	SAQs,	Pathology
	Integration			Define Cyanosis		Recall		Lecture,	SAQs	Viva	Medicine
7.21	(K-2)							Small group		Voce	
	(1-2)							discussion			

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

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 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	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 (K-1)			nervous system	nervous system – brain & spinal cord with its function		/ recall)		discussion		Voce	
Hom			Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB 8.2			How		developmental aspect of central nervous system		Understand / interpret	Know	Small group discussion	MCQs	Viva Voce	
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		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB		How		electrical events		Understand		Small group	MCQs	Viva	
8.5				occurring at		/ interpret		discussion		Voce	
				synapses							
HomUG		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
-PB 8.6		How		properties of		Understand		Small group	MCQs	Viva	
				synapse.		/ interpret		discussion		Voce	
HomUG	Integration	Knows	Describe the	Define receptor	Cognitive	Level 1	Desirable to	Lecture,	SAQs	SAQs	Anatomy
-PB 8.7	Of		functions and			(Remember	know	Small group	MCQs	Viva	
	Information		properties of			/ recall)		discussion		Voce	
Hom	(K-1)	Knows	receptors	Classify the	Cognitive	Level 1	Desirable to	Lecture,	MCQs	LAQs,	Anatomy
UG-PB				sensory		(Remember	Know	Small group		Viva	
8.8				receptors.		/ recall)		discussion		Voce	
Hom		Knows		Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB		How		Cutaneous	000	Understand	Know	Small group	MCQs	Viva	
8.9				receptor		/ interpret		discussion		Voce	
Hom		Knows		explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB		How		properties of	0	Understand		Small group	MCQs	Viva	
8.10				receptor		/ interpret		discussion		Voce	
Hom	Integration	Knows	Describe the	Discuss reflex arc	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	functions and			Understand		Small group	MCQs	Viva	
8.11	Information		properties of			/ interpret		discussion		Voce	
Hom	(K-1)	Knows	reflex.	Classify reflexes	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB					-	(Remember		Small group	MCQs	Viva	
8.12						/ recall)		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB		How		properties of		Understand		Small group	MCQs	Viva	
8.13				reflex		/ interpret		discussion		Voce	
Hom	Integration	Knows	Describe the	Classify neuro-	Cognitive	Level 1	Must know	Lecture,	MCQs	SAQs,	Medicine
UG-PB	Of		mechanism of	transmitters		(Remember		Small group		Viva	
8.14	Information		chemical			/ recall)		discussion		Voce	
Hom	(K-1)	Knows	transmission in	Explain the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	
UG-PB		How	the nervous	different types of		Understand		Small group	MCQs	Viva	
8.15			system.	neuro-		/ interpret		discussion		Voce	
				transmitter							

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

Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Gathering	How	physiology of	physiological	0	Understand		Small group		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
UG-PB	Integration	How	posture and	functions of	U	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
UG-PB		How	(ANS)	divisions of		Understand		Small group		Viva	
8.29				Autonomic		/ interpret		discussion		Voce	
				nervous system							
Hom		Knows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	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,	Anatomy
UG-PB	Gathering		functions,	of Spinal cord		(Remember		Small group		Viva	Medicine
8.31	,Integration		lesion &			/ recall)		discussion		Voce	
Hom	Of	Knows	sensory	Illustrate the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	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,	SAQs	SAQs,	Medicine
UG-PB	(K-2)	How		sensory		Understand		Small group		Viva	
8.33				disturbances of		/ interpret		discussion		Voce	
				spinal cord							

Hom	Information	Knows	Describe	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy
UG-PB	Gathering	How	functions of	connections &	cognitive	Understand	Must know	Small group	3703	Viva	Medicine –
8.34	,Integration		cerebral cortex,			/ interpret		discussion		Voce	Psychiatry
	Of		basal ganglia,	cerebral cortex		,					Repertory
Hom	information, Problem	Knows	thalamus, hypo - thalamus,	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Integration	How	cerebellum and	connections&		Understand	know	Small group		Viva	Medicine –
8.35	(K-2)		limbic system	functions of Basal Ganglia		/ interpret		discussion		Voce	Psychiatry
Hom	-	Knows	and their abnormalities	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		How	abnormalities	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	Knows	Describe	Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	
UG-PB	Of	How	behavioral and	importance of		Understand		Small group	•	Voce	
8.41	Information		EEG	EEG		/ interpret		discussion			
Hom	(K-1)	Knows	characteristic	Explain the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	
UG-PB		How	during	Physiological	0	Understand		Small group	•	Voce	
8.42			Sleep and	Basis of EEG		/ interpret		discussion			
Hom		Knows	mechanism	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How	responsible for	factors affecting	0	Understand	Know	Small group	-	Viva	
8.43			its production	sleep		/ interpret		discussion		Voce	
Hom		Knows		Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		Physiological	-	Understand	Know	Small group		Viva	
8.44				changes during		/ interpret		discussion		Voce	
				sleep							
Hom		Knows		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		Knows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Anatomy
UG-PB		How		factors		Understand		Small group		Voce	Medicine
8.46				controlling sleep		/ interpret		discussion			
				cycle							
Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Gathering	How	physiological	mechanism and		Understand	Know	Small group		Viva	Medicine
8.47	,Integration		basis of	development of		/ interpret		discussion		Voce	
	Of		memory,	speech							
Hom	information,	Knows	learning	Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Problem	How	And speech	physiological		Understand		Small group		Viva	Medicine
8.48	Integration			basis of learning		/ interpret		discussion		Voce	Materia
	(K-2)										Medica
											Repertory
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		physiological		Understand		Small group		Viva	
8.49				basis of memory.		/ interpret		discussion		Voce	
Hom		Knows	1	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		applied		Understand		Small group		Viva	Materia
8.50				physiology of		/ interpret		discussion		Voce	Medica
				memory							Repertory

						1					
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, cranial	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	1	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 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	Summat ive Assessm ent	Integration - Horizontal / Vertical / Spiral
Hom UG-PB 9.1 Hom UG-PB 9.2	Integration Of Information (K-1)	Endocrine system	Knows Knows How	Describe the mechanism of action of steroid, protein And amine hormones	Define hormones Discuss the characteristic of hormones	Cognitive Cognitive	Level 1 (Remembe r/ recall) Level 2 Understan d / interpret	Desirable to Know Desirable to know	Lecture, Small group discussion Lecture, Small group discussion	SAQs	SAQs, Viva Voce SAQs, Viva Voce	Psychology
Hom UG-PB 9.3			Knows How		Classify the hormones as per their chemistry	Cognitive	Level 2 Understan d / interpret	Desirable to know	Lecture, Small group discussion	SAQs MCQs	SAQs, Viva Voce	Biochemistry

Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	regulation of	regulation of		Understan		Small group	MCQs	Viva	Medicine
9.4	Information		secretion of	hormone from		d /		discussion		Voce	
	(K-1)		hormones by	the		interpret					
			hypothalamus	hypothalamus							
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	SAQs,	Medicine
UG-PB		How		homoeostatic		Understan		Small group		Viva	
9.5				mechanism of		d /		discussion		Voce	
				secretion of		interpret					
				hormone							
				through							
				Hypothalamus							
Hom	Integration	Knows	Discuss the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	synthesis,	physiological		Understan	Know	Small group	MCQs	Viva	Materia
9.6	Information		secretion,	anatomy of		d /		discussion		Voce	Medica
	(K-1)		Transport,	pituitary gland		interpret					
Hom		Knows	Physiological	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	LAQs,	Anatomy
UG-PB		How	action,	secretion of	008	Understan	Know	Small group	•	Viva	Materia
9.7			regulation &	anterior		d/		discussion		Voce	Medica
			effect of	pituitary		interpret					
			altered secretion of	hormone		•					
Hom		Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How	Pituitary gland	secretion of	•	Understan		Small group	MCQs	Viva	
9.8				growth		d /		discussion		Voce	
				hormone		interpret					
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		functions of	-	Understan		Small group	MCQs	Viva	
9.9				growth		d /		discussion		Voce	
				hormone		interpret					
Hom		Knows	1	List the factors	Cognitive	Level	Nice to know	Lecture,	SAQs	Viva	
UG-PB				affecting growth		1Recall		Small group	MCQs	Voce	
9.10				hormone				discussion			
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy
UG-PB		How		effects of		Understan		Small group	MCQs	Viva	Medicine
9.11				altered		d /		discussion		Voce	
				secretion of		interpret					

			1	1	1	1	1				
				growth hormone							
Hom	-	Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		How		actions and		Understan		Small group		Viva	Obstetrics &
9.12				control of secretion of prolactin		d / interpret		discussion		Voce	Gynaecology
Hom UG-PB		Knows How		Discuss the secretion of	Cognitive	Level 2 Understan	Desirable to Know	Lecture, Small group	SAQs MCQs	SAQs, Viva	Anatomy
9.13				posterior Pituitary hormones		d / interpret		discussion		Voce	
Hom		Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		functions of		Understan		Small group	MCQs	Viva	
9.14				ADH		d / interpret		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB		How		functions of		Understan		Small group	MCQs	Viva	Obstetrics &
9.15				Oxytocin		d / interpret		discussion		Voce	Gynaecology
Hom		Knows		Describe	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB 9.16		How		pituitary insufficiency		Understan d /		Small group discussion	MCQs	Viva Voce	Medicine
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	interpret Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	synthesis,	physiological		Understan	know	Small group		Viva	Materia
9.17	Information		secretion,	anatomy of		d /		discussion		Voce	Medica
	(K-1)		Transport,	Thyroid gland		interpret					Repertory
Hom		Knows	Physiological	Describe the	Cognitive	Level 2	Must know	CBL,	SAQs	LAQs,	
UG-PB		How	action,	formation &		Understan		Lecture,		Viva	
9.18			regulation &	secretion of		d /		Small group		Voce	
			effect of	thyroid		interpret		discussion			
			altered	hormone							

Hom		Knows	secretion of	Explain the	Cognitive	Level 2	Desirable to	CBL,	SAQs	LAQs,	
UG-PB		How	Thyroid gland	transport &	-	Understan	Know	Lecture,		Viva	
9.19				metabolism of		d /		Small group		Voce	
				thyroid		interpret		discussion			
				hormone		·					
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	CBL,	SAQs	LAQs,	
UG-PB		How		regulation and	-	Understan		Lecture,		Viva	
9.20				action of		d /		Small group		Voce	
				thyroid		interpret		discussion			
				hormone							
Hom		Knows		Explain the	Cognitive	Level 2	Must know	CBL,	SAQs	LAQs,	Medicine
UG-PB		How		effect of altered	-	Understan		Lecture,		Viva	
9.21				secretion of		d /		Small group		Voce	
				Thyroid		interpret		discussion			
				hormone		-					
Hom	Integration	Knows	Explain the	Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Biochemistry
UG-PB	Of	How	synthesis,	calcium &		Understan		Small group		Voce	Medicine
9.22	Information		secretion,	phosphate		d /		discussion			Materia
	(K-1)		Transport,	metabolism		interpret					Medica
Hom		Knows	Physiological	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB		How	action,	action of	-	Understan	Know	Small group	MCQs	Viva	
9.23			regulation &	parathormone		d /		discussion		Voce	
			effect of			interpret					
Hom		Knows	altered	Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Biochemistry
UG-PB		How	secretion of	action of		Understan	Know	Small group	MCQs	Viva	
9.24			Para Thyroid	Calcitonin		d /		discussion		Voce	
			gland.			interpret					
Hom		Knows		Discuss the role	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Biochemistry
UG-PB		How		of Calcitonin in		Understan		Small group	MCQs	Viva	Medicine
9.25				the		d /		discussion		Voce	Materia
				maintenance of		interpret					Medica
				calcium							
				homoeostasis in							
				body							

Hom		Calcitonii		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	Medicine
UG-PB				effect of altered		Understan		Small group	MCQs	Viva	
9.26				secretion of		d /		discussion		Voce	
				para thyroid		interpret					
				hormone							
Hom	Integration	Calcitonii	Describe the	Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	Anatomy
UG-PB	Of		synthesis,	physiological		Understan		Small group		Voce	
9.27	Information		secretion,	anatomy of		d /		discussion			
	(K-1)		Transport,	Adrenal Cortex		interpret					
			Physiological	gland							
Hom		Calcitonii	action,	Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB			regulation &	formation,		Understan		Small group		Viva	
9.28			effect of	secretion, and		d /		discussion		Voce	
			altered	functions of		interpret					
			secretion of	Glucocorticoid							
			Adrenal gland	hormone							
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		formation,		Understan		Small group		Viva	
9.29				secretion, and		d /		discussion		Voce	
				functions of		interpret					
				Mineralocortico							
				id hormone							
Hom		Knows		Describe the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	
UG-PB		How		formation,		Understan	know	Small group		Viva	
9.30				secretion, and		d /		discussion		Voce	
				functions of Sex		interpret					
				hormones							
Hom		Knows		Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Medicine
UG-PB		How		effects of		Understan	know	Small group		Viva	
9.31				altered		d /		discussion		Voce	
				secretion of		interpret					
				Adrenal cortex							
				hormone							

Hom		Knows		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	Knows	Describe the	Explain the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Of	How	synthesis,	physiological	008	Understan	Know	Small group	0, 100	Viva	Materia
9.33	Information	1101	secretion,	anatomy of		d /	i i i i i i i i i i i i i i i i i i i	discussion		Voce	Medica
5.55	(K-1)		Transport,	Pancreatic gland		interpret		uiscussion		Vocc	ivicalea
Hom		Knows	Physiological	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	SAQs	LAQs,	
UG-PB		How	action,	action and	Cognitive	Understan	Know	Small group	JAQS	Viva	
9.34		TIOW	regulation &	regulation of		d /	KIIOW	discussion		Voce	
9.54			effect of	Glucagon		interpret		uiscussion		VULE	
Hom	-	Knows	altered	Discuss the	Cognitive	Level 2	Must know	CBL,	SAQs	LAQs,	Medicine
UG-PB		How	secretion of	action and	Cognitive	Understan	IVIUST KITOW	Lecture,	SAUS	Viva	Materia
9.35		поw	Pancreatic	regulation of		d /				Voce	Medica
9.35			Gland	•		-		Small group		voce	ivieuica
			Giana	Insulin		interpret		discussion			
Hom		Knows		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	Knows	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		Knows		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	Knows	Describe the	State the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	Viva	
UG-PB		How	Physiology of	functions of	U U	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 / nice to know	TL method / media	Format ive Assess ment	Summa tive Assess ment	Integration - Horizontal / Vertical / Spiral
Hom UG-PB 10.1	Integration Of Information (K-1)	Reproduct ive System	Knows	Describe the onset, progression, and stages	Define puberty	Cognitive	Level 1 (Remember / recall)	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Psychology Obstetrics & Gynaecology
Hom UG-PB 10.2			Knows How	puberty. List causes and expressions of early and	Discuss the role of LH & FSH in development of puberty	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	LAQs, Viva Voce	Anatomy Psychology Obstetrics & Gynaecology
Hom UG-PB 10.3			Knows How	delayed puberty	Explain puberty for its onset, and stages. Describe the causes for delayed &precocious puberty.	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy Psychology Obstetrics & Gynaecology
Hom UG-PB 10.4	Integration Of Information (K-1)		Knows How	Describe the structure and functions of male	Describe the structure of male reproductive system	Cognitive	Level 2 Understand / interpret	Nice to know	Lecture, Small group discussion	SAQs	Viva Voce	Anatomy

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

Hom	Integration	Knows	Describe	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Obstetrics &
UG-PB	Of	How	menstrual cycle	ovarian changes		Understand		Small group	MCQs	Viva	Gynaecology
10.13	Information		with hormonal,	during menstrual		/ interpret		discussion		Voce	
	(K-1)		uterine and	cycle		· ·					
Hom		Knows	ovarian	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Obstetrics &
UG-PB		How	changes	Uterine changes		Understand		Small group	MCQs	Viva	Gynaecology
10.14				during menstrual		/ interpret		discussion		Voce	
				cycle							
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	

Hom		Knows		Discuss the	Cognitive	Level 2	Desirable to	CBL,	MCQs	SAQs,	Medicine
UG-PB		How		altered sensation	0	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 – EN
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 - EN
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 – EN
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	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB	Of	How	physiology of	visual pathway	0	Understand		Small group	•	Viva	
11.14	Information		image			/ interpret		discussion		Voce	
	(K-1)		formation			, ,					
	-				a						-
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							
Hom	Information	Knows	Describe the	reflex Discuss the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Surgony
HOM UG-PB		How		photochemistry	cognitive	Understand	know	Small group	IVICUS	sags, Viva	Surgery – Ophthalmolo
UG-РВ 11.16	Gathering ,Integration	поw	physiology of vision including	, ,		/ interpret	NIUW	discussion		Viva Voce	•
11.10	,integration Of		•			/ interpret		uiscussion		voce	gy
	U		colour vision								

Hom	information,	Knows		Discuss the	Cognitive	Level 2	Nice to know	Lecture,	SAQs	SAQs,	Surgery –
UG-PB	Problem	How		photopic &		Understand		Small group		Viva	Ophthalmol
11.17	Integration			scotopic vision		/ interpret		discussion		Voce	gy
Hom	(K-2)	Knows		Discuss the visual	Cognitive	Level 2	Desirable to	PBL,	SAQs	SAQs,	Surgery –
UG-PB		How		adaptation, visual		Understand	know	Lecture,		Viva	Ophthalmol
11.1.8				accommodation		/ interpret		Small group		Voce	gy
				& night blindness				discussion			Materia
											Medica
Hom	Information	Knows	Describe the	Discuss the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	LAQs,	Surgery –
UG-PB	Gathering	How	refractive	different types of		Understand	know	Small group		Viva	Ophthalmol
11.19	,Integration		errors and	refractive errors		/ interpret		discussion		Voce	gy
	Of		colour								Materia
	information,		blindness								Medica
	Problem										Repertory
Hom	Integration	Knows		Discuss the	Cognitive	Level 2	Desirable to	CBL,	MCQs	SAQs,	Surgery –
UG-PB	(K-2)	How		colour blindness	0	Understand	know	Lecture,		Viva	Ophthalmol
11.20	· · /	-				/ interpret	-	Small group		Voce	gy
						,		discussion			Materia
											Medica
Hom		Knows		List the causes of	Cognitive	Level	Nice to know	CBL,	SAQs	Viva	Surgery –
UG-PB				Nystagmus		1Recall		Lecture,		Voce	Ophthalmol
11.21								Small group			gy
								discussion			87 Materia
								alseassion			Medica
Hom	Information	Shows	Demonstrate	Perform the	Psycho	Level 2	Desirable to	Demonstrat	Observa	Checklist	
UG-PB	Gathering	How	Testing of	testing of visual	Motor	(Control)	know	ion	tion	0	Ophthalmol
11.22	,Integration		visual acuity,	acuity, colour	motor	(control)		1011			gy
11.22	Of		colour and field	1.							6 <i>9</i>
	information,		of vision in a								
Hom	Problem	Knows	volunteer	Interpret the	Cognitive	Level 2	Nice to know	CBL,	SAQs	Viva	Surgery –
UG-PB	Integration	How	Volunteel	testing of visual		Understand		Lecture,		Voce	Ophthalmol
11.23	(K-2)			acuity, colour		/ interpret		Small group			gy
	(K-2)			and field of vision				discussion			Materia
											Medica
Hom	Information	Shows	Demonstrate	Perform the	Psycho	Level 2	Desirable to	Demonstrat	Observa	Checklist	Surgery – El
UG-PB	Gathering	How	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	Ophthalmolo
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 – EINT
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	Ophthalmolo
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 – EINT
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 – EINT
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 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 ment	Summat ive Assessm ent	- Horizontal
								nice to know				
Hom UG-PB 12.1	Integration Of Information (K-1)	Digestiv e System		Describe the structure, Function &	Discuss the importance of digestive system	Cognitive	Level 2 Understand / interpret	Must know	Lecture, Small group discussion	SAQs	SAQs, Viva Voce	Anatomy

Hom		&	Knows	Innervation of	Recall the	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		Nutrition		digestive	structure of		Recall		Small group		Viva	
12.2				system	digestive system				discussion		Voce	
Hom			Knows		Recognize the	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB					structure of small		Recall		Small group		Viva	
12.3					intestine				discussion		Voce	
Hom			Knows		Identify the	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB					structure of large		Recall		Small group		Viva	
12.4					intestine				discussion		Voce	
Hom	Integration Of		Knows	Describe the	Classify salivary	Cognitive	Level 1	Desirable	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Information			composition,	glands.		Recall	to know	Small group		Viva	Materia
12.5	(K-1)			mechanism of	Mention the				discussion		Voce	Medica
				secretion,	innervation of							
				function &	salivary glands.							
Hom			Knows	regulation of	Discuss	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Biochemistr
UG-PB			How	saliva	composition of		Understand		Small group		Viva	у
12.6					saliva		/ interpret		discussion		Voce	
Hom			Knows		Discuss functions	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB			How		of saliva		Understand		Small group		Viva	Materia
12.7							/ interpret		discussion		Voce	Medica
Hom			Knows		Describe	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB			How		mechanism of		Understand		Small group		Viva	
12.8					salivary secretion		/ interpret		discussion		Voce	
Hom			Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB			How		control of		Understand		Small group		Viva	
12.9					salivary secretion		/ interpret		discussion		Voce	
Hom			Knows		Explain the	Cognitive	Level 2	Desirable	PBL,	SAQs	SAQs,	Medicine
UG-PB			How		clinical relevance		Understand	to Know	Lecture,		Viva	Materia
12.10					of salivary gland		/ interpret		Small group		Voce	Medica
					& salivary				discussion			
					secretion							
Hom	Integration Of		Knows	Describe the	Describe the	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,	
UG-PB	Information		How	movement of	process of		Understand	to Know	Small group		Viva	
12.11	(K-1)			oesophagus	mastication.		/ interpret		discussion		Voce	
Hom			Knows		Explain the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Anatomy
UG-PB			How		stages of		Understand		Small group		Viva	Medicine
12.12					swallowing		/ interpret		discussion		Voce	

Hom		Knows		Discuss the role	Cognitive	Level 2	Nice to	Lecture,	SAQs	Viva	
UG-PB		How		of upper & lower		Understand	know	Small group		Voce	
12.13				oesophageal		/ interpret		discussion			
				sphincter							
Hom		Knows		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	Knows	Describe the	Recall the macro	Cognitive	Level 1	Must know	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Information	KIIOW3	composition,	and micro	cognitive	Recall	Widst Know	Small group	3703	Viva	Anacomy
12.15	(K-1)		mechanism of	structure of		neeun		discussion		Voce	
12.15	((1)		secretion,	stomach				41364331011		VOCC	
Hom		Knows	function &	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Anatomy
UG-PB		How	regulation of	functions of	coginare	Understand		Small group	0,100	Viva	, and comy
12.16			Gastric Juice	stomach		/ interpret		discussion		Voce	
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Biochemistr
UG-PB		How		composition &	coginare	Understand	indst know	Small group	Meds	Viva	y
12.17		now		functions of		/ interpret		discussion		Voce	y
12.17				gastric juice		, interpret		discussion		Vocc	
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB		How		mechanism &	cognitive	Understand	Widst Know	Small group	3703	Viva	Wiedleffie
12.18		11000		regulation of		/ interpret		discussion		Voce	
12.10				gastric juice		/ interpret		41364331011		VOCC	
				secretion							
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		process of	0	Understand		Small group		Viva	
12.19				digestion in		/ interpret		discussion		Voce	
				stomach		,					
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,	Anatomy
UG-PB		How		movements of	-	Understand	to know	Small group		Viva	
12.20				stomach		/ interpret		discussion		Voce	
Hom	1	Knows	1	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	0080	Recall		Small group	0.100	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,	SAQs	SAQs,	Anatomy
UG-PB	Information	How	structure &	structure &		Understand	know	Small group		Viva	
12.26	(K-1)		function of	functions of Liver		/ interpret		discussion		Voce	
Hom		Knows	liver & Gall	Explain the signs	Cognitive	Level 2	Desirable	CBL,	MCQs	SAQs,	Medicine
UG-PB		How	bladder	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,	SAQs	LAQs,	Biochemistr
UG-PB		How	regulation of	composition &	Cognitive	Understand		Small group	5443	Viva	y
12.30		11000	Bile	composition &		/ interpret		discussion		Voce	y
12.30			l			, incorpier	1	41304351011		1000	

	· · · · ·			T		1				1	1
				function of gall							
				bladder bile							
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		control &		Understand		Small group		Viva	
12.31				mechanism of		/ interpret		discussion		Voce	
				bile secretion							
Hom		Knows		Describe the	Cognitive	Level 2	Desirable	CBL,	SAQs	SAQs,	Medicine
UG-PB		How		clinical		Understand	to know	Lecture,		Viva	Materia
12.32				significance of		/ interpret		Small group		Voce	Medica
				liver functions.				discussion			
Hom		Knows		Describe the	Cognitive	Level 2	Desirable	CBL,	SAQs	SAQs,	Medicine
UG-PB		How		clinical		Understand	know	Lecture,		Viva	Surgery
12.33				significance of		/ interpret		Small group		Voce	
				Gall Bladder				discussion			
				functions							
Hom	Integration Of	Knows	Describe the	Recognise the	Cognitive	Level 1	Desirable	Lecture,	SAQs	SAQs,	Anatomy
UG-PB	Information		composition,	macro and micro		Recall	to know	Small group		Viva	Repertory
12.34	(K-1)		mechanism of	structure of Small				discussion		Voce	
			secretion,	intestine							
Hom		Knows	function &	Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Biochemist
UG-PB		How	regulation of	composition &		Understand		Small group		Viva	У
12.35			Small intestine	functions of		/ interpret		discussion		Voce	
				Succus Entericus							
Hom		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		mechanism &		Understand		Small group		Viva	
12.36				regulation of		/ interpret		discussion		Voce	
				secretions of							
				Succus Entericus							
Hom		Knows		Describe the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		process of		Understand		Small group		Viva	
12.37				digestion in small		/ interpret		discussion		Voce	
				intestine							
Hom		Knows	1	Describe the	Cognitive	Level 2	Nice to	CBL,	SAQs	SAQs,	Medicine
UG-PB		How		Malabsorption		Understand	Know	Lecture,		Viva	Materia
12.37				Syndrome		/ interpret		Small group		Voce	Medica
								discussion			

Hom	Integration Of	Knows	Describe the	Explain peristalsis	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Materia
UG-PB	Information	How	movement of	as intestinal		Understand		Small group		Viva	Medica
12.39	(K-1)		gastrointestinal	movement		/ interpret		discussion		Voce	
Hom		Knows	tract, it's	Describe	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How	regulation &	segmentation as	-	Understand		Small group		Viva	
12.40			function.	intestinal		/ interpret		discussion		Voce	
				movement							
Hom		Knows		Discuss the	Cognitive	Level 2	Desirable	CBL,	SAQs	SAQs,	Medicine
UG-PB		How		clinical		Understand	to Know	Lecture,		Viva	
12.41				importance of		/ interpret		Small group		Voce	
				small intestine				discussion			
Hom	Integration Of	Knows	Describe the	Discuss the	Cognitive	Level 2	Must	Lecture,	SAQs	SAQs,	
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	

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

Hom	Knows 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	Shows	Perform the	Psycho	Level 2	Desirable	Demonstrati	Observ	Checklist	Anatomy
UG-PB	How	percussion of	Motor	(Control)	to know	on	ation		Medicine
12.56		gastrointestinal							
		system in the							
		clinical							
		examination							
Hom	Knows 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	Shows	Perform the	Psycho	Level 2	Desirable	Demonstrati	Observ	Checklist	Anatomy
UG-PB	How	auscultation of	Motor	(Control)	to know	on	ation		Medicine
12.58		gastrointestinal							
		system in the							
		clinical							
		examination							
Hom	Knows	Interpret the	Cognitive	Level 2	Nice to	Lecture,	MCQs	SAQs,	Anatomy
UG-PB	How	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 Hom			Knows How Knows		Discuss the functions of kidney Discuss the	Cognitive Cognitive	Level 2 Understand / interpret Level 2	Must know Must know	Lecture, Small group discussion Lecture,	SAQs SAQs	LAQs, Viva Voce SAQs,	Anatomy
UG-PB 13.3	-		How		organization and function of glomerulus		Understand / interpret		Small group discussion		Viva Voce	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		Knows		Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	
UG-PB		How		mechanism of		Understand		Small group		Viva	
13.9				GFR.		/ interpret		discussion		Voce	
				Explain the							
				factors affecting							
				GFR							
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	MCQs	LAQs,	Medicine
UG-PB	Of	How	process of	general		Understand		Small group		Viva	Biochemistr
13.10	Information		filtration,	considerations		/ interpret		discussion		Voce	у
	(K-1)		secretion &	of reabsorption							
			reabsorption in	& secretion							
Hom		Knows	kidney	Describe the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Biochemistr
UG-PB		How		renal transport		Understand	know	Small group		Viva	у
13.11				mechanisms		/ interpret		discussion		Voce	-
				throughout the							
				tubular							
				segments							
Hom		Knows		Describe the	Cognitive	Level 2	Nice to	Lecture,	MCQs	Viva	
UG-PB		How		transport of	-	Understand	know	Small group		Voce	
13.12				individual		/ interpret		discussion			
				substances in							
				different							
				segments of							
				renal tubule							
Hom	Integration	Knows	Describe the	Discuss the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQs,	Medicine
UG-PB	Of	How	concentration	general	-	Understand		Small group		Viva	
13.13	Information		and diluting	consideration of		/ interpret		discussion		Voce	
	(K-1)		mechanism in	urine							
			the kidney	concentration							
			,	mechanism							
Hom	1	Knows		Describe the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	Biochemistr
UG-PB		How		counter current	-	Understand	Know	Small group		Viva	у
13.14				multipliers		/ interpret		discussion		Voce	
Hom	1	Knows		Discuss the	Cognitive	Level 2	Desirable to	Lecture,	MCQs	SAQs,	
UG-PB		How		counter current	Ŭ	Understand	Know	Small group	-	Viva	
13.15				exchangers		/ interpret		discussion		Voce	

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

Hom	Knows	Interpret the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQ,	Biochemistr
UG-PB	How	results of	0	Understand		Small group	-	Viva	y
13.24		examination for		/ interpret		discussion		Voce	Medicine
		the abnormal							
		constituents of							
		urine							
Hom	Knows	Interpret the	Cognitive	Level 2	Must know	Lecture,	SAQs	LAQ,	Biochemistr
UG-PB	How	renal clearance		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		Understand		Small group		Viva	у
13.26		test for Tubular		/ 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 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	Summa tive Assess ment	Integration - Horizontal / Vertical / Spiral
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	

									1		
				properties of lipids.				group discussion			
Hom	Integration	Knows	Describe the	Discuss	Cognitive	Level 2	Must know	Lecture,	SAQs	SAQs,	
UG-PB	Of	How	Carbohydrate	different types		Understand		Small		Viva	
14.4	Information		metabolism	of		/ interpret		group		Voce	
	(K-1)			carbohydrates.				discussion			
Hom		Knows		List major	Cognitive	Level	Must	Lecture,	SAQs	SAQs,	
UG-PB				functions of		1Recall	Know	Small		Viva	
14.5				carbohydrates.				group		Voce	
								discussion			
Hom		Knows		Discuss the food	Cognitive	Level 2	Desirable	Lecture,	SAQs	SAQs,	
UG-PB		How		sources of		Understand	to Know	Small		Viva	
14.6				carbohydrates.		/ 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		Describe the	Discuss the	Cognitive	Level 2	Must	Lecture,	SAQs	SAQs,	
UG-PB	Of		Protein	special features		Understand	Know	Small		Viva	
14.10	Information		Metabolism	of protein		/ interpret		group		Voce	
	(K-1)			Metabolism				discussion			
Hom		Knows		Discuss the	Cognitive	Level 2	Nice to	Lecture,	SAQs	SAQs,	
UG-PB		How		functions of		Understand	know	Small		Viva	
14.11				intact amino		/ interpret		group		Voce	
				acid				discussion			

Hom		Knows	[Discuss the	Cognitive	Level 2	Must	Lecture,	SAQs	LAQs,	
UG-PB		How		oxidation of	Cognitive	Understand	Know	Small	SAUS	Viva	
14.12		TIOW		amino acid		/ interpret	KIIOW			Voce	
14.12						/ interpret		group discussion		VOLE	
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			

UG-PB 14.20				Classify vitamins	Cognitive	Level	Desirable	Lecture,	SAQs	SAQs,	
						1Recall	to Know	Small		Viva	
								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	07
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	1 30.0000
14.28						/ interpret					

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

		done in a 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	Lipid Profile	Demonstration
9	Interpretation and Discussion of Results of Biochemical Tests	Demonstration
CLI	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	DTTING	
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	11	16	Yes	Yes	Yes
E	Respiratory system	II	16	Yes	Yes	Yes
F	Excretory system	III	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	s. 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	II	21	Yes	Yes	Yes
С	Digestive system and Nutrition	III	16	Yes	Yes	Yes
D	Reproductive system	III	17	Yes	Yes	Yes
E	Sense organs	III	17	Yes	Yes	Yes
F	Biochemistry	III	08	Yes	Yes	No

UNIVERSITY EXAM PAPER-II – 100 MARKS

Question	Type of Question	Question Paper Format (Refer Theme table for themes)		
Serial Number	Type of Question			
Q1	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 Professional	1 st PA 20 Marks	1 ^{s⊤} TT 100	100	2 nd PA 20 Marks	2 ND TT 100	100	3 rd PA 20 Marks	UE
	BHMS	Practical/Viva	Marks Theory	Marks Practical/ Viva	Practical/Viva	Marks Theory	Marks Practical/ Viva	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
						ТТ2/	
						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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