RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI

DEPARTMENT OF PHYSIOLOGY

Curriculum of Objective Structured Video Examination

First & Second Year MBBS 2025

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The Vision

The **Objective Structured Video Examination (OSVE)** is designed to provide a structured and concept-driven assessment approach, ensuring students master essential clinical and physiological concepts. By integrating the **Calgary Model**.

Key Features of OSVE:

1. **Prioritization of Essential Knowledge:**
   - The assessment framework is based on a **70-30 division**, where **70%** of the exam content focuses on **must-know** objectives and **30%** on **should-know** objectives.
   - The **nice-to-know** category is excluded from OSVE and is instead covered within the **Learning Management System (LMS)**.

2. **Structured and Video-Assisted Assessment:**
   - OSVE utilizes video-based examination techniques to assess physiological mechanisms through dynamic, case-based scenarios.
   - This approach enhances **clinical reasoning and visual interpretation skills**, which are crucial in medical practice.

3. **Integration with LMS for Comprehensive Learning:**
   - The LMS covers broader theoretical aspects, allowing OSVE to focus on key practical and physiological applications.
   - This structured division ensures **efficient learning** and **exam-focused preparation**.

4. **Continuous Evaluation and Adaptation:**
   - The OSVE model is regularly reviewed to ensure its relevance, aligning with **updated medical education standards and student feedback**.

Examples of OSVE Assessments

1. **Thyroid Physiology:** A patient presents with **fatigue, weight gain, and cold intolerance**. A video displays **TSH, T3, and T4 levels**, followed by ultrasound findings.
   - **Must-Know (70%)**: Thyroid hormone regulation (TSH-T3/T4 feedback), primary vs. secondary hypothyroidism.
   - **Should-Know (30%)**: Effects of iodine deficiency, thyroid hormone transport.

2. Myopia Mechanism: A video compares **normal vs. myopic vision**, showing **axial elongation of the eyeball** and **light refraction changes**.
   - **Must-Know (70%)**: Role of axial length in myopia, impact on image formation.
   - **Should-Know (30%)**: Ciliary muscle function, near work and screen time effects.

By integrating **structured assessments with video-based learning**, OSVE ensures **effective, clinically relevant evaluation**.

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Table of Contents

MODULE WISE LEARNING OBJECTIVES

First Year MBBS

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Learning Domain	Calgary Guage	Grade	Teaching Strategy	Assessment Tools
Introduction to Physiology & Physiology Department	• Introduce faculty members	C1			LGIS SGD	SAQ MCQ VIVA
	• Define physiology	C2	Must Know	A		
Cell physiology & Homeostasis	• Understand functional organization of human body from cell to systems	C2	Must Know	A	LGIS SGD	M SAQ MCQ VIVA
	• Discuss salient features of cell theory	C2	Should Know	B		
	• Define homeostasis	C1	Must Know	A		
	• Describe homeostatic mechanisms of the major functional systems.	C1	Must Know	A		
Concept of Body Fluid and Internal Environment	• Describe distribution of total body water	C1	Must Know	A	LGIS SGD	SAQ MCQ VIVA
	• Enlist the proportion of intra cellular and extra cellular fluids.	C1	Must Know	A		
	• Differentiate between ECF & ICF	C2	Must Know	A		
	• Recall Physical characteristics of normal ECF constituents	C1	Should Know	B		
	• Understand the concept of internal environment (which student can differentiate for unicellular and multi cellular organisms.)	C2	Must Know	A		
Homeostatic Control System I	• Describe the characteristic of control system of the body.	C1	Must Know	A	LGIS SGD	SAQ MCQ VIVA
	• Enlist four control mechanisms of body	C1	Must Know	A		
	• Understand the mechanism of positive feedback, negative feedback, feed forward control and adaptive control with examples.	C2	Must Know	A		
Homeostatic Control System II	• Recall control mechanisms	C1	Should Know	B	LGIS SGD	SAQ MCQ VIVA
	• Give examples	C1				
	• Compare and contrast feed forward and adaptive mechanisms	C2	Should Know	B		

	• Define gain of control system	C1	Must Know	A		
	• Comprehend gain of the control system	C2	Must Know	A		
Cellular organelles and cell functions	• Describe cytoskeleton & cell locomotion	C1	Must Know	A	LGIS Group presentations	SAQ MCQ VIVA
	• Discuss functions of cilia and amoeboid movement	C2	Must Know	A		
	• Describe the mechanism of ATP generation	C1	Should Know	B		
	• Enlist three major processes of ATP consumption in the body	C1	Should Know	B		
	• Understand cell ingestion and other independent roles of cell	C2	Should know	B		
Cell Membrane and Cell Organelles, I & II	• Enlist functions of ER, golgi apparatus, lysosome&perxosome, mitochondria	C1	Must Know	A	LGIS SGD Group presentations	SAQ MCQ VIVA
	• Compare and contrast RER & SER, lysosomes & peroxisomes	C2	Must know	A		
	• Understand Docking mechanism	C2	Should Know	B		
	• Discuss physiological importance of mitochondria & ATP	C2	Must know	A		
	• Describe the structure of cell membrane: fluid mosaic model	C1	Must know	A		
	• Enlist functions of cell membrane	C1	Must know	A		
Cell membrane Ion channels, Transport across the cell membrane: Diffusion	• Enlist various types of ion channels	C1	Must know	A	LGIS SGD	SAQ MCQ VIVA
	• Enumerate modes of transport mechanism across the cell membrane	C1	Must Know	A		
	• Define and discuss factors affecting diffusion	C1	Should know	B		
Transport across cell membrane: Osmosis	• Recall transport mechanism across the cell membrane with special emphasis on osmosis and osmotic pressure	C1	Should know	B	LGIS SGD	SAQ MCQ VIVA
	• Recall factors affecting osmosis	C1	Should know	B		
	• Recall osmolarity of body fluids	C1	Should know	B		

	• Discuss tonicity	C2	Should know	B		
	• Comprehend concept of isotonic, hypertonic and hypotonic	C2	Should know	B		
Transport across cell membrane: Active transport I & II	• Define active transport	C1	Must know	A	LGIS SGD	SAQ MCQ VIVA
	• Classify active transport	C2	Must know	A		
	• Comprehend various types of active transport with examples with special emphasis on Na-K pump	C2	Must know	A		
	• Understand basic concepts about DNA and	C2	Should know	B		
	• RNA	C1	Should know	B		
	• Recall various types of RNA and their functions	C1	Must know	A		
Genetics Transcription & Translation	• Define & Explain Genetics, Transcription & Translation		Should know	B	LGIS PBL	SAQ MCQs VIVA
	• Describe Genetic control of protein synthesis		Must know	A		
	• Differentiate between apoptosis & Necrosis		Should know	B		
	• Explain Cell differentiation, apoptosis and cellular changes in cancer	C2	Should know	B		
Intracellular communication and cell junctions	• Describe the structure of various intracellular connections	C1	Should know	B	LGIS SGD	SAQ MCQ VIVA
	• Give the physiological importance of cell junctions	C1	Should know	B		
Signal Transduction	• Describe the various 2nd messenger systems	C1	Must know	A	LGIS	SAQ MCQ VIVA
	• Discuss physiological significance	C2				

Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives	Learning Domain	Calgary Guage	Grade	Teaching Strategy	Assessment Tools
Cell and homeostasis	Understand functional organization of human body	C2	Must Know	A	SGD	SAQ MCQ VIVA
	Discuss homeostasis/control systems of the body	C2	Must know	A		
Cell cytoskeleton and locomotion and cell functions	Discuss the functions of cell	C2	Should know	B	SGD	SAQ MCQ VIVA
	Describe cell cytoskeleton	C1	Must Know	A		
Transport across cell membrane	Describe the structure of cell membrane	C1	Must know	A	SGD	SAQ MCQ VIVA
	Enlist various ion channels	C1	Must know	A		
	Discuss transport mechanism across the cell membrane with special emphasis on diffusion and osmosis	C2	Must Know	A		
	Explain the types of active transport	C2	Must Know	A		
Intracellular communication and cell junction, signal transduction	Describe the structure and function of various intracellular connections Discuss second messenger system	C1 C2	Must Know Must Know	A A	SGD	SAQ MCQ VIVA

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives	Calgary gauge	grade	C/P/A	Teaching Strategy	Assessment Tool
Structure of Neuron	• Describe different parts of neuron	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
Classification of Neurons and nerve fibers, NGF	• Describe the classification of neurons and nerve fibers	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
	• Describe NGF; given their roles	Should know	B	C1		
Stimulus and Response & Types of Stimuli	• Define stimulus	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE
	• Describe various types of stimuli and response	Must know	A	C1		
Concept of degeneration and regeneration	• Explain degeneration and regeneration of nerve fibers	Must know	A	C2	LGIS	SAQs MCQs VIVA VOCE
Properties of nerve fibers	• Discuss the properties of nerve fibers	Must know	A	C2	LGIS	SAQs MCQs VIVA VOCE
Graded Potential, Comparison with action potential	• Define graded Potential with examples	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE
	• Compare between graded potential and action potential	Must know	A	C2		
Nernst Potential RMP	• Understand the concept of Nernst potential and equilibrium potential for different ions	Must know	A	C2	LGIS SDL	SAQs MCQs VIVA VOCE
	• Define resting membrane potential of nerves.	Must know	A	C1		
	• Explain the factors which determine the level of RMP	Should know	B	C2		
	• Differences between electrical and chemical synapse	Must know	A	C2		
RMP: & Measurement	• Describe the terms polarized and hyperpolarized	Should	B	C1	LGIS	SAQs

& effect of Electrolytes,		know				MCQs VIVA VOCE
	• Describe the role of various ions for these states	Should know	B	C1		
Stages of Action Potential I&II	• Define and draw action potential	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE
	• Describe different phases of action potential	Must know	A	C1		
Recording of Action Potential Propagation of Action Potential & Factors effecting nerve conduction Polarization and hyperpolarization state	• Briefly describe the method of recording resting membrane potential and action potential	Should know	B	C1	LGIS	SAQs MCQs VIVA VOCE
	• Describe the mechanism of propagation of action potential	Must know	A	C1		
	• Describe various factor that effect nerve conduction	Should know	B	C1		
Refractory Period, Different types of Action Potentials	• Define refractory period and discuss its types	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
	• Describe various types of action potential	Must know	A	C1		
Synapse and synaptic transmission	• Describe synapse and its types	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE
EPSP, IPSP, Properties of chemical synapse	• Discuss in detail various properties of chemical synapse	Should know	B	C2	LGIS	SAQs MCQs VIVA VOCE
Properties of Chemical synaptic	• Discuss in detail various properties of chemical synapse	Must know	A	C2	LGIS	SAQs MCQs VIVA VOCE
NMJ , Synthesis and release of Ach Excitation-Contraction coupling	• Describe the physiologic anatomy of neuromuscular junction.	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
	• Recall Synthesis and release of Ach	Should know	B	C1		
	• Describe the mechanism of transmission of impulses from nerve endings to skeletal muscle fibers	Should know	B	C1		
Drugs acting on NMJ,Excitation-Contraction coupling	• Enlist drugs that enhance and block transmission at neuromuscular junction	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA
	• Describe mechanism of excitation contraction	Must	A	C1		

	coupling	know				VOCE
Myasthenia Gravis, Lambert Eaton Syndrome	• Describe the salient features of myasthenia gravis and Lambert Eaton syndrome	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE

PhysiologySmall Group Discussion (SGDs)

Topic	Learning Objectives At the end of Session students should be able to	Calgary guage	Grade	C/P/A	Teaching Strategy	Assessment Tool
Discussion regarding previous module	• Discuss difficulties regarding questions, MCQs of Foundation Module	Should know		C2	SGD	MCQs SAQs Viva Voce OSPE
RMP, measurement & effects, of electrolyte on RMP	• Define resting membrane potential of nerves.	Should know	B	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Explain the factors which determine the level of RMP	Should know	B	C2		
	• Excitation contraction coupling	Must know	A	C1		
Synapse and synaptic transmission &EBSP,IPSP properties of chemical synapse	• Describe synapse and its types	Must know	A	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Differences between electrical and chemical synapse	Must know	A	C2		
Nernst potential	• Concept of Nernst potential	Must know	A	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Equilibrium potential for different ions	Should know	B	C2		
Neuro muscular function(NMJ)	• Transmission Across NMJ	Should know	B	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Diseases of NMJ	Must know	A	C2		
Nerve growth factor (NGF)	• Describe NGF	Should know	B	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Give their role	Should know	B	C1		
	• Explain De-generation and Re-Generation of nerve fibers	Should know	B	C2		

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Calgary guage	grade	Learning Domain	Assessment Tool	References	Learning Resources
Introduction to musclephysiology, StructureofSarcomere	Explainthephysiologicalanatomy of skeletalmuscle Drawandlabelthesarcomere	Must Know	A	C2	MCQ SAQ VIVA	• Ganong'sReview of MedicalPhysiology.25TH Edition.Section01,Excitabletissue:Muscle (Chapter 05,Page99) • Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology(Chapter1.Page34) • HumanPhysiology byDeeUnglaubSilverthorn. 8TH Edition.Muscle (Chapter12,Page411) • Textbook of Medica Physiology byGuyton&Hall.14th Edition.Contractionof Skeletalmuscle.Section02.(Chapter06,Page79)	1. https://youtu.be/8iklTDlra5Q 2. https://www.sciencedirect.com/science/article/abs/pii/0197018687901070 3. https://teachmephysiology.com/histology/tissue-structure/muscle-histology/skeletal-muscle/

Sarcotubularsystem, excitationcontraction coupling mechanism inskeletalmuscle	Discuss the slidingfilamentmodelofmusclecontraction. Describe the structure of sarcotubular system anditsimportanceinmusclecontraction	Must Know	A	C2 C2	MCQ SAQ VIVA	• Ganong'sReview of MedicalPhysiology.25TH Edition.Section01,Excitabletissue:Muscle(Chapter05,Page103) • Physiology by Linda S. Costanzo 6th Edition. • CellularPhysiology(Chapter1. Page36) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle(Chapter 12,Page 413,421) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 68) • Textbook of	1. https://www.sciencedirect.com/science/article/abs/pii/0197018687901070 2. https://youtu.be/8iklTDlra5Q .https://link.springer.com/article/10.1007/s12551-013-0135-x

						Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter • 06, Page 81) (Chapter 07, Page 93,97)	
Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies	Define motor unit Discuss recruitment and its effect on force of contraction Discuss Molecular Mechanism of skeletal muscle contraction	Must Know	A	C1 C2	MCQ SAQ VIVA	• Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 36) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 413,421) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, ,	

						(Chapter 04,page 70) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 82,88)	.https://youtu.be/NvV2xTrShvg
Energetics, efficiency and types of contraction, heat production in muscle	Elaborate Energetic and efficiency of contraction. Discuss heat production in nerve and muscle	Should Know	B	C3	MCQ SAQ VIVA	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 431) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, , (Chapter 04,page	1.https://www.sciencedirect.com/topics/engineering/length-tension-curve 2.https://youtu.be/3ntulKD4kvY

						77,84) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 85,87)	
Properties of skeletal muscles, Tetanus & Fatigue	Discuss various properties of skeletal muscle in detail Tetanus and fatigue	Must Know	A	C2	MCQ SA Q VIVA	• Ganong's Review of Medical Physiology 25thEdition Section01,Excitabletissue:Muscle (Chapter 05, Page 110) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 422,424,428) Physiological Basis of	1. https://youtu.be/v5Nm_LaAQVo 2. https://www.sciencedirect.com/science/article/abs/pii/S2387020622003485

						Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 74,86)	
Introduction to CVS	Introduction to Cardiovascular system. Classify blood vessels	Must Know	A	C1	MCQ SAQ VIVA	• Ganong's Review of Medical Physiology. 25TH Edition.Section05,Cardioascular physiology (Chapter 29, Page 519) • Human Physiology by Dee Unglaub lver thorn. 8TH Edition. Cardioascular physiology (Chapter 14,Page 469) Physiological Basis of Medical Practice by Best & Taylor's.13th	1. https://youtu.be/28CYhgjrBLA 2. https://litfl.com/cardiovascular-physiology-overview/

						Edition.Section 02, Introduction to Cardiovascular system.(Chapter 05,page 101)	
Physiologic anatomy, types and properties of Smooth Muscle	Enlist type of smooth muscles and explain their characteristics Explain the properties of smooth muscle	Must Know Must Know	A A	C1 C2	MCQ SAQ VIVA	• Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 40) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 436) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Excitation and Contraction of Smooth	1. https://www.kenhub.com/en/library/anatomy/smooth-musculature 2. https://youtu.be/qEVRoKuoj4U

						muscle.Section 02. (Chapter 08, Page 101)	
Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential	Describe the physiologic anatomy of myocardium Discuss properties of myocardium Discuss in detail various properties of myocardium Describe the mechanism of production of action potential and its propagation Describe excitation contraction coupling in detail Discuss propagation of electrical activity in cardiac muscle	Must know	A	C1 C2 C1 C2	MCQ SAQ VIVA	• Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 14. Page 131) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 482) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 09, Page	1. https://youtu.be/L2Gf9cj7jBw 2. https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential

						114)	
Mechanism of smooth muscle contraction & its control	Explain the chemical and physical basis of smooth muscle contraction	Must Know	A	C2	MCQ SAQ VIVA	• Ganong's Review of Medica Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 42) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12,Page 439,443) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Excitation and Contraction of Smooth muscle.Section02. (Chapter 08, Page 103,105)	1. https://www.kenhub.com/en/library/anatomy/smooth-musculature 2. https://youtu.be/qEVRoKuoj4U
Regulation of myocardial activity	Describe the regulation of pumping activity of heart	Must Know	A	C1	MCQ SAQ VIVA	Textbook of Medical Physiology by Guyton & Hall.14th Edition. Excitation and Contraction of Smooth	https://pubmed.ncbi.nlm.nih.gov/16618229/ https://www.sciencedirect.com/topics/medicine-and-

						muscle.Section 02. (Chapter 09, Page 123)	dentistry/cardiac-action-potential
Comparison of 3 types of muscle	• Discuss differences among three types of muscle in detail	Must Know	A	C2	MCQ SAQ VIVA	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 444)	https://training.seer.cancer.gov/anatomy/muscular/types.html - https://youtu.be/eShBZ3-RxHA
Excitatory & Conducting system of heart	• Describe the conductive system of heart in detail • Enlist the various components of conductive system of heart • Describe the mechanism of production of action potential in SA node, AV node, ventricles.also describe its propogation	Must Know Must Know Must Know	A A A	C1 C1 C1	MCQ SAQ VIVA	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle(Chapter 12,Page 488) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 08,page 155,162) • Textbook of Medical Physiology by Guyton & Hall.14th	3. https://youtu.be/TnFoJ7Hhi-M 4. https://teachmeanatomy.info/thorax/organs/heart/conducting-system/

						Edition.Section 02. (Chapter 10, Page 127,133)	

Physiology Large Group Interactive Session (LGIS)

Topics	At the end of lecture students should be able to:	Calgary Gauge	Grade	Learning Domains	Teaching Strategy	Assessment Tools	Referernces	Links
Composition of blood & Hemopoiesis	1.Describe composition and general functions of blood	Must Know	A	1.C2 2. C2 3. C3 4. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, Cardiovascular Physiology (Chapter 31, Page 553) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547,548) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 19, Page347) (Chapter 20, Page 356) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Red blood cells, Anemia and Polycythemia. Section 06. (Chapter 33, Page 439)	https://accessmedicine.mhmedical.com/content.aspx?bookid=3047&sectionid=255121548 2.https://youtu.be/cm8IK24RRvA
	2.Explain the role of bone marrow in hemopoiesis and erythropoiesis	Must Know	A					
	3.Draw steps of hemopoiesis	Must Know	A					
	4. Define committed and uncommitted cells	Should Know	B					

Plasma Proteins	1.Enumerate plasma proteins, their properties, sites of production and their functions.	Must Know	A	C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, Cardiovascular Physiology (Chapter 31, Page 563) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 19, Page	https://www.ncbi.nlm.nih.gov/books/NBK531504/ 2.https://accessmedicine.mhmedical.com/content.aspx?bookid=1366&sectionid=732470953 48,353)
	2.Explain effects of deficiency of plasma proteins	Must Know	A	C2				
	3.Discuss conditions associated with decreased production and increased excretion of plasma proteins	Should Know	B	C2				
WBCs classification & formation. Neutrophils, Eosinophils &Basophils and their properties	1. Enumerate and explain various types of leukocytes and steps of leucopoiesis.	Must Know	A	C1/C2		MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Textbook of Medical Physiology by Guyton & Hall.14thEdition. Resistance of the body to Infection. Section 06. (Chapter	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9777002/ 2.https://youtu.be/TelOcCkZX7c
	2. Explain the characteristics and functions.	Must Know	A	C2	LGIS			
	3. Conditions in which these cells are increased and decreased.	Must Know	A	C2				

	4. Leukemias and their effects on the body	Should Know	B	C2			34, Page 449,456,457)	
Stages of erythropoiesis & factors affecting erythropoiesis	1. Elaborate Morphological features of RBCs.	Should Know	B	C2		MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, Cardiovascular Physiology (Chapter 31, Page 553) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547,548) • Physiological Basis of Medical Practice by Best &Taylor's.13th Edition. Section 03, Blood (Chapter 19, Page347) (Chapter 20, Page 356) • Textbook of Medical Physiology by Guyton & Hall.14thEdition. Red	https://accessmedicine.mhmedical.com/content.aspx?bookid=3047&sectionid=255121548 2.https://youtu.be/cm8IK24RRvA
	2. Describe the stages of production of RBCs.	Must Know	A	C1				
	3. Recall Life span of RBCs	Should Know	B	C2	LGIS			
	4. Enumerate and explain factors which affect erythropoiesis.	Must Know	A	C2				
	5. Enlist sites of production of erythropoietin	Should Know	B	C2				
	6. Explain mechanism of release and action of erythropoietin	Must Know	A					

							blood cells, Anemia and Polycythemia. Section 06. (Chapter 33, Page 439)	
Monocytes - macrophage system & lymphocytes	1. Explain the characteristics and functionsof monocytes. 2. Explain monocyte-macrophage system; importance	Must Know Must Know	A A	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 67) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. Section 03, Blood (Chapter 21, Page371)	https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2.https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4

							(Chapter 22, Page 387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452)	
Hemoglobin & Hemoglobinopathies, Iron Metabolism	1. Discuss details about iron metabolism in body including iron absorption and storage.	Should Know	B	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 555) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 23, Page 407,409) • Textbook of Medical	https://www.sciencedirect.com/topics/medicine-and-dentistry/red-blood-cell-indices 2.https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744
	2. Understand the structure, synthesis and functions of hemoglobin and its types.	Must Know	A	C2				
	3. Enlist different types of hemoglobinopathies	Should KNow	B	C1				

							Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 446,447)	
Process of inflammation and Lines of defense during inflammation	1. Describe the role of neutrophils and monocytes in inflammation. 2. Elaborate Lines of defense 3.	Must Know Must Know	A A	C1, C2 C1, C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25 TH Edition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 81) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood) (Chapter 22, Page 384) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page	https://youtu.be/WFm9j1rNkQs .https://en.wikipedia.org/wiki/Inflammation .https://www.verywellhealth.com/signs-of-inflammation-4580526

							454)	
Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	1. Define RBC fragility; importance; conditions in which fragility is changed.	Should Know	B	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 555) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 23, Page 407,409) • Textbook of Medical Physiology by Guyton & Hall.14th	https://www.sciencedirect.com/topics/medicine-and-dentistry/red-blood-cell-indices 2.https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744
	2. Discuss various blood indices, give their formulae,co-related with different types of anemias.	Should KNow	B	C2				
	3. Enumerate various types of anemias and polycythemias.	Must Know	A	C1				
	4. DIiscuss details about various types of anemias and polycythemia and their effect on circulatory system.	Must Know	A					

							Edition. Section 06. (Chapter 34, Page 446,447)	
Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)	1. Explain thrombocytopoiesis.	Must Know	A	C2		MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25 TH Edition. Section05, (Chapter 31, Page 564) (Chapter 03, Page 79) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 558) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 24, Page 413) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.	https://my.clevelandclinic.org/health/symptoms/21999-hemostasis https://www.sciencedirect.com/topics/neuroscience/hemostasis
	2. Describe functions of platelets	Must Know	A	C2	LGIS			
	3. Define hemostasis. 4. Explain steps of hemostasis	Must Know	A	C2				

							Section 06. (Chapter 37, Page 477,487)	
Fate of RBCs & Jaundice	1. Give life span of RBCs and explain their destruction. 2. Describe various types, compare and differentiate between various types of jaundice	Should Know Should Know	B B	C1, C2 C1, C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 555) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 23, Page 407,409) • Textbook	https://www.sciencedirect.com/topics/medicine-and-dentistry/red-blood-cell-indices 2.https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744

							of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 446,447)	
Blood coagulation	1. Explain hemostasis, mechanism of blood coagulation, fibrinolysis and anticoagulants	Must Know	A	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 559) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 24, Page 417) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter	https://youtu.be/gExUCrpAKyQ https://medlineplus.gov/lab-tests/coagulation-factor-tests/

							37, Page 479)	
Types of immunity, Physiology of innate immunity tolerance & auto immunity	1. Define immunity and its types.	Must Know	A	C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25THEdition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 67) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. Section 03, Blood (Chapter 21, Page371) (Chapter 22, Page 387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452)	https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2.https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4
	2. Compare and contrast innate and acquired immunity.	Must Know	A	C2				
	3. Difference between passive and active immunity	Must Know	A	C2				
Concept of intravascular	1. Explain Intravascular	Must Know	A	1.C2 2.C2		MCQ SEQ	• Human Physiology by	https://youtu.be/gExUCrp

anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)	coagulation. 2. Discuss Bleeding disorders. 3. Enlist Types of hemophilia			3. C1	LGIS	VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 559) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 24, Page 417) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 37, Page 479)	AKyQ https://medlineplus.gov/lab-tests/coagulation-factor-tests/
Physiology of acquired immunity B-Cells	1. Enumerate various types of lymphocytes 2. Discuss their important characteristics and 3. Explain the mechanism of preprocessing	Must Know Must Know Must Know	A A A	C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25THEdition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 67) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. Section 03, Blood (Chapter 21, Page371) (Chapter 22, Page 387) • Textbook of Medical Physiology	https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2.https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4

							by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452)	
Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)	• Discuss different Thromboembolic Conditions • Explain Pulmonary Embolism and clinical correlation • Enlist different Anticoagulant therapy	Should Know	B	C2 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 559) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 24, Page 417) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 37, Page 479)	https://youtu.be/gExUCrpAKyQ https://medlineplus.gov/lab-tests/coagulation-factor-tests/
Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS	1. Define clone and explain the roles of T and B lymphocyte clones in immunity 2. Discuss the mechanisms involved in Immune Tolerance 3. Compare Type I and Type IV hypersensitivity reactions 4. Describe the process of immunization 5. Understand role of	Must Kow	A	C1, C2 C2 C2 C1 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25THEdition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 67) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. Section 03, Blood (Chapter 21, Page371) (Chapter 22, Page 387)	https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2.https://bmcbiol.biomedcentral.com/ar

	T-lymphocytes in transplants 6. Identify different types of tissue grafts						• Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452)	ticles/10.1186/s12915-017-0392-4
Physiological mechanism of temperature regulation	1. Explain Concept of temperature 2. Discuss Physiological mechanism of temperature regulation	Must Know Must Know	A A	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 73, Page 889-936) •	**https://shop.elsevier.com/books/guyton-and-hall-textbook-of-medical-physiology/hall/978-0-323-59712-8**
ABO & Rh Blood grouping system	1. Enlist Blood group and its types 2. Explain Rh Blood Grouping System	Must Know Must Know	A A	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 558) (Chapter 36, Page 473) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 25, Page 432) • Textbook of Medical Physiology by Guyton &	https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/abo-blood-group-system https://youtu.be/wfqnNuYIY78

							Hall.14th Edition. Section 06. (Chapter 36, Page 471)	
Role of Hypothalamus in temperature regulation	1. Discuss Role of Hypothalamus in temperature regulation 2. Explain Temperature Regulating centers	Must Know Must Know	A A	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 73, Page 889-936) •	**https://shop.elsevier.com/books/guyton-and-hall-textbook-of-medical-physiology/hall/978-0-323-59712-8**
Rh Blood grouping system and Erythroblastosis fetalis	1. Discuss Rh Blood Grouping System 2. Explain Erythroblastosis fetalis 3. Discuss Clinical correlation	Must Know Must Know	A A	C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 558) (Chapter 36, Page 473) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 25, Page 432) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 36, Page 471)	https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/abo-blood-group-system https://youtu.be/wfqnNuYIY78

Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold)	1. Discuss Disorders of temperature regulation 2. Explain Concept of Fever 3. Clinical correlation Of Heat Stroke	Should Know Must Know	B B	1.C2 2.C2 3.C3	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 73, Page 889-936) •	**https://shop.elsevier.com/books/guyton-and-hall-textbook-of-medical-physiology/hall/978-0-323-59712-8**
Blood transfusion hazards. Tissue and organ transplantations	1. Discuss Blood transfusion hazards. 2. Explain Effect of blood transfusion on various organs 3. Explain Tissue and organ transplantations	Must Know Should know Should Know	A B B	C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 558) (Chapter 36, Page 473) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 25, Page 432) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 36, Page 471)	https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/abo-blood-group-system https://youtu.be/wfqnNuYIY78

CARDIOVASCULAR MODULE

Physiology Large Group Interactive Session (LGIS)

Topics	Learning Objectives	Calgary Gauge	Grade	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Introduction to CVS	1. Describe scheme of circulation through the heart and body	Must Know	A	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Cardiovascular Physiology (Chapter 14, Page 469) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4, Page 117) • Physiological Basis of Medical Practice by Best &Taylor's.13th Edition.Section 02, (Chapter 05, Page 101)	**1.** https://youtu.be/28CYhgjrBLA **2.** https://training.seer.cancer.gov/anatomy/cardiovascular/#:~:text=The%20cardiovascular%20system%20is%20sometimes,arteries%2C%20veins%2C%20and%20capillaries.	1.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Classification of blood vessels &Biophysical considerations	1.Enumerate Classification of blood vessels. 2.Explain structure and functions of types of blood vessels	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section 05, Cardiovascular Physiology (Chapter 31, Page 567,571) • Human Physiology by Dee Unglaub Silver thorn. 8TH	1. https://youtu.be/ar2_UPiGzmU 2. https://training.seer.cancer.gov/anatomy/cardiovascular/blood/classification.html	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment)

				Edition. (Chapter 15, Page 513) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4, Page 119) • Physiological Basis of Medical Practice by Best &Taylor's.13th Edition.Section 04 (Chapter 15, Page 183)				OSPE
Heart Sounds	Describe four heart sound and differences between 1st and 2nd heart sounds	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section 05, Cardiovascular Physiology (Chapter 30, Page 542) • Textbook of Medical Physiology by Guyton &Hall.14th Edition.Section 04. (Chapter 23, Page 283)	**1.** https://youtu.be/dBwr2GZCmQM **2.** https://www.utmb.edu/pedi_ed/CoreV2/Cardiology/cardiologyV2/cardiologyV23.html	C1/C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Regulation of blood flow	Define and describe Resistance to Blood flow Describe regulation of Blood pressure and Poiseuilles law	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section 05, Cardiovascular Physiology (Chapter 31, Page 575) • Physiological Basis of Medical Practice	1. https://youtu.be/coccB-M3h9k0 2. https://journals.physiology.org/doi/full/10.1152/advan.00074.2010	C1 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	Describe factors related with Blood viscosity and its role in regulation			by Best &Taylor's.13th Edition.Section 02(Chapter 5, Page 107) (Chapter 6,page 110) • Textbook of Medical Physiology by Guyton &Hall.14th Edition.Section 04. (Chapter 14, Page 173) (Chapter 17, Page 205)				
Capillary circulation, Concept of vasomotion and starling forces	Explain the details of types of starling forces. Expalin role of starling forces in different pathological conditions	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section05,(Chapter 31, Page 577) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 170) • Physiological Basis of Medical Practice by Best &Taylor's.13th Edition.Section 02(Chapter 6,Page 119) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 04. (Chapter 16, Page	1. https://youtu.be/YNROPnYy1tc 2. https://www.osmosis.org/learn/Microcirculation_and_Starling_forces	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

				193)				
Functions of veins, Venous return and factors affecting venous return	Describe how veins are different from arteries Explain Various factors that affect venous return	Must Know	A	• Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 158) • Textbook of Medical Physiology by Guyton &Hall.14th Edition.Section 4. (Chapter 15, Page 188)	1. https://youtu.be/FKJr5uqPv5s 2. https://www.sciencedirect.com/topics/medicine-and-dentistry/venous-return	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Introduction to ECG & its clinical importance	Enumerate and describe normal components of ECG Draw normal ECG Describe the method of recording ECG Describe the following. Bipolar limb leads. Describe Einthovians law and Enthovian triangle. Describe Chest leads and Augmented unipolar limb leads	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section01,Immunity,Infection and Inflammation(Chapter 29, Page 522) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 491) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Chapter 09,Page 170) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03.	1. https://youtu.be/SEFhbK8ZCgk 2. https://my.clevelandclinic.org/health/diagnostics/16953-electrocardiogram-ekg	C1 C1 C1 C1 C1 C1 C1 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	Describe how to read normal ECG Describe the principles of vectorial analysis of ECG. Describe the vectorial analysis of normal ECG			(Chapter 11, Page 135)				
Cardiac output & its control, measurement of cardiac output, pathologically high and low cardiac output	Explain cardiac output Understand various method to measure cardiac output Explain various factor which help in regulation of heart rate and stroke volume	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section05,(Chapter 30, Page 543) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 500-507) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 149,154-158) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 04. (Chapter 20, Page 245)((Chapter 22, Page 280)	1. https://youtu.be/WuGMqezV3eo 2. https://teachmephysiology.com/cardiovascular-system/cardiac-output/	C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Vectorial analysis & arrhythmia	Describe the principles of vectorial analysis of	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edit	1. https://www.brainkart.com/article/Principles-of-	C1 C1 C1 C1		MCQ SEQ VIVA VOCE

s I	ECG. Describe the vectorial analysis of normal ECG Define arrhythmia Describe abnormal sinus rhythms			ion.Section 05(Chapter 29, Page 526) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 09,Page 179,180-189) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 12, Page 143)((Chapter 13, Page 157)	Vectorial-Analysis-of-Electrocardiograms_19241/ 2. https://youtu.be/6LrptveKYus 3. https://www.medicalnewstoday.com/articles/8887#definition		LGIS	MCQ (LMS based Aseessment, MST based Assessment) OSPE
Cardiac cycle - I, Events of cardiac cycle and its graphical representation	Describe the cardiac cycle in detail Enumerate and explain its events Explain the events of cardiac cycle	Must Know	A	• Ganong's Review of Medical Physiology.25THEdition.Section05,(Chapter 30, Page 537) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 495-500) • Physiology by Linda S. Costanzo 6thEdition.Cardiovascular Physiology (Chapter 4,Page 154) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 9, Page	1. https://youtu.be/XbivIaFPoQI 2. https://www.sciencedirect.com/science/article/pii/S0010027721003309 3. https://youtu.be/sLLLOaZ85Lk 4. https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/ 5. https://youtu.be/HNkwXZSSssU	C1 C1, C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

				117)				
Arrhythmias II	Describe abnormal rhythms resulting from the block of heart signals within the intra cardiac conduction pathways Define ectopic beats Explain the following with the help of relevant ECGs. Premature contractions. Paroxysmal tachycardia. Ventricular fibrillation. Atrial fibrillation. Atrial flutter. Cardiac arrest. Describe different degrees of heart block and ECG changes Explain atrial and ventricular flutter and fibrillation	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 29, Page 527) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 09,Page 180-189) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 13, Page 157)	1. https://youtu.be/6LrptveKYus 2. https://www.medicalnewstoday.com/articles/8887#definition	C1 C1 C2 C2 C2 C2 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Cardiac cycle – II, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping	Draw various events during cardiac cycle Explain regulation of heart pumping	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section05,(Chapter 30, Page 537) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 495-500) • Physiology by Linda S. Costanzo 6thEdition.Cardiovascular Physiology (Chapter 4,Page 154) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 9, Page 117-126)	1. https://youtu.be/dmPtaJxgRQU 2. https://youtu.be/VI9zo_CzQ9g 3. https://youtu.be/pli2zs8Kekw 4. https://youtu.be/kMJ-US6Qfqc 5. https://youtu.be/qhtAhbyBSfs 6. https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
ECG changes in myocardial hypertrophies, ischemic heart disease	Discuss ECG changes in different diseases	Should Know	B	• Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 29, Page 532) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 12,Page 151)	• https://youtu.be/SEFhbK8ZCgk • https://youtu.be/D0V_aQXtRSw • https://www.msdmanuals.com/home/heart-and-blood-vessel-disorders/diagnosis-of-heart-and-blood-vessel-disorders/electrocardiography	1.C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Short term regulation of blood pressure	Explain short term regulation of blood pressure Explain central nervous system ischemic response &cushing reaction	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 32, Page 585,590) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 15,Page 517,528) • Physiology by Linda S. Costanzo 6thEdition.Cardiovascular Physiology (Chapter 4,Page 163) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 18,Page 217)	1. https://youtu.be/HUf1LtkPj1k 2. https://www.sciencedirect.com/topics/nursing-and-health-professions/blood-pressure-regulation 3. https://www.cliffsnotes.com/study-guides/anatomy-and-physiology/the-cardiovascular-system/control-of-blood-pressure	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Congestive cardiac failure	Define cardiac failure. Classify cardiac failure Enumerate the causes of cardiac failure and discuss in detail. Discuss and differentiate between compensated heart failure and	Should Know	B	• Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 30, Page 538) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 22,Page 271)	1. https://www.webmd.com/heart-disease/guide-heart-failure 2. https://youtu.be/EDCaFKgtXks 3. https://www.healthline.com/health/congestive-heart-failure	C1/C2 C1 C2 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	decompensated heart failure Discuss and differentiate between Low and high output cardiac failure Define Cardiac reserve.							
Long term regulation of blood pressure	Explain the role of kidneys in long term regulation of blood pressure	Must Know	A	• Physiology by Linda S. Costanzo 6thEdition.Cardiovascular Physiology (Chapter 4,Page 163) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 16,page 282) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 19, Page 229)	1. https://youtu.be/5S9xEpAdAgA 2. https://jps.biomedcentral.com/articles/10.1007/s12576-012-0192-0 3. https://onlinelibrary.wiley.com/doi/10.1111/j.1440-1681.2005.04205.x	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Splanchnic circulation, cutaneous circulation	Describe the Physiologicanatomy of cerebral blood flow Describe the blood flow in normal state and local control of blood flow	Must Know	A	• Physiology by Linda S. Costanzo 6thEdition.Cardiovascular Physiology (Chapter 4,Page 173) • Physiological Basis of Medical Practice by Best &	1. https://youtu.be/hr6oGuW7mVA 2. https://www.sciencedirect.com/topics/medicine-and-dentistry/splanchnic-blood-flow 3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC29992	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

				Taylor's.13th Edition. (Chapter 7,page 146)	90/			
Skeletal muscle blood flow, Cardiovascular changes during exercise	Discuss the blood flow regulation in skeletal muscle at rest and during exercise.	Must Know	A	Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 30, Page 549) Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 178) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 07,Page 148) Textbook of Medical Physiology by Guyton & Hall.14th Edition.. (Chapter 18, Page 226)(Chapter 21,Page 259)	1. https://www.sciencedirect.com/topics/medicine-and-dentistry/muscle-blood-flow 2. https://youtu.be/H6Fd8sfE2eQ	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Circulatory Shock	Define shock. Describe the physiologicca uses of shock. Enumerate various types of shock. Describe the stages of shock	Must Know	A	• Physiological Basis of Medical Practice by Best &Taylor's.13th Edition.Section 4(Chapter 24,Page 293)	1. https://youtu.be/VZtBOaAMG9w 2. https://my.clevelandclinic.org/health/diseases/17837-cardiogenic-shock	1.C1 2.C1 3.C1 4.C1 5.C1 6.C1 7.C1 8.C1 9.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment)

	Describe the following types of shock in detail. Describe Circulatory shock and Hypovolemic shock. Describe Neurogenic shock. Describe Septic shock. Describe Anaphylactic shock							OSPE
Coronary circulation , Atherosclerosis & acute coronary occlusion	Understand the physiologic anatomy of coronary blood supply and normal coronary blood flow Discuss the control of coronary blood flow	Must Know	A	Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 33, Page 610) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 15,Page 265) Textbook of Medical Physiology by Guyton & Hall.14th Edition.. (Chapter 21, Page 262)	1. https://www.msdmanuals.com/professional/cardiovascular-disorders/coronary-artery-disease/overview-of-coronary-artery-disease 2. https://youtu.be/WKrVxKJVh00 3. https://www.uptodate.com/contents/mechanisms-of-acute-coronary-syndromes-related-to-atherosclerosis	1.C2 2.C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Cardiac cycle, Events of cardiac	Describe the cardiac cycle in detail Enumerate	Must Know	A	• Ganong's Review of Medical Physiology.25TH Edit	1. https://youtu.be/XbivIaFPoQI 2. https://www.scien	C1 C1/C2 C2		MCQ SEQ

cycle and its graphical representation, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping (SDL)	and explain its events Explain the events of cardiac cycle			ion.Section05,(Chapter 30, Page 537) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 495-500) • Physiology by Linda S. Costanzo 6thEdition.Cardiovascular Physiology (Chapter 4,Page 154) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 9, Page 117)	cedirect.com/science/article/pii/S0010027721003309 3. https://youtu.be/sLLLOaZ85Lk 4. https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/ 5. https://youtu.be/HNkwXZSSssU		LGIS	VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

RESPIRATION MODULE

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Calgary guage	grade	C/P/A	Teaching Strategy	Assessment Tools
Introduction to respiration	• Enlist goals of respiration and discuss physiological anatomy of respiratory system	Should know	B	C1	LGIS	MCQ SAQ VIVA
Physiology of Alveolus and pleural space	• Discuss the role of alveoli and pleural space in respiration and pressure changes during respiration	Should know	B	C2	LGIS	MCQ SAQ VIVA
Functions of respiration	• Enlist non-respiratory and respiratory functions of respiration	Should know	B	C1	LGIS	MCQ SAQ

						VIVA
Mechanics of pulmonary ventilation	• Enumerate muscles of inspiration and expiration and	Should know	B	C1	LGIS	MCQ SAQ VIVA
	• Describe mechanics of pulmonary ventilation	Must know	A	C1		
Alveolar surface tension and surfactant Compliance	• Describe surfactant, surface tension and collapse of alveoli	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Define compliance.	Must know	A	C1		
	• Draw compliance diagram of lungs.	Must know	A	C1		
	• Explain relationship of surface tension, radius of alveoli, elastic forces of lungs with compliance	Must know	A	C2		
Lungs volume and capacities	• Define lung volumes and capacities.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Define the four pulmonary volumes and capacities.	Must know	A	C1		
	• Enlist normal values of all the lung volumes and capacities	Must know	A	C2		
Lungs volume and capacities	• Draw a graph representing all the lung volumes and capacities.	Should know	B	C1	LGIS	MCQ SAQ VIVA
	• Describe how lung volumes and capacities can be measured with spirometer.	Should know	B	C1		
	• Enlist the lung volumes and capacities which can’t be measured by spirometer	Must know	A	C1		
Dead Space	• Define dead space.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Describe physiological and anatomical dead space	Must know	A	C1		
Respiratory Reflexes	• Describe in detail cough reflex and sneeze reflex	Must know	A	C1	LGIS	MCQ SAQ VIVA
Pulmonary blood flow	• Describe the physiologic anatomy of pulmonary circulatory system.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Describe three zones of lung with respect to blood flow. Explain the effects of gravity and heavy exercise on the blood flow of lungs	Must know	A	C1		
	• Explain starling forces acting on the lung capillaries to maintain pulmonary interstitial	Must know	A	C2		

	fluid dynamics					
Pulmonary edema, effusion, pheumothorax	• Define pulmonary edema.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Give two most important cause of pulmonary edema.	Must know	A	C1		
	• Describe pulmonary edema safety factor.	Must know	A	C1		
	• Describe the mechanism of development of pulmonary edema	Must know	A	C1		
Composition ofAir	• Describe the composition alveolar and atmospheric air	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Differences between the two types of air and partial pressure of oxygen and carbon dioxide in alveolar air	Must know	A	C2		
Respiratory membrane	• Define and explain the concept of respiratory membrane.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Define and draw respiratory unit	Must know	A	C1		
	• Draw a diagram showing the exchange of gases through the respiratory membrane	Must know	A	C1		
	• Enlist four factors affecting the rate of gas diffusion through the respiratory membrane	Must know	A	C2		
Diffusion across respiratory membrane	• Define diffusing capacity of respiratory membrane.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Describe the changes in diffusing capacity of oxygen and carbon dioxide during exercise	Must know	A	C1		
	• Compare the diffusing capacities of oxygen and carbon dioxide	Must know	A	C2		
VP ratio	• Define Explain importance.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Draw ventilation perfusion diagram Explain the concept of physiologic shunt and dead space.	Must know	A	C2		
	• Describe the abnormalities of ventilation perfusion ratio	Must know	A	C1		
Transport of oxygen	• Describe in detail the transport of oxygen from lungs to tissues	Must know	A	C1	LGIS	MCQ SAQ VIVA
Oxygen-Hb	• Describe the role of hemoglobin in oxygen	Must	A	C1	LGIS	MCQ

dissociation curve	transport.	know				SAQ VIVA
	• Draw oxy-hemoglobin dissociation curve.	Must know	A	C1		
Oxygen-Hb dissociation curve	• Enlist and explain factors which shift the curve towards right and left.	Must know	A	C1	LGIS	MCQ, SAQ, VIVA
	• Briefly explain the transport of oxygen in plasma	Must know	A	C2		
Transport of CO_2 Respiratory exchange ratio	• Enumerate and explain the various transport forms of carbondioxide in blood.Also state percentages of all these forms	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Explain the carbondioxide dissociation curve	Must know	A	C2		
Transport of CO_2 Respiratory exchange ratio	• Define respiratory exchange ratio.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Describe haldaneseffect ,bohr effect and chloride shift	Must know	A	C1		
	• Enumerate the various respiratory centers.	Must know	A	C1		
	• Give the anatomical location of respiratory centers	Should know	B	C1		
Chemical control of berating	• Describe in detail the role of respiratory centers in the regulation of respiration.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Explain chemical control of respiration in detail	Must know	A	C2		
Chemical control of berating	• Describe changes in respiration during exercise. Enumerate and briefly explain factors which affect respiration.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Describe briefly the mechanism of periodic breathing and sleep apnea	Must know	A	C1		
Hypoxia	• Define hypoxia. Enumerate and explain its various types.	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Enumerate the roles of oxygen therapy in different types of hypoxia	Must know	A			
Clinical disorders	• Explain the physiologic peculiarities of chronic pulmonary emphysema, pneumonia, ateiectasis, asthma and tuberculosis	Must know	A	C2	LGIS	MCQ SAQ VIVA
Pulmonary function tests	• Describe all the non-invasive & invasive tests to assess the pulmonary functions	Should know	B	C1	LGIS	MCQ SAQ VIVA

Deep sea diving	• Discuss Effect of high partial pressure of individual gasses on the body	Must know	A	C2	LGIS	MCQ SAQ VIVA
Deep sea diving	• Discuss Oxygen toxicity at high pressure Carbon dioxide toxicity at high pressure Explain in detail the process of decompression in deep sea divers	Must know	A	C2	LGIS	MCQ SAQ VIVA
High altitude physiology	• Describe the effects of low oxygen pressure on body	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Enumerate the acute effects of hypoxia on body	Must know	A	C1		
High altitude physiology	• Define and explain the process of acclimatization to low oxygen tension	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Describe acute and chronic mountain sickness Describe the effects of acceleratory forces on body in aviation and space physiology	Must know	A	C1		
Exercise Physiology	• Define exercise	Must know	A	C1	LGIS	MCQ SAQ VIVA
	• Describe the effects of exercise on muscle metabolic system	Must know	A	C1		
Exercise Physiology	• Discuss Effects of exercise on respiration and CVS	Must know	A	C2	LGIS	MCQ SAQ VIVA

MODULE WISE LEARNING OBJECTIVES

Second Year MBBS

Physiology Large Group Interactive Session (LGIS)

Code	Topic	Learning Objectives At the end of lecture students should be able to	Calgary Gauge	Grade	Learning Domain	Teaching Strategy	Assessment Tools
M1-GIT-P-001	Introduction to GIT, Electrical activity in GIT Movements of GIT	• Explain the physiologic anatomy ofGIT	Must know	A	C2	LGIS	SEQ MCQ VIVA
		• Summarize the functions of GIT	Must know	A	C1		
		• Explain the electrical activity of GIT smooth muscle	Must know	A	C2		
		• Describe the concept of slow waves and spike potentials	Must know	A	C1		
		• Explain resting membrane potential and factors affecting RMP	Must know	A	C2		
		• Explain role of calcium ions in muscle contraction	Should know	B	C2		
		• Describe tonic contraction in GIT smooth muscles	Should know	B	C1		
		• Enumerate different types of movements in GIT	Should know	B	C1		
		• Define propulsive movements	Must know	A	C1		
		• Define mixing movements	Must know	A	C1		
		• Describe sites of peristaltic movement in GIT	Should know	B	C1		
		• Describe stimulus, mechanism and direction of peristaltic movement	Should know	B	C1		
		• Discuss role of Myenteric plexus in peristaltic movement	Must know	A	C2		
		• Explain peristaltic reflex and Law of gut	Must know	A	C2		
		• Describe mechanism and function performed by mixing movements	Must know	A	C1		
M1-GIT-P-002	Enteric nervous system and GIT reflexes	• Describe physiological anatomy of enteric nervous system	Must know	A	C1	LGIS	SEQ MCQ VIVA
		• Enlist functions of enteric nervous system	Must know	A	C1		
		• Compare and contrast Myenteric and Meissner‘s plexus	Must know	A	C2		
		• Enumerate neurotransmitters of enteric nervous system	Must know	A	C1		
		• Describe the autonomic regulation of entericnervous system	Must know	A	C1		
		• Enumerate afferent sensory connections of enteric nervous system	Must know	A	C1		
		• Discuss the physiology of GIT reflexes	Must know	A	C2		

		• Explain GIT reflexes integrated at the level of gut wall, prevertebral sympathetic ganglia and spinal cord/brain stem	Must know	A	C2		
M1-GIT-P-003	Control of GIT motility and factors affecting GIT blood flow	• Enumerate hormones of GIT	Must know	A	C2	LGIS	SEQ MCQ VIVA
		• Describe the hormonal control of GIT motility	Must know	A	C1		
		• Explain site of secretion, stimuli for secretion and actions of Gastrin, Cholecystokinin, Secretin, Gastric inhibitory peptide and Motilin	Must know	A	C2		
		• Discuss the factors affecting GIT blood flow	Should know	B	C2		
		• Recall anatomy of GIT blood supply	Should know	B	C1		
		• Explain splanchnic circulation and hepatic portal circulation	Must know	A	C2		
		• Describe the significance of blood flow to liver through portal vein	Must know	A	C1		
		• Describe special organization of blood flow through intestinal villus	Should know	B	C1		
		• Explain factors affecting gastrointestinal blood flow	Must know	A	C2		
		• Describe counter current blood flow in villi.	Must know	A	C1		
		• Explain nervous control of GIT blood supply	Must know	A	C2		
		• Discuss physiological importance of sympathetic vasoconstriction in GIT under special conditions	Must know	A	C2		
M1-GIT-P-004	Swallowing1 and (Mastication and Saliva)	• Describe the secretion and composition of saliva and its physiologic roles	Must know	A	C1	LGIS	SEQ MCQ VIVA
		• Describe the nervous regulation of saliva	Must know	A	C1		
		• Describe mastication	Must know	A	C1		
		• Enumerate functions of mastication	Must know	A	C1		
		• Explain role of teeth and muscles of mastication	Should know	B	C2		
		• Describe the steps and nervous control center of chewing reflex	Must know	A	C1		
		• Introduceswallowing	Must know	A	C1		
		• Enumerate stages ofswallowing(voluntary/involuntary)	Must know	A	C1		

		• Explain in detail each stage ofswallowing
		  ○ Voluntary stage Mechanism
		  ○ Pharyngeal stage (reflex act)
		  ▪ Stimulus, receptors,afferents, center, efferent, effectors, response
		  ▪ Relate pharyngeal stagewith process ofrespiration
		  ▪ Esophagealstage
			Must know	A	C2		

		• Primary peristalsis Secondary peristalsis (stimulus, afferent, center, efferent, response)	Must know	A	C2		
M1-GIT-P-005	Swallowing -II	• Describe physiological anatomy and function of Lower esophageal sphincter	Should know	B	C1	LGIS	SEQ MCQ VIVA
		• Explain receptive relaxation of stomach with nervous pathway	Must know	A	C2		
		• Describe physiological anatomy and function of distal end of esophagus	Should know	B	C1		
	Clinical disorders of swallowing (Achalasia cardia, vomiting & nausea)	• Define Achalasia cardia	Must know	A	C1	LGIS	SEQ MCQ VIVA
		• Describe causes, effects and treatment of achalasia cardia	Should know	B	C1		
		• Define vomiting	Must know	A	C1		
		• Describe stimuli & nervous pathway of vomiting	Must know	A	C1		
		• Discuss act of vomiting	Should know	B	C2		
		• Describe chemoreceptor trigger zone	Must know	A	C1		
		• Define nausea	Should know	B	C1		
		• Enlist causes of nausea	Should know	B	C2		
M1-GIT-P-006	Regulation of Stomach emptying	• Discuss in detail gastric factors that promote emptying and duodenal factors that inhibit emptying	Should know	B	C2	LGIS	SEQ MCQ VIVA
		• Explain the role of enterogastric nervous reflexes and hormonal feedback	Must know	A	C2		
M1-GIT-P-007	Motor functions of stomach	• Recall physiological anatomy of stomach	Should know		C1	LGIS	SEQ MCQ VIVA
		• Describe motor functions of stomachin detail 1. Storage 2. Mixing and propulsion of foodchyme and Hungercontractions 3. Stomachemptying 4. Role of pyloricpump	Must know	A	C1		

		• Discuss role of pyloricsphincter	Must know	A	C2		
M1-GIT-P-008	Gastric juice-I and Digestion in stomach Physiological barrier protecting development of peptic ulcer	• Describe the secretion of gastricjuice. a. Describe the basic mechanism ofHCl secretion. b. Describe the secretion andactivationofpepsinogen c. Describe the secretion ofintrinsic factor d. Describe the secretion of mucousand gastrin e. Describe the regulation of gastricacid and pepsinogensecretion	Should know	B	C1	LGIS	SEQ MCQ VIVA
		• Summarize the digestive process occurring in stomach	Should know	B	C1		
		• Discuss the role of gastric juice, hormones and enzymes acting in stomach	Should know	B	C2		
		• Discuss sites, causes and physiological factors preventing peptic ulcer	Should know	B	C2		
M1-GIT-P-009	Liver & gall bladder, liver and biliary secretions	• Recall physiological anatomy of liver & portal circulation	Must know	A	C1	LGIS	SEQ MCQ VIVA
		• Describe in detail metabolic and non metabolic functions of liver	Should know	B	C1		
		• Explain the mechanism of secretion of bile.	Must know	A	C2		
		• Explain the functions of biliary tree.	Should know	B	C2		
		• Describe the composition of bile.	Must know	A	C1		
		• Explain the role of bile in fat digestion.	Must know	A	C2		
		• Explain the formation of gall stones.	Should know	B	C2		
M1-GIT-P-0010	LFTs and jaundice	• Enlist liver functions test	Should know	B	C1	LGIS	SEQ MCQ VIVA
		• Discuss in detail pathophysiology of jaundice	Must know	A	C2		
M1-GIT-P-0011	Cirrhosis & portal hypertension	• Describe causes and effects of cirrhosis	Must know	A	C1	LGIS	SEQ MCQ VIVA
		• Describe causes and effects of portal hypertension	Must know	A	C1		
M1-GIT-P-0012	Physiology of pancreas Pancreatic secretions	• Discuss composition of pancreatic secretions	Should know	B	C2	LGIS	SEQ MCQ VIVA
		• Describe mechanism of secretion of bicarbonate ions	Should know	B	C1		

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Calgary guage	Grade	Learning Domain	Teaching Strategy	Assessment Tools
Body fluid compartments,Volume&osmolarity of ECF &ICF.	• FluidIntake/Output balance • Bodyfluidcompartments • ConstituentsofECF&ICF • ConceptofOsmolarity,Osmolality,OsmosisandOsmoticpressure	Should know	B	C1	LGIS	SAQ MCQ VIVA
		Must know	A	C2		
		Must know	A	C2		
		Must know	A	C1		
PhysiologyofRenalsystem,Glomerularfiltrationrate	• Functionsofkidney. • Physiologic AnatomyofKidney • ConceptofGlomerular Filtration • Introduction to Glomerular filtration rate.	Should know	B	C2	LGIS SGD	SAQ MCQ VIVA
		Should know	B	C2		
		Must know	A	C2		
		Must know	A	C1		
				C1		
Abnormalitiesoffluidvolume&regulation,Edema	• Volumeandosmolarityinabnormalstates • Abnormalitiesoffluidvolume&Regulation • HyponatremiaandHypernatremia • EdemaanditsMechanism. • Fluid in potential spaces of the body	Must know	A	C1	LGIS SGD	SAQ MCQ VIVA
		Must know	A	C1		
		Should know	B	C2		
		Must know	A	C1		
		Should know	B	C2		
A. Regulation of GFR & RBF-I(Determinants ofGFR&RBF) RegulationofGFR&RBF-II,PhysiologicalcontrolofGFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	Must know	A	C1	LGIS SGD	SAQ MCQ VIVA
		Must know	A	C1		
				C2		
RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback	Must know	A	C1	LGIS SGD	SAQ MCQ VIVA
		Must know	A	C1		
		Must know	A	C2		
		Must know	A	C1		
		Must know	A	C2		

	Mechanism • Macula-densa Feedback Mechanism			C3		
Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in ○ Proximal tubule ○ Loop of Henle ○ Distal tubule & collecting tubule. Active and passive transport mechanisms			C1	LGIS Group presentations	SAQ MCQ VIVA
		Must know	A	C2		
		Must know	A	C1		
		Must know	A	C1		
		Must know	A	C2		
Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	Must know	A	C1	LGIS SGD Group presentations	SAQ MCQ VIVA
		Should know	B	C2		
		Must know	A			
A. Clearance methods to quantify kidney function Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, Creatinine clearance, Para amminohipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	Must know	A	C1	LGIS SGD	SAQ MCQ VIVA
				C1		
				C1		
		Should know	B	C1		
		Must know	A	C1		
		Must know	A	C2		

REPRODUCTION MODULE

Physiology Large Group Interactive Session (LGIS)

Topics	Learning Domains At the end of lecture students should be able to:	Learning Domain	Calgary Guage	Grade	Teaching Strategy	Assessment Tools
Physiological anatomy of male reproductivesystem& spermatogenesis	• DescribePhysiological anatomy of male reproductive system	C2	Must Know	A	LGIS	• MCQ • SEQ • VIVA
	• Explainthestepsof spermatogenesis	C2	Must know	A		
	• Identifytheprocessof meiosis	C2	Should Know	B		
	• Describethehormonal factors that stimulate spermatogenesis	C2	Must know	A		
	• Describefunctionsof seminal vesicles	C2	Must know	A		
Physiological anatomy female reproductive system	• Describe oogenesis &folliculardevelopmentin ovaries	C2	Must know	A	LGIS	• MCQ • SEQ • VIVA
Semen,capacitation& acrosome reaction	• Explain capacitation	C2	Must Know	A	LGIS	• MCQ • SEQ • VIVA
	• Describe acrosomal reaction	C2	Must know	A		
	• Summarize the abnormalities related to spermatogenesis: ○ Bilateral orchitis ○ Effects of temperature ○ Cryptorchidism	C2	Should Know	B		
MonthlyOvarianCycle,ovulation	• Describe gonadotropic hormones & their effects on ovaries	C2	Must know	A	LGIS	• MCQ • SEQ • VIVA
	• Explain follicular phase of ovarian cycle	C2	Must know	A		
	• Explain ovulation hormones	C2	Must know	A		
Male sex hormones, Abnormalitiesofmale sexual function and spermatogenesis	• Describe male sex hormone's (secretion, metabolism, chemistry, degradation and excretion)	C 1	Must Know	A	LGIS	• MCQ • SEQ • VIVA
	• Explain functions of testosterone in detail • Describe:	C2	Must know	A		

system	➢ Hypogonadism in males ➢ Interstitial Leydig cell tumors ➢ Erectiledysfunctioninmales	C2	Should Know	B		
MonthlyEndometrial Cycle and Menstruation	• Explain monthly endometrial cycle	C2	Must know	A	LGIS	• MCQ • SEQ • VIVA
	• Explain menstruation & physiological changes in endometrium	C2	Must know	A		
Responseofmother's body to pregnancy, Parturition	• Explain: ➢ Anterior pituitaryglandsecretion ➢ Increased corticosteroid secretion ➢ Increased thyroidglandsecretion ➢ Increasedparathyroid gland secretion	C2	Must know	A	LGIS	• MCQ • SEQ • VIVA
	• Discuss mechanical factorsincreasinguterine contractility	C2	Must Know	A		
	• Explainthephysiological mechanism of labour	C2	Must know	A		
Female sex hormones (estrogen and progesterone)	• Explain: ➢ Functions of estradiol & progesterone ➢ Chemistry of sex hormones ➢ Synthesis of estrogen & progesterone	C2	Should Know	B	LGIS	• MCQ • SEQ • VIVA
Lactation, Milk composition,breastfeeding	• Explaindevelopmentof breasts	C2	Must know	A	LGIS	• MCQ • SEQ • VIVA
	• Explainhormonalcontrol of breast development	C2	Must know	A		
	• Describe the role of prolactininlactation	C2	Must know	A		
	• Describeamenorrhea	C 2	Must Know	A		
	• Describehypersecretion by ovaries	C 1	Must know	A		
Fertilization of ovum, transport, implantation Functions of placenta	• Describe: ➢ Entry of ovum into fallopian tube ➢ Transport of fertilized ovum ➢ Implantation of blastocyst ➢ Early nutrition of embryo	C2	Should Know	B	LGIS	• MCQ • SEQ • VIVA
	• Describe physiological anatomy of placenta	C2	Must know	A		
	• Explain placental permeability	C2	Must	A		

			know			
	• Explain diffusion of gases & excretion of waste products	C2	Must know	A		
Hormonal factors in pregnancy, Special functionalproblemsin neonate. Prematurity and its problems	• ExplainfunctinsofB- HCG	C2	Must Know	A	LGIS	• MCQ • SEQ • VIVA
	• Describesecretionof estrogens by the placenta	C2	Must know	A		
	• Summarizefunctionof estrogen in pregnancy	C2	Should Know	B		
	• Summarizefunctionof progesterone in pregnancy	C2	Must know	A		
	• Explainonsetof breathing	C2	Must know	A		
	• Describethecauseof breathing at birth	C2	Must know	A		

CENTRAL NERVOUS SYSTEM MODULE

Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of this LGIS, second year MBBS students should be able to:	Learning Domain	Calgary Guage	Grade	Teaching strategy	Assessment tools
Organization of Nervous System	• Describe the general organization of nervous system	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe major levels of CNS functions	C 1	Must Know	A		
	• Describe labeled line principle	C 2	Should Know	B		
Mechanism of synaptic transmission	• Define synapse	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enumerate & compare types of synapses	C 2	Must Know	A		
	• Describe process of synaptic transmission	C 1	Must Know	A		
	• Enumerate the important neurotransmitters of nervous system	C 2	Must Know	A		
Properties of synaptic transmission	• Briefly explain the electrical events during neuronal excitation and inhibition	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain temporal and spatial summation	C 1	Should Know	B		
	• Enlist & explain various characteristics of synaptic transmission	C 2	Must Know	A		
Classification of sensory receptors	• Enumerate & explain different types of sensory receptors according to function	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
	• Enumerate & explain different types of sensory receptors according to location	C 2	Must Know	A		
Properties of sensory receptors	• Enlist various properties of sensory receptors	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe mechanism of signal transduction & generation of receptor potential	C 1	Should Know	B		
	• Describe mechanism of adaptation of different types of receptors	C 2	Should Know	B		
Properties of sensory receptors cont.	• Describe the properties of sensory receptors	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe the types and characteristics of tactile receptors	C 1	Must Know	A		
Sensory pathways for transmitting somatic signals	• Classify somatic senses	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe the sensory pathways for transmission of somatic sensations to central nervous system	C 2	Must Know	A		
Sensory pathways for transmitting somatic signals cont.	• Enumerate sensations carried by dorsal column system and anterolateral system	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe the characteristics of transmission in the dorsal column medial lemniscal system and anterolateral system	C 2	Should Know	B		
	• Compare and contrast dorsal column medial lemniscal	C 1	Should Know	B		

	system and anterolateral system					
Somatosensory cortex & lesions	• Explain cortical mapping & association cortex	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe lesions of somatosensory areas	C 1	Must Know	A		
	• Summarize role of thalamus in somatic sensations	C 1	Must Know	A		
	• Interpret the importance of dermatomes	C 2	Should Know	B		
Physiology of pain	• Define pain	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enumerate different types of pain	C 2	Must Know	A		
	• Tabulate the differences between two types of pain	C 2	Should Know	B		
	• Discuss the mechanism of stimulation of pain receptors	C 2	Must Know	A		
Dual pathway for transmission of pain	• Compare and contrast neospinothalamic & paleospinothalamic tract	C 1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Define referred pain	C 1	Must Know	A		
	• Explain the mechanism of referred pain	C 2	Must Know	A		
	• Give examples of referred pain	C 2	Should Know	B		
	• Describe visceral pain and its causes	C 2	Must Know	A		
	• Define headache	C 2	Should Know	B		
	• Enlist the types of headache& their causes	C 1	Must Know	A		
	• Explain the analgesia system	C 2	Must Know	A		
Thermal sensations	• Describe thermal receptors	C 1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Explain mechanism of excitation of thermal receptors	C 1	Must Know	A		
	• Describe transmission of thermal signals in nervous system	C 2	Must Know	A		
Introduction to autonomic nervous system	• Describe general organization of autonomic nervous system	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enumerate the functions of autonomic nervous system	C 2	Should Know	B		
Basic Characteristics of sympathetic & parasympathetic function	• Describe sympathetic and parasympathetic nervous system	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enumerate & explain their receptors, neurotransmitters& physiological effects	C 1	Should Know	B		
	• Describe physiological anatomy & effects of adrenal medulla	C 2	Must Know	A		
Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation	• Briefly explain physiological actions of ANS, vasomotor tone, vagal tone & sympathetic stress response	C 1	Should Know	A	LGIS	MCQ SEQ VIVA
	• Draw a table showing autonomic effects on various body organs	C 1	Must Know	A		
	• Briefly describe the pharmacology of autonomic nervous system	C 2	Should Know	B		

Introduction to motor nervous system &Reflex action	• Outline brief intrCoduction of motor nervous system	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Briefly explain UMN, LMN, anterior motor neurons & interneurons	C 2	Must Know	A		
	• Define reflex action	C 1	Must Know	A		
	• Define and draw reflex arc	C 2	Must Know	A		
	• Enumerate components of reflex arc	C 1	Should Know	B		
	• Classify the reflexes	C 1	Must Know	A		
Conditioned reflexes & properties	• Define conditioned reflex	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enlist and describe properties of conditioned reflexes	C 2	Should Know	B		
	• Give examples of conditioned reflex	C 2	Must Know	A		
Properties of reflex action	• Enlist and Explain properties of reflex action	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
Control of spinal cord reflexes by higher centers	• Compare & contrast spinal animal with decerebrate animal	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe organization of spinal cord for motor functions	C 2	Must Know	A		
	• Explain the concept of cortical & subcortical control. • Define UMN &LMN	C 1	Should Know	B		
Muscle spindle & Golgi tendon organ	• Describe muscle spindle & Golgi tendon organ in detail	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain the receptor function of the Muscle Spindle &Golgi tendon organ	C 2	Must Know	A		
	• Explain the dynamic and static response of muscle spindle& Golgi tendon organ	C 2	Must Know	A		
Muscle Stretch reflex	• Briefly describe muscle stretch reflex	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
	• Draw the neuronal circuitry of the stretch reflex	C 1	Must Know	A		
	• Explain the static and dynamic components of stretch reflex	C 2	Should Know	B		
	• Discuss the clinical applications of stretch reflex	C 1	Must Know	A		
Role of muscle spindle and Golgi	• Explain negative stretch reflex	C 1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Explain lengthening reaction and its significance	C 2	Must Know	A		
tendon organ in voluntary motor activity	• Describe role of muscle spindle and Golgi tendon organ in voluntary muscle activity	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
	• Explain the role of alpha gamma coactivation	C 2	Must Know	A		
Polysynaptic reflexes	• Enlist polysynaptic reflexes	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
	• Describe the polysynaptic reflexes	C 1	Must Know	A		
	• Explain mechanism of reciprocal inhibition	C 2	Must Know	A		

	and reciprocal innervation					
	• Enlist and describe reflexes of posture and locomotion	C 1	Must Know	A		
	• Explain scratch reflex	C 1	Must Know	A		
	• Enumerate the spinal cord reflexes that cause muscle spasm	C 2	Should Know	B		
	• Enlist autonomic reflexes in the spinal cord	C 2	Must Know	A		
Motor cortex & physiological importance of neocortex	• Briefly describe motor areas in cortex	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
	• Draw motor & somatic association areas of motor cortex	C 2	Must Know	A		
	• Explain functions of motor & somatic association areas	C 1	Should Know	B		
	• Explain allocortex &neocortex	C 2	Must Know	A		
	• Describe medial and lateral descending pathways	C 1	Must Know	A		
Corticospinal or pyramidal tract	• Explain transmission of signals from motor cortex to muscle	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Draw course of pyramidal tract	C 2	Must Know	A		
	• Enlist the functions of pyramidal tract	C 2	Should Know	B		
	• Mention the effects of lesions in Corticospinal tract	C 2	Should Know	B		
Extra pyramidal system	• Briefly describe extra pyramidal descending tracts	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe rigidity and spasticity	C 1	Must Know	A		
	• Describe location and function of red nucleus	C 2	Must Know	A		
Role of brain stem in controlling motor functions	• Enumerate and explain role of brainstem in controlling motor function	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain role of pontine & medullary reticular nuclei	C 1	Must Know	A		
	• Briefly write role of vestibular nuclei in antigravity muscle control	C 2	Must Know	A		
	• Summarize decerebrate rigidity	C 2	Must Know	A		
Lesions of motor system	• Enlist the effects of damage to specialized areas of motor cortex	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Differentiate UMN Lesion and LMN Lesion	C 2	Must Know	A		
	• Explain decorticate rigidity	C 1	Must Know	B		
	• Briefly explain the pathophysiology of syringomyelia, tabes- dorsalis &poliomyelitis	C 2	Must Know	A		
Transection of spinal cord	• Briefly describe transection of spinal cord	C 1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Explain stages of complete transection	C 1	Must Know	A		
Transection of spinal cord (continued)	• Briefly explain stages of complications in complete transection of spinalcord	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe hemi section of spinal cord	C 2	Must Know	A		
	• Explain brown-sequard syndrome	C 2	Must Know	A		

Introduction to cerebellum	• Describe physiological anatomy of cerebellum	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Classify the functional parts of cerebellum & mention their functions	C 1	Must Know	A		
Neuronal circuits of cerebellum	• Describe neuronal circuits of cerebellum in detail	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
	• Enumerate the afferent and efferent pathways	C 1	Must Know	A		
	• Explain the role of purkinje cell, Deep nuclear cells and inhibitory cells of cerebellum in overall functions of cerebellum	C 2	Must Know	A		
	• Explain role of climbing fibers	C 2	Must Know	A		
	• Discuss the turn-on and turn-off mechanism	C 2	Must Know	A		
Cerebellum and its motor functions	• Enlist and explain motor functions of cerebellum	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain the role of vestibulo cerebellum, spinocerebellum& neocerebellum in overall motor control by cerebellum	C 1	Must Know	A		
Manifestations of cerebellar disease	• Enlist and explain clinical abnormalities of cerebellum	C 2	Should Know	B	LGIS	MCQ SEQ VIVA
Basal Ganglia— motor functions	• Describe physiological anatomy of basal ganglia	C 1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Draw neuronal circuits of basal ganglia	C 1	Must Know	A		
	• Explain the role of neuronal circuits in functioning of basal ganglia	C 2	Must Know	A		
	• Enlist and explain the physiological role of neurotransmitters in basal ganglia system	C 2	Must Know	A		
Clinical syndromes resulting from damage to basal ganglia	• Enumerate the clinical abnormalities caused by damage to basal ganglia	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Briefly explain Parkinson disease regarding its causes, signs and symptoms & treatment	C 2	Must Know	A		
	• Explain Huntington‘s Chorea regarding its causes, signs and symptoms	C 1	Must Know	A		
Concept of Association areas, dominant and non- dominant cerebral hemispheres	• Draw association areas of brain	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe association areas of brain regarding their physiological role	C 1	Must Know	A		
	• Explain briefly the clinical features, if the association areas become damaged	C 1	Must Know	A		
	• Describe concept of dominant hemisphere	C 2	Should Know	B		
	• Enlist role of parieto-occipito temporal cortex in non-dominant hemisphere	C 2	Should Know	B		
CSF, BBB, Blood CSF Barrier, LP	• Describe briefly the physiological anatomy of cerebral blood flow	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain cerebrospinal fluid system	C 2	Must Know	A		

CSF, BBB, Blood CSF Barrier, LP (cont.)	• Describe the CSF pressure, its measurement by lumbar puncture, &hydrocephalus	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain blood CSF barrier &BBB	C 2	Must Know	A		
	• Describe brain edema	C 1	Must Know	A		
Speech and aphasia	• Describe sensory and motor aspects of communication	C 1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Define Wernicke‘s aphasia, Motor aphasia & Global aphasia	C 2	Should Know	B		
Speech and aphasia (cont.)	• Explain Wernicke‘s aphasia, Motor aphasia & Global aphasia	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe function of corpus callosum & anterior commissure in transferring information between two cerebral hemispheres	C 2	Must Know	A		
Learning and memory	• Define memory & classify its various types	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe role of synaptic inhibition and synaptic facilitation in memory	C 1	Must Know	A		
	• Explain mechanism of short term, intermediate and long-term memory	C 2	Must Know	A		
	• Describe mechanism of consolidation of memory	C 1	Must Know	A		
	• Enumerate specific parts of brain involved in memory	C 1	Must Know	A		
	• Explain the role of each part	C 2	Must Know	A		
Limbic system	• Describe the concept of limbic system	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe physiological anatomy of limbic system	C 2	Must Know	A		
	• Enumerate and explain the roles of hippocampus, amygdala and limbic cortex	C 2	Must Know	A		
Functions of hypothalamus	• Describe physiological anatomy of hypothalamus	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enlist functions of hypothalamus	C 2	Must Know	A		
	• Explain role of hypothalamus in: ○ Vegetative function ○ Endocrine function Behavioral function ○ Reward and punishment function	C 1	Must Know	A		
EEG and epilepsy	• Describe brain waves	C 1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enumerate different types of brainwave	C 2	Must Know	A		
	• Explain the origin of different brainwaves	C 2	Should Know	B		
	• Describe EEG	C 2	Must Know	A		
	• Define epilepsy	C 2	Must Know	A		
	• Enumerate various types of epilepsy	C 1	Must Know	A		
EEG and	• Explain various types of epilepsy	C 2	Should Know	A	LGIS	MCQ

epilepsy (cont.)	• Describe role of nor-epinephrine, serotonin and	C 1	Must Know	A		SEQ VIVA
	• Dopamine in psychotic disorders	C 1	Should Know	B		
	• Describe the causes, symptoms & treatment of depression& bipolar disorder	C 2	Must Know	A		
	• Discuss causes, types, symptoms and treatment of schizophrenia	C 2	Must Know	A		
	• Define Alzheimer‘s disease. Mention its causes, clinical features, incidence and treatment	C 2	Must Know	A		
Reticular activating system and sleep	• Describe activating driving system of the brain	C 2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain the reticular activating system	C 1	Must Know	A		
	• Discuss the control of cerebral activity by signals from brain stem	C 2	Should Know	B		
	• Explain neurohormonal system of the brain	C 2	Should Know	B		
	• Define sleep and enumerate types of sleep	C 2	Must Know	A		
	• Compare and contrast between two types of sleep	C 2	Must Know	A		
	• Describe the basic theories of sleep in detail	C 2	Must Know	A		
	• Explain physiological effects of sleep	C 2	Must Know	A		
	• Describe sleep and wakefulness cycle	C 2	Should Know	B		

SPECIAL SENSES MODULE

Large Group Interactive Session (LGIS)

Topics	Learning Objectives	Learning Domains	Calgary Guage	Grade	References	Learning Resources	Assessment Tools
Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction	1. Explain the basic physiology of eye and its refractive surfaces	C2	Must Know	A	• Ganong's Review of Medical Physiology.25 TH Edition.Section02,Vision (Chapter 09, Page 177,185) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 85 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378) • Physiological Basis of Medical Practice by	• https://www.britannica.com/science/human-eye • https://youtu.be/laEFdlxW0rA	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE
	2. Discuss the physical principles of optics	C2	Should Know	B			
	3. Describe the mechanism of accommodation and its control	C2	Must Know	A			
	4. Describe the errors of refraction (Myopia, hyperopia, astigmatism and their correction by using different lens systems	C2	Must Know	A			

					Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1086) • Textbook of Medical Physiology by Guyton & Hall.14thEdition..Section 10. (Chapter 50, Page 627-635)		
Introduction to Physiology of external ear, Middle ear	1.Describe physiology of external ear	C2	Must Know	A	• Ganong's Review of Medical Physiology. 25TH Edition .Section 02, (Chapter	• https://youtu.be/VRLm7cpmZSk • https://www.sciencedirect.com/science/articl	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
	2.Describe physiology of middle ear 3. Explain structure of middle ear	C2 C2	Must Know	A			

			Must Know	A	10, Page 199) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 92 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 364-371) • Textbook of Medical Physiology by Guyton & Hall.14thEdition..Section 10. (Chapter 53, Page 663)	e/pii/S0378595522002192	
Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina	1.Describe the formation and circulation of aqueous humor	C2	Must Know	A	• Ganong's Review of Medical Physiology. 25THEdition .Section02,	• https://youtu.be/CKtLlOSh8o4 • https://youtu.be/7CFY4gxLnMY	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
	2.Explain the mechanism of regulation of intraocular pressure	C2	Must Know	A			

	3.Define glaucoma and its treatment	C1	Must Know	A	Vision (Chapter 09, Page 178) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1094) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 635) (Chapter 51,Page 639)	• https://my.clevelandclinic.org/health/body/24611-aqueous-humor-vitreous-humor	
Functions of Inner ear, Physiology of Hearing	7. Describe the physiology of hearing and function of tympanic membrane and ossicular system. 8. Define impendence matching and	C2 C1	Must Know Should Know	A B	• Ganong's Review of Medical Physiology. 25TH Edition .Section02, Vision (Chapter	1. https://youtu.be/Ie2j7GpC4JU 2. https://youtu.be/qgdqp-oPb1Q 3. https://www.urmc.rochester.edu/	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	attenuation reflex				10, Page 200,204) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 93 • Human Physiology by Dee Unglaub Silverthorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 371-374) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 664,669)	encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02025	
Photochemistry of vision &Physiological basis for photo transduction	3. Describe the physiology of retinal layers	C2	Must Know	A	• Ganong's Review of Medical Physiology. 25TH Edition .Section02,	3. https://www.brainkart.com/article/Photochemistry-of-Eye-	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment)
	4. Explain photochemistry of vision (rhodopsin -	C2	Must Know	A			

	retinal)				Vision (Chapter 09, Page 182) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 87 • Human Physiology by Dee Unglaub Silverthorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 379-387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 51, Page 641)	4. Vision 19676/ 4. https://youtu.be/k9lrM5iPNuY	OSPE
	5. Describe the mechanism of activation of Rods	C2	Must Know	A			
	6. Explain the photochemistry of color vision	C2	Must Know	A			
Hearing abnormalities, Tuning fork tests and	4. Explain the auditory nervous pathway and abnormalities associated with	C2	Must Know	A	• Physiological Basis of Medical Practice by	3. https://youtu.be/FgF91K7dU8Y 4. https://yout	MCQ SEQ VIVA VOCE MCQ (LMS based

audiometry	it.				Best & Taylor's.13th Edition(Chapter 62,Page 1067) • Textbook of Medical Physiology by Guyton & Hall.14thEdition..Section 10. (Chapter 53, Page 672)	u.be/acYMy9b0F2A 5. https://www.uptodate.com/contents/image?imageKey=PC%2F58032&topicKey=PC%2F15359&source=see_link	Aseessment, MST based Assessment) OSPE
	5. Describe the function of cerebral cortex in hearing.	C2	Must Know	A			
Light & dark adaptation, Color vision, Neural functions of the retina, Central neurophysiology of vision, Neural pathways for analysis of visual information	1. Explain the neural circuitry of the Retina	C2	Must Know	A	• Ganong's Review of Medical Physiology. 25TH Edition .Section02, Vision (Chapter 09, Page 189,193) • Physiology by Linda S. Costanzo 6thEdition,Neurophysiology chapter 3, page 90 • Textbook of Medical Physiology by Guyton	**1.** https://youtu.be/wiYmTAuVimg 2. https://youtu.be/cG5ZuK0_qtc 3. https://teachmeanatomy.info/head/cranial-nerves/optic-cnii/	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
	2. Describe the physiology of visual pathway	C2	Must Know	A			
	3. Name the optic lesion associated with visual pathway	C1	Must Know	A			

					& Hall.14th Edition..Section 10. (Chapter 51, Page 644)(Chapter 52,Page 653-657)		
Vestibular system	5. Describe the function of the organ of corti	C2	Must Know	A	• Ganong's Review of Medical Physiology. 25TH Edition .Section02, Vision (Chapter 10, Page 209) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 95 • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,(Chapter 63,Page 1072)	3. https://www.physio-pedia.com/Vestibular_System 4. https://youtu.be/ryGMI3SpxCE 5. https://youtu.be/mcp7qLh8_5c	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
	6. Explain vestibular system	C2	Must Know	A			

Lesions of visual pathway and its effects on field of vision, Movements of eye ball along with neural control	5. Explain the muscular control of eye movement	C2	Must Know	A	• Ganong's Review of Medical Physiology. 25TH Edition .Section02, Vision (Chapter 09, Page 190) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 52, Page 657)	4. https://youtu.be/evLyI35m8xU 5. https://teachmeanatomy.info/head/organs/eye/extraocular-muscles/	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
	6. Describe the fixation movements of eye	C2	Must Know	A			
	7. Define accommodation reflex and pupillary light reflex	C2	Must Know	A			
	8. Name the optic lesion associated with visual pathway	C2	Must Know	A			
	3. List the primary sensation of taste	C1	Must Know	A	• Ganong's	• https://yout	

Sense of Taste and pathophysiology	4. Explain the mechanism of taste perception and its transmission into central nervous system	C2	Must Know	A	Review of Medical Physiology.25TH Edition.Section02,Vision (Chapter 11, Page 221) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 100 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 361) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 675-679)	u.be/K9JSBzEEA0o • https://youtu.be/mFm3yA1nslE • https://www.sciencedirect.com/topics/nursing-and-health-professions/taste	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Physiology of accommodation and	1. Define accommodation reflex and pupillary light	C1	Must Know	A	Ganong's Review of Medical	1. https://youtu.be/xj0blrAx3_s	MCQ SEQ VIVA VOCE MCQ (LMS based

clinical abnormalities	reflex				Physiology.25TH Edition.Section02,Vision (Chapter 09, Page 188) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 52, Page 660)	2. https://teachmephysiology.com/nervous-system/ocular-physiology/ocular-accommodation/	Aseessment, MST based Assessment) OSPE
	2. Explain Clinical abnormalities associated with accommodation	C2	Must Know	A			
Sense of Smell and pathophysiology	1. List the primary sensation of smell	C1	Must Know	A	4. Ganong's Review of Medical Physiology. 25TH Edition .Section02, Vision (Chapter 11, Page 217) 5. Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 98 6. Human Physiology by Dee Unglaub Silver	7. https://www.alimentarium.org/en/fact-sheet/senses-smell 8. https://youtu.be/mFm3yA1nslE	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
	2. Describe the stimulation of olfactory cells and its transmission into central nervous system	C2	Must Know	A			

					thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 358) 7. Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 679)		

ENDOCRINOLOGY MODULE

Large Group Interactive Session (LGIS)

Topic	Learning Objectives	Learning Domain	Calgary Guage	Grade	Teaching Strategy	Assessment Tool
Introduction to Endocrinology-I	• Define endocrinology	C1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Describe several types of chemical messenger systems	C1	Must Know	A		
	• Enumerate endocrine glands in the body along with their secretions	C1	Must Know	A		
	• Compare two major control systems of the body	C2	Must Know	A		
Introduction to Endocrinology-I	• Classify hormones according to solubility and chemical nature	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe the nature& synthesis of hormones	C1	Must Know	A		
	• Differentiate different classes of hormones	C2	Must Know	A		
	• Describe the	C1	Must	A		

	secretion, transport, feedback control& clearance of hormones		Know			
	• Differentiate different classes of hormones	C2	Must Know	A		
Signal transduction	• Identify different locations and properties of hormone receptors	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain various intracellular signaling pathways after hormone receptor activation	C2	Should Know	B		
	• Describe various mechanism of actions of hormones in detail	C1	Must Know	A		
Pituitary gland	• Recall the physiological anatomy and parts of pituitary gland	C1	Should Know	B	LGIS	MCQ SEQ VIVA
	• Enumerate various cell types in pituitary gland along with their secretion and function	C1	Must Know	A		
	• Explain connections	C2	Must	A		

	of anterior and posterior pituitary gland with hypothalamus		Know			
	• Enlist various hormones secreted from anterior & posterior pituitary gland	C1	Must Know	A		
Growth hormone-I	• Describe metabolic functions of growth hormone	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Elaborate the role of growth hormone in soft tissue and bone growth	C2	Should Know	B		
	• Discuss role of somatomedins in relation with growth hormone	C2	Must Know	A		
	• Explain regulation of secretion	C2	Must Know	A		
Growth hormone-II	• Enlist abnormalities of GH secretion	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe pan hypopituitarism	C1	Should Know	B		
	• Discuss in detail dwarfism & its treatment	C2	Must Know	A		

	• Explain gigantism & acromegaly	C2	Should Know	B		
	• Differentiate gigantism & acromegaly	C2	Must Know	A		
Hormones of posterior pituitary gland	• Recall site of synthesis and secretion of posterior pituitary hormones	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe mechanism of action, stimuli for secretion, functions and regulation of ADH	C1	Must Know	A		
	• Discuss functions of oxytocin	C2	Must Know	A		
	• Briefly explain secretions of thyroid gland	C2	Must Know	A		
	• Compare the features of tri iodothyronine with thyroxine	C2	Must Know	A		
Thyroid hormone-II	• Describe the steps of synthesis of thyroid hormone	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Discuss in detail half-life, release, and transport of thyroid	C2	Should Know	B		

	hormones					
	• Explain regulation of secretion of thyroid hormone	C2	Should Know	B		
Thyroid hormone-III	• Describe mechanism of action of thyroid hormone	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain physiological functions of thyroid hormone	C2	Must Know	A		
Thyroid hormone-IV	• Enlist disorders of thyroid gland	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Discuss in detail causes, symptoms, diagnosis and treatment of hyperthyroidism	C2	Must Know	A		
	• Discuss in detail causes, symptoms, diagnosis and treatment of hypothyroidism	C2	Must Know	A		
	• Compare hypothyroidism with hyperthyroidism	C2	Must Know	A		
	• Differentiate between pituitary dwarfism and	C2	Must Know	A		

	cretinism					
Parathyroid hormone-I	• Discuss normal levels and metabolism of calcium and phosphate	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe the effects of hypocalcemia & hypercalcemia	C1	Should Know	B		
	• Explain the absorption and excretion of calcium and phosphate	C2	Must Know	A		
Parathyroid hormone-II	• Discuss in detail bone physiology	C2	Must Know	A	LGIS	MCQ SEQ VIVA
Parathyroid hormone-III	• Describe the steps involved the activation of Vitamin D	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Discuss the actions of vitamin D	C2	Should Know	B		
Parathyroid hormone-IV	• Describe the physiological anatomy of parathyroid glands	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe the chemistry & regulation of	C1	Must Know	A		

	secretion of parathyroid hormone					
	• Explain the actions of parathyroid hormones	C2	Must Know	A		
	• Describe functions and regulation of calcitonin	C1	Must Know	A		
Parathyroid hormone-V	• Discuss in detail hypoparathyroidism	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe hyperparathyroidism	C1	Must Know	A		
	• Describe osteoporosis	C1	Must Know	A		
Adrenocortical hormones-I	• Describe physiological anatomy of adrenal gland	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enumerate its various hormones	C1	Must Know	A		
	• Describe synthesis, transport & metabolism of adrenocortical hormones	C1	Must Know	A		
Adrenocortical hormones-II	• Describe mechanism of action of aldosterone	C1	Should Know	B	LGIS	MCQ SEQ

	• Discuss physiological actions of aldosterone	C2	Must Know	A		VIVA
	• Explain the phenomenon of aldosterone escape	C2	Must Know	A		
	• Describe regulation of aldosterone secretion	C1	Should Know	B		
	• Enlist abnormalities of aldosterone secretion	C1	Must Know	A		
	• Discuss Addison's disease and Conn's syndrome in detail	C2	Must Know	A		
Adrenocortical hormones-III	• Describe mechanism of action of cortisol	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain the physiological actions of cortisol	C2	Should Know	B		
	Discuss anti stress and anti-inflammatory actions of cortisol	C2	Must Know	A		
	• Describe regulation of cortisol secretion	C1	Must Know	A		
	• Discuss functions of adrenal androgens	C2	Must Know	A		
	• Describe the	C1	Must	A		

	chemistry, secretion regulation of secretion of ACTH		Know			
	• Discuss the actions of ACTH	C2	Should Know	B		
Adrenocortical hormones-IV	• Discuss in detail Cushing's syndrome	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Differentiate between Cushing disease and Cushing's syndrome	C2	Must Know	A		
Adrenocortical hormones-V	• Discuss the physiological anatomy of adrenal medulla	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Enumerate various hormones secreted by adrenal medulla	C1	Must Know	A		
	• Describe the steps involved in synthesis of catecholamines	C1	Must Know	A		
	• Explain the function of catecholamines	C2	Must Know	A		
	• Discuss stress response	C2	Must Know	A		
	• Describe pheochromocytoma	C1	Must Know	A		
Insulin-I	• Describe	C1	Should	B	LGIS	MCQ

	physiological anatomy of pancreas		Know			SEQ VIVA
	• Describe chemistry, synthesis and transport of insulin	C1	Must Know	A		
	• Describe the factors which affect secretion of insulin	C1	Must Know	A		
Insulin-II	• Discuss mechanism of action of insulin	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Describe the physiological actions of insulin	C1	Should Know	B		
	• Explain mechanism of insulin secretion	C2	Must Know	A		
Glucagon	• Describe mechanism of action of glucagon	C1	Must Know	A	LGIS	MCQ SEQ VIVA
	• Discuss regulation of secretion of glucagon	C2	Must Know	A		
	• Explain the functions of glucagon	C2	Must Know	A		
Regulation of blood glucose	• Describe various factors regulating blood glucose concentration	C1	Should Know	B	LGIS	MCQ SEQ

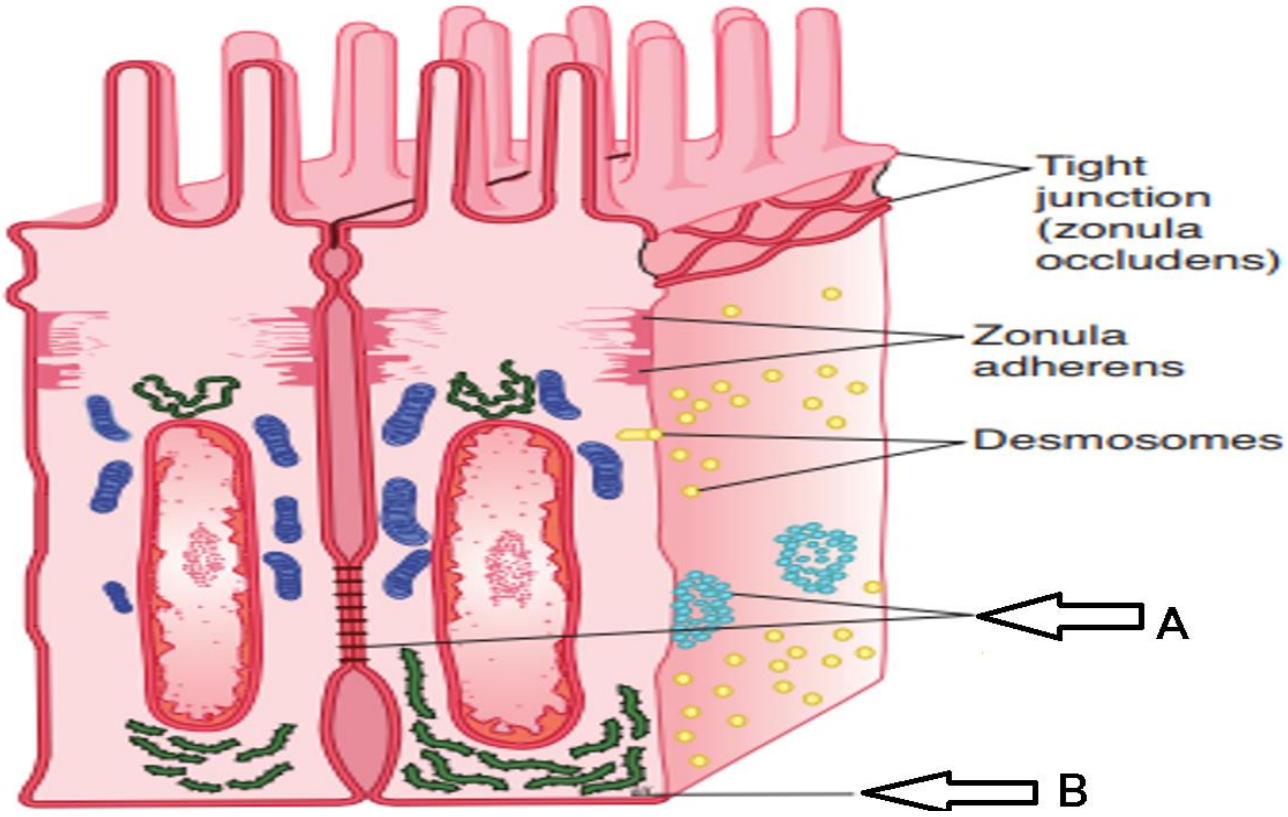
	• Discuss the importance of blood glucose regulation	C2	Must Know	A		VIVA
Diabetes mellitus	• Discuss the pathophysiology of diabetes mellitus	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Explain the physiology of diagnosis of diabetes mellitus	C2	Must Know	A		
	• Explain the treatment of diabetes mellitus	C2	Should Know	B		
	• Differentiate between type I & type II diabetes mellitus	C2	Must Know	A		
	• Differentiate between diabetes mellitus & diabetes insipidus	C2	Should Know	B		
Physiology of growth	• Explain factors affecting growth	C2	Must Know	A	LGIS	MCQ SEQ VIVA
	• Discuss role of various hormones affecting growth	C2	Must Know	A		
	• Differentiate pattern of growth in males and females	C2	Must Know	A		

	• Explain growth spurts	C2	Must Know	A		

Examples of Questions for OSVE Stations

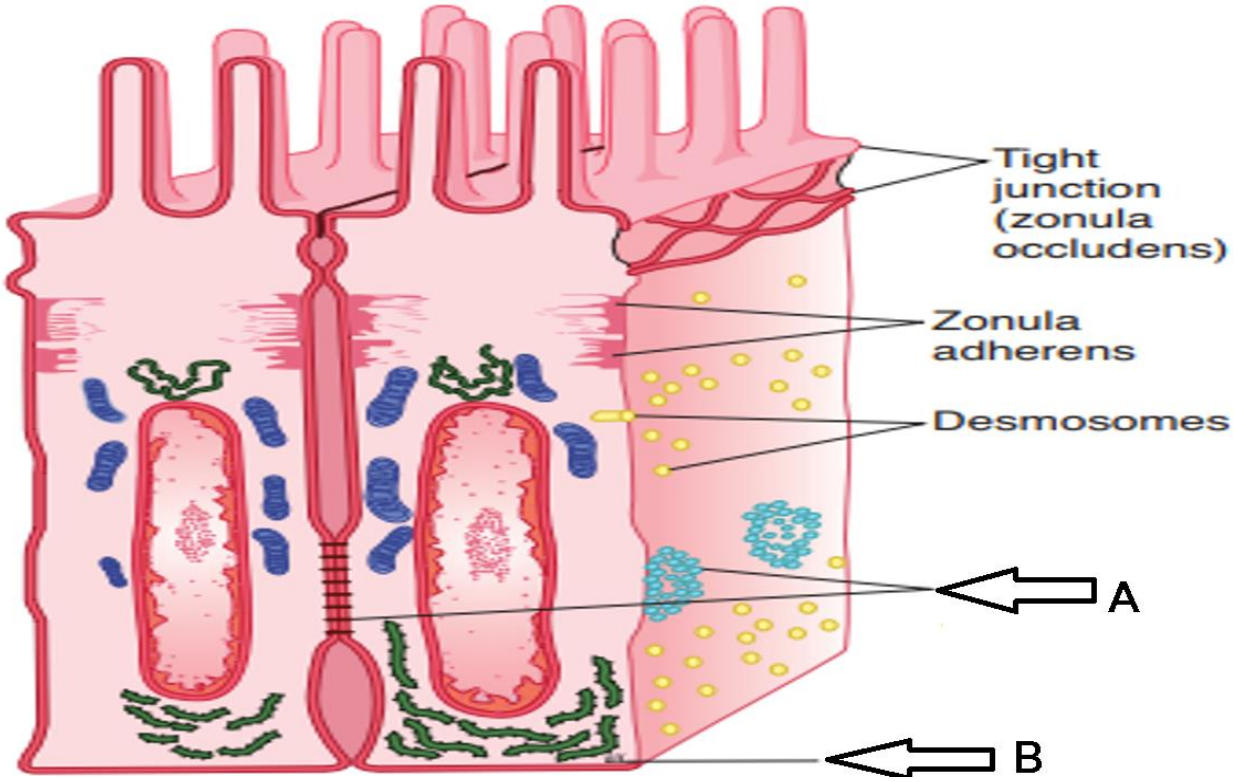
First Year MBBS

Please observe this image for 30 seconds, the questions related to this image will be on the next slide



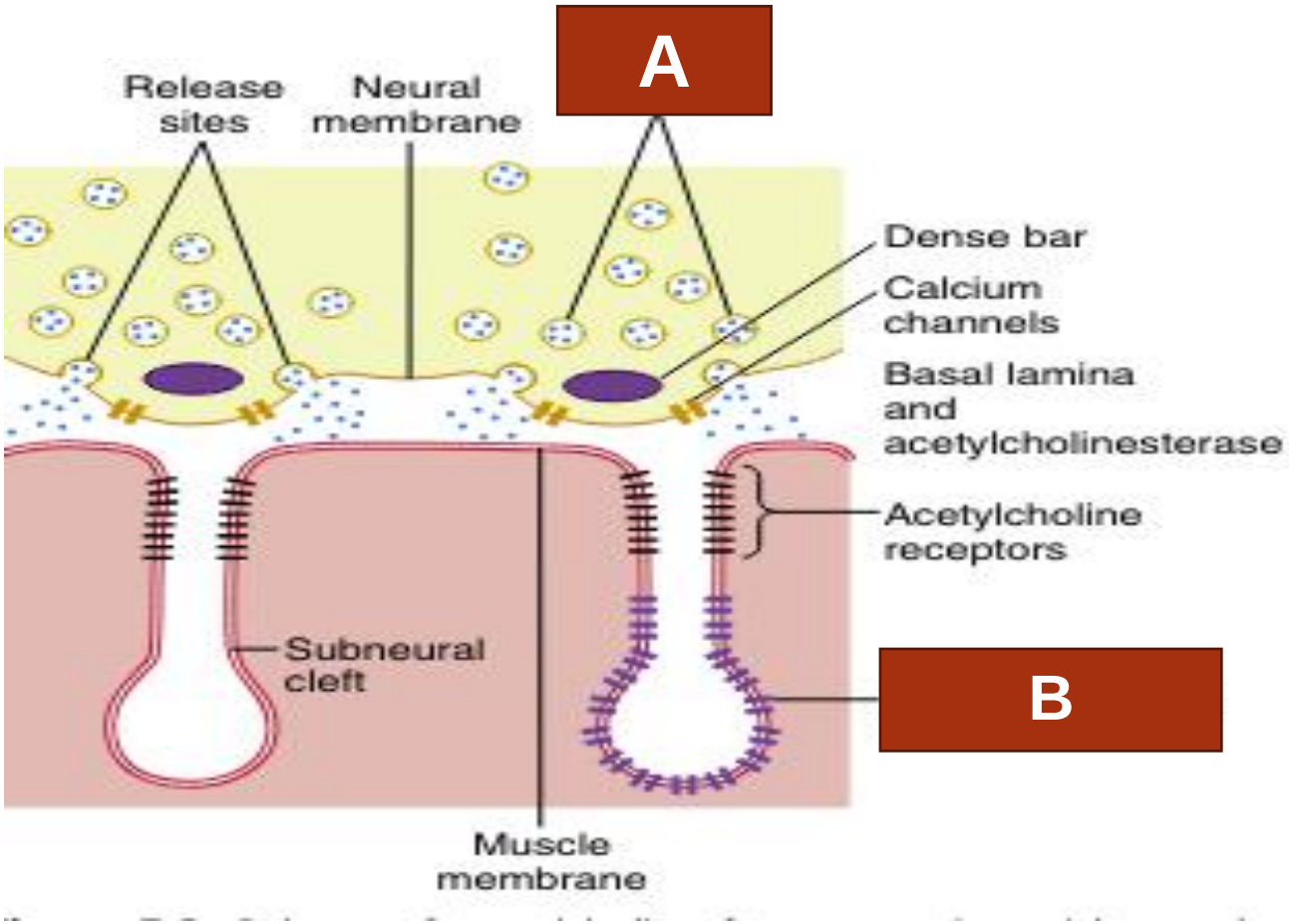
a) Identify the structures labeled as A & B in the above diagram.(3)

b) Enlist the functions of desmosomes(2)



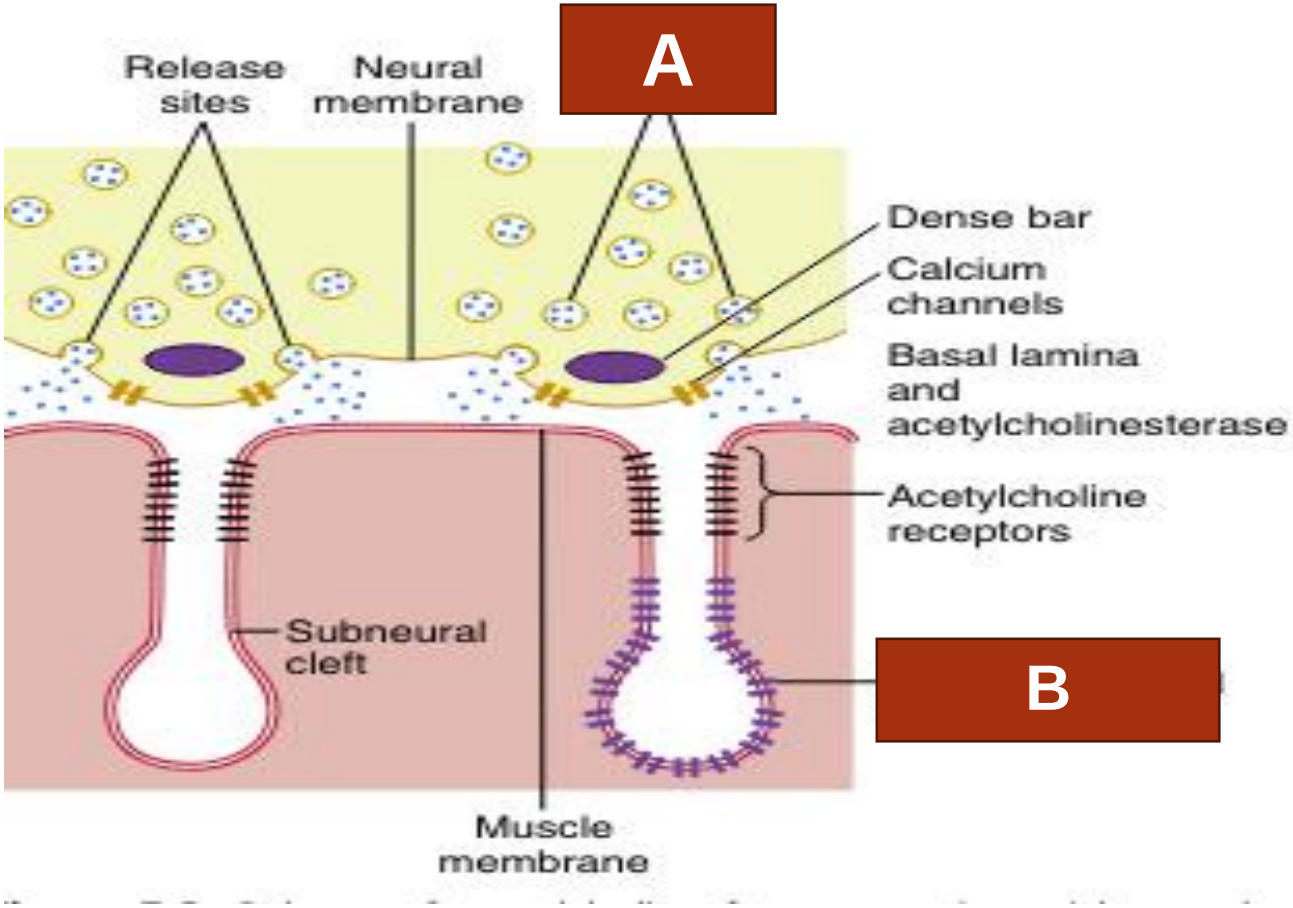
MUSCULOSKELETAL MODULE (MSK-1)

Please observe this image for 30 seconds, the questions related to this image will be on the next slide.



a) Identify structures A & B (2)

b) Enlist the steps of release of the Acetylcholine(3)



MUSCULOSKELETAL MODULE(MSK-II)

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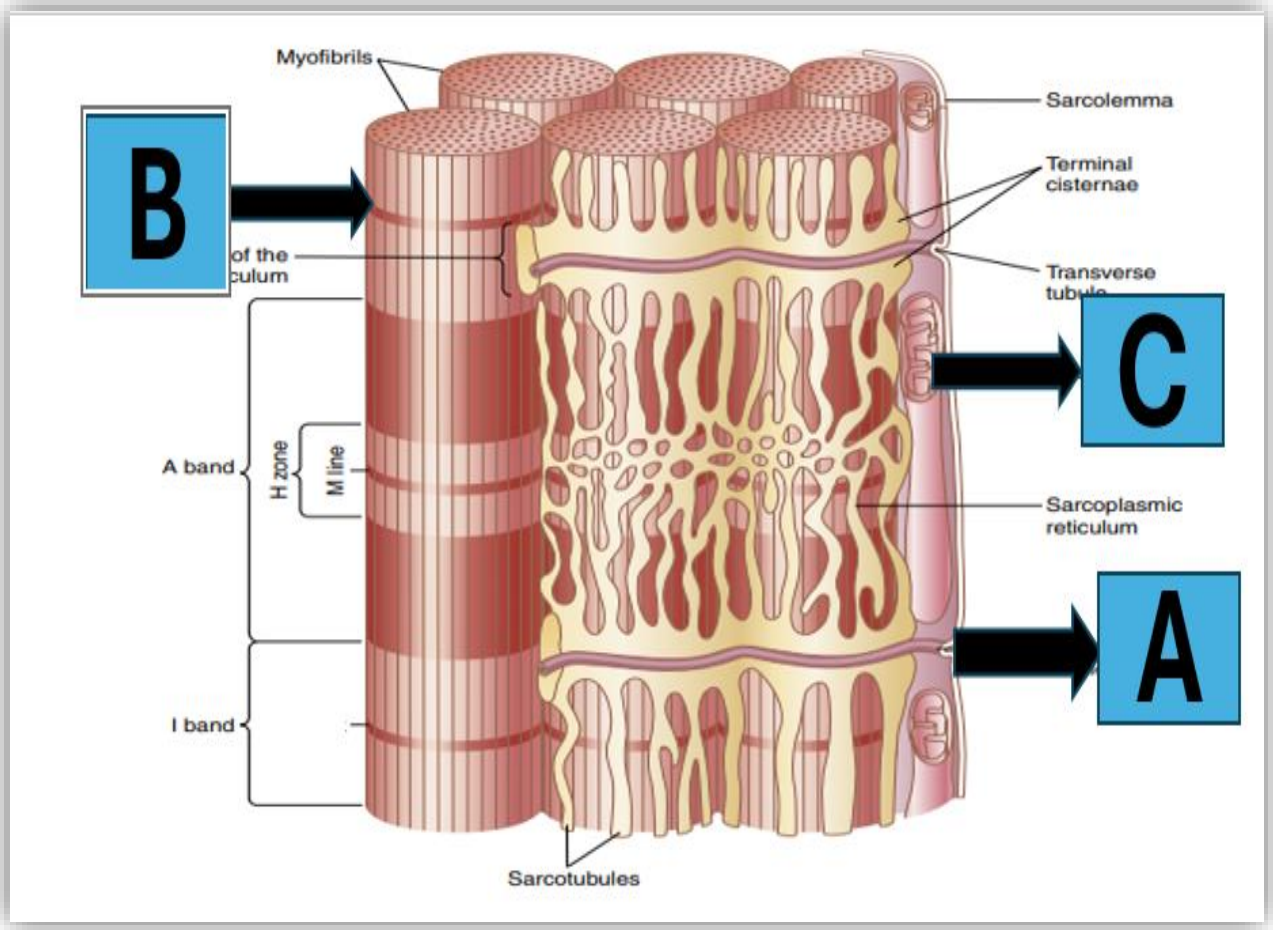
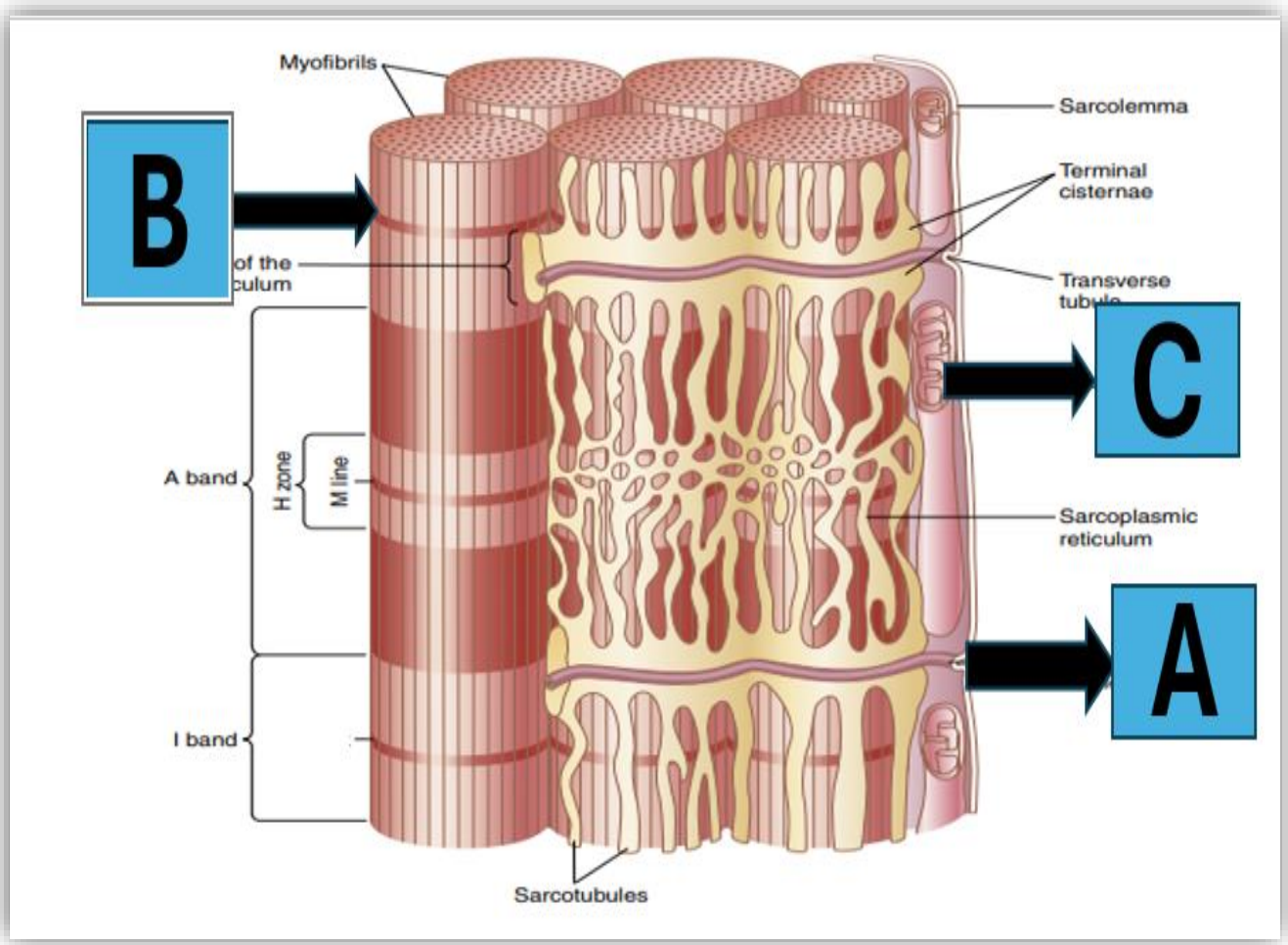


Identify the Structures marked asA,B& C (3)

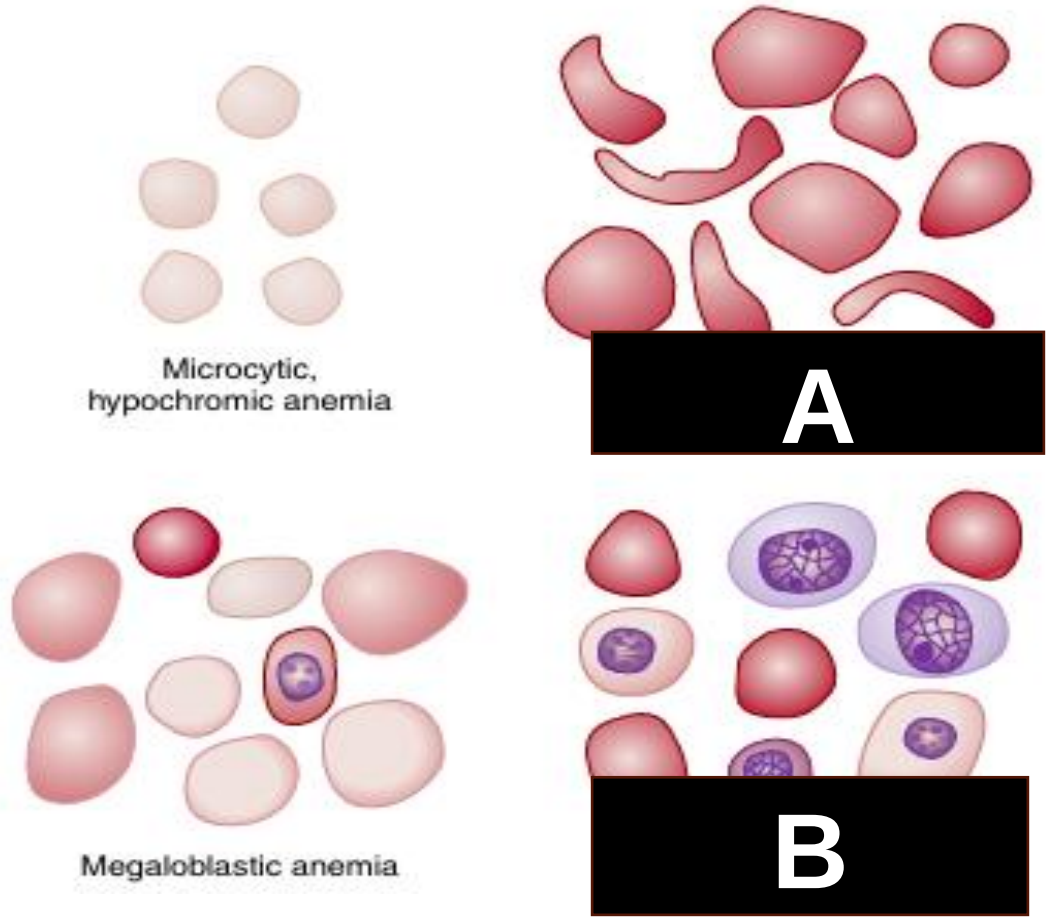
Differentiate between Slow and Fast Muscle Fibers. (2)



BLOOD & IMMUNITY MODULE **Please Observe This Image for 30 sec. Questions will be on the next slide**

Identify structure A (1)

Identify structure B (1)

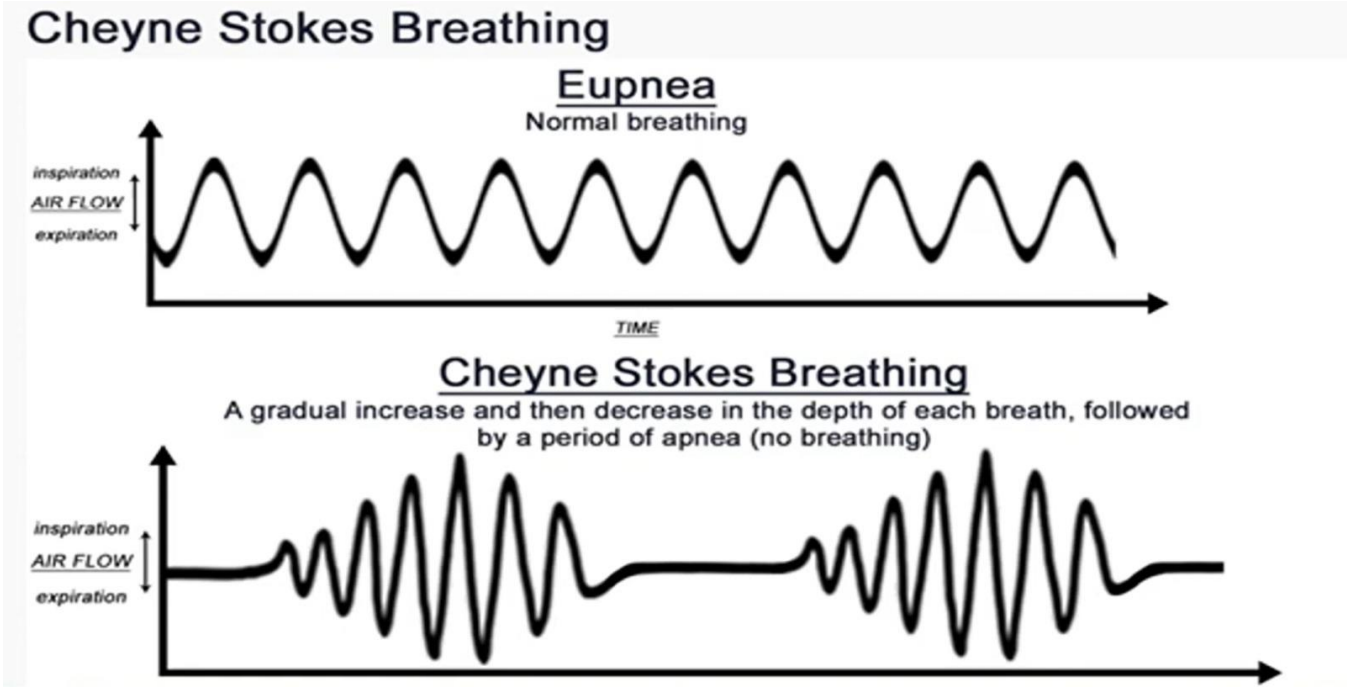


Please observe this image carefully. Questions related to this image will be asked in the next slide.

a) Interpret the recording (2)

b) What are the variables which need to be assessed in examination of arterial pulse (3)

Please observe this image carefully. Questions will be on the next slide



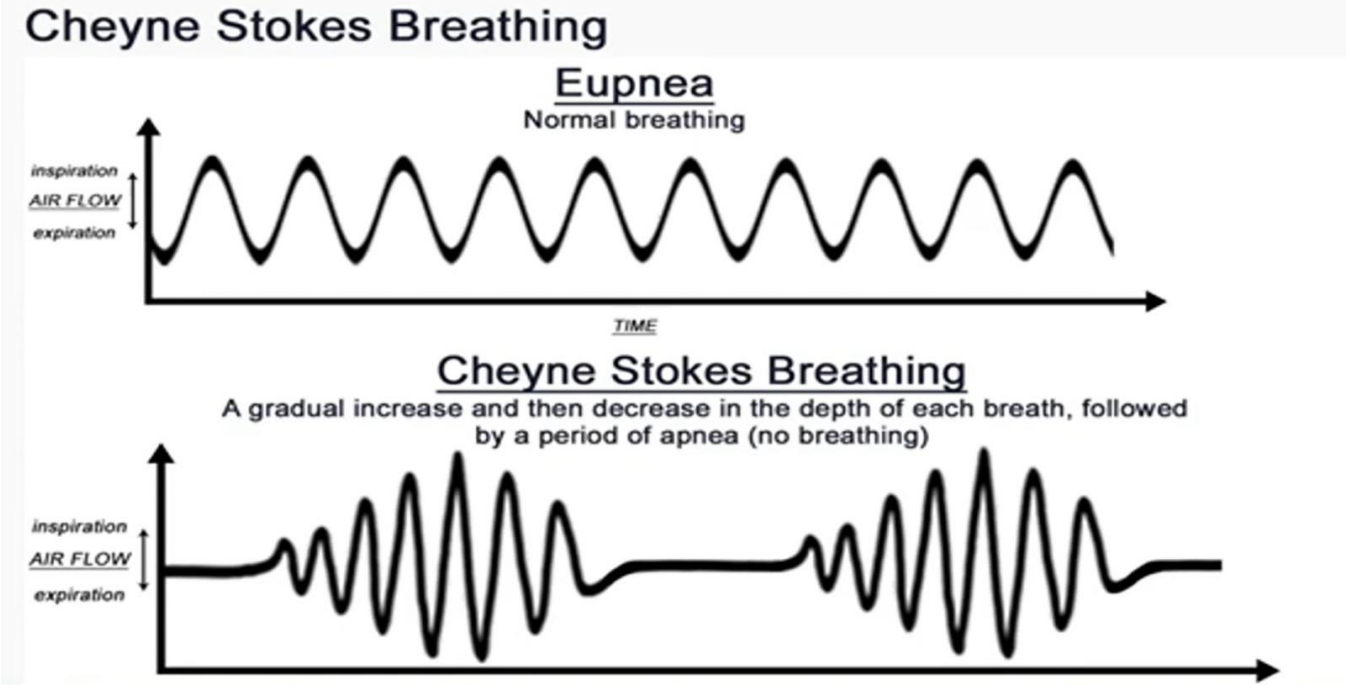
a)Define Cheyne-Stokes Breathing (1)

b)What causes the Cyclic Breathing pattern in Cheyne-Stokes Respiration?(1)

c)Which Medical Conditions are commonly associated with Cheyne-Stokes Breathing(1)

d)What is the typical Apnea Phase duration in Cheyne-Stokes Breathing?(1)

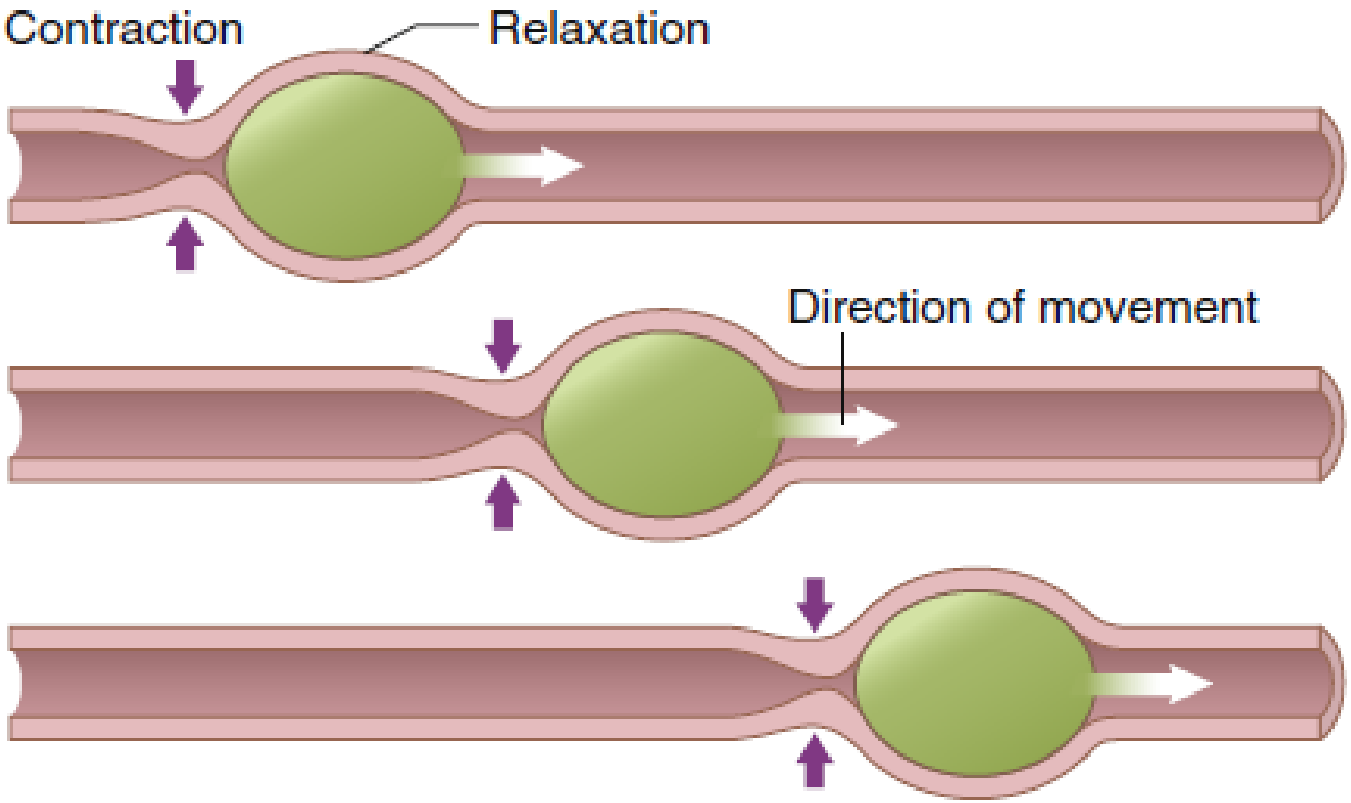
e) How does Cheyne-Stokes Breathing differ from other types of Abnormal Breathing?(1)



Examples of Questions For OSVE Stations

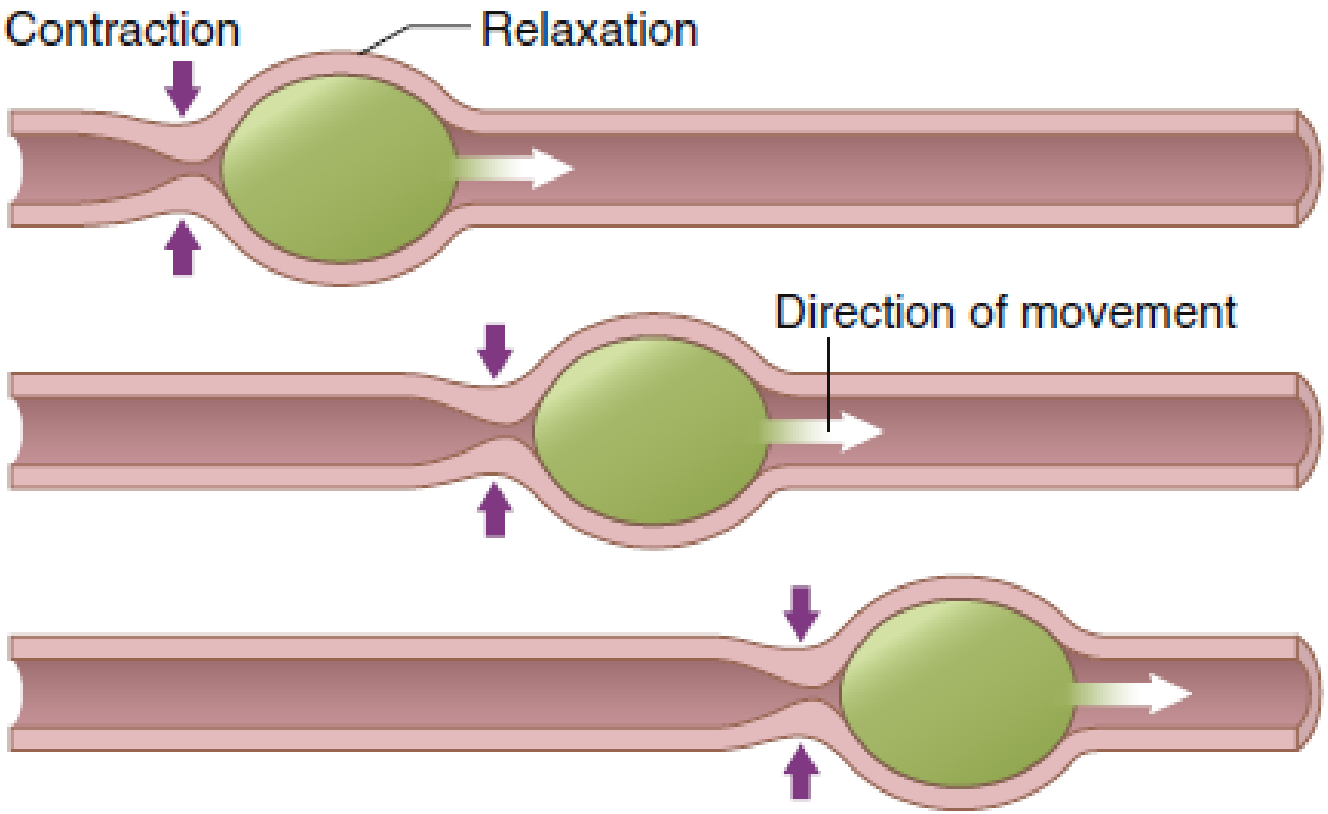
Second Year MBBS

Please observe this image for 30 seconds, the questions related to this image will be on the next slide.

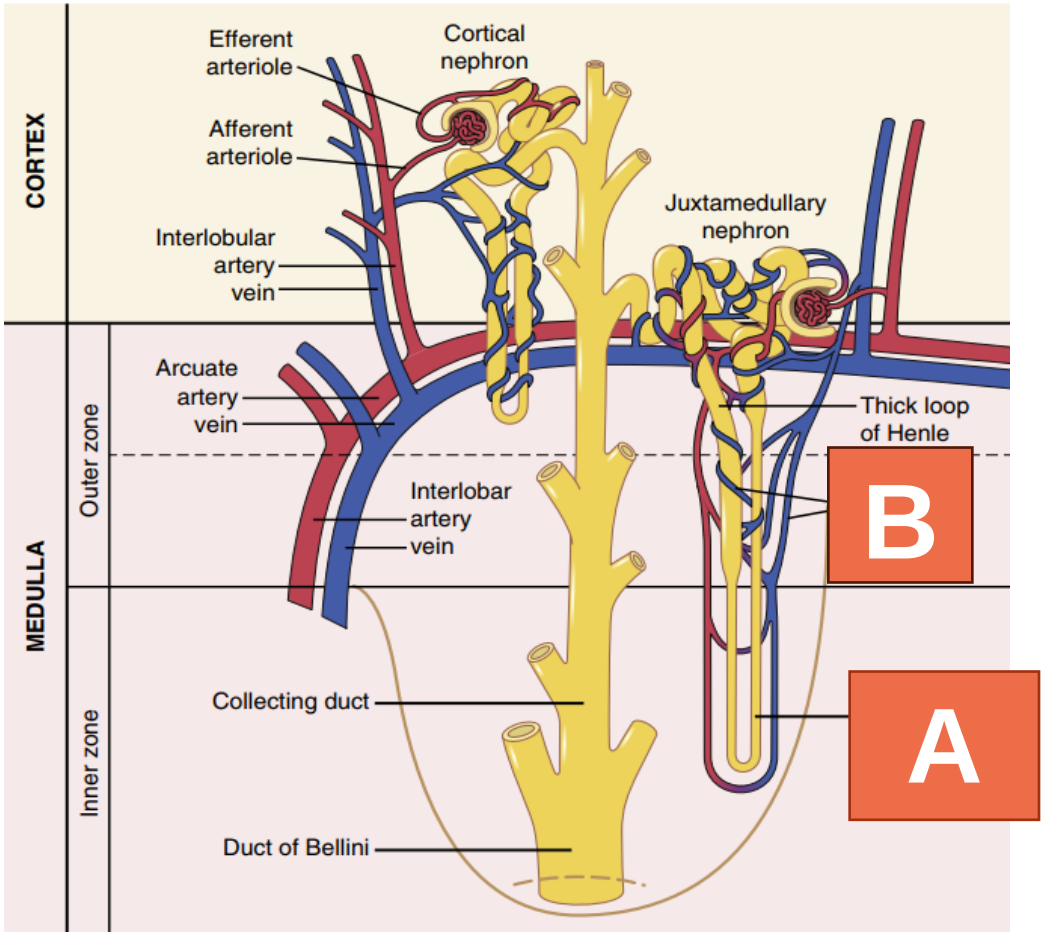


Identify the type of contractions of the gastrointestinal tract illustrated in this image. (2)

Enlist the sites of the gastrointestinal tract which exhibit this type of contraction. (3)

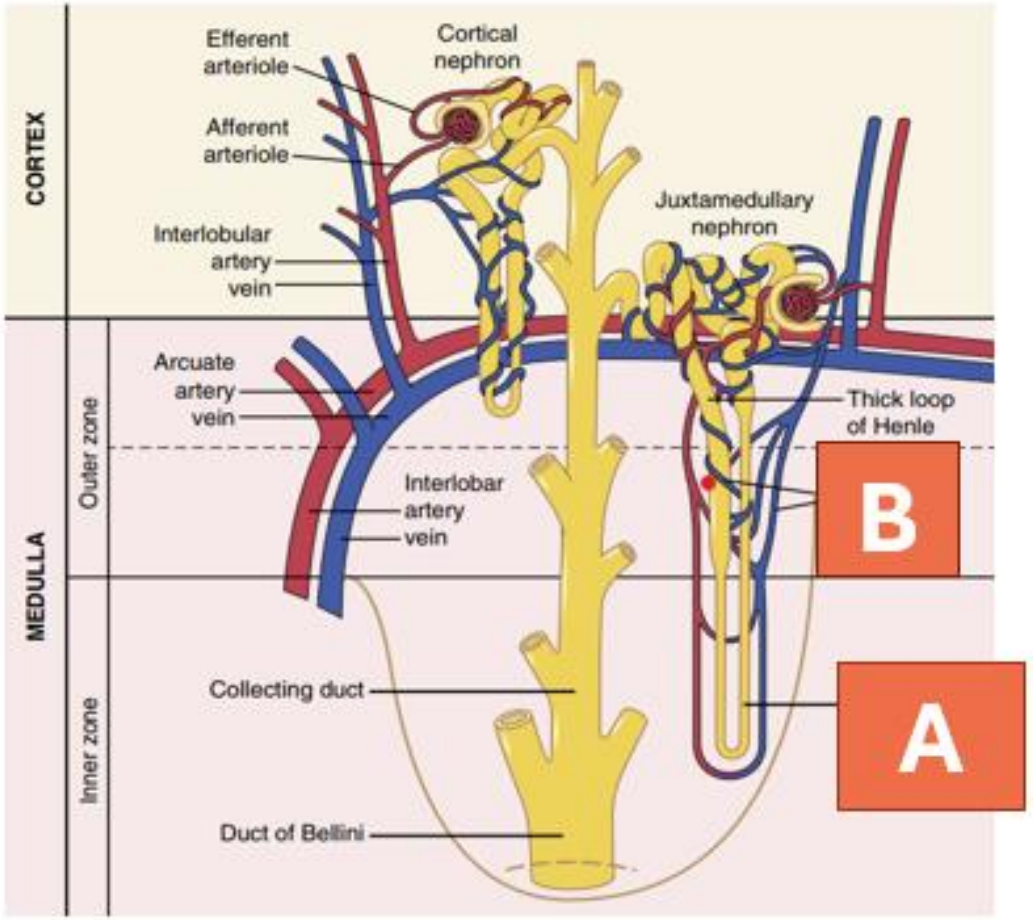


Please observe this image for 30 seconds, the questions related to this image will be on the next slide.



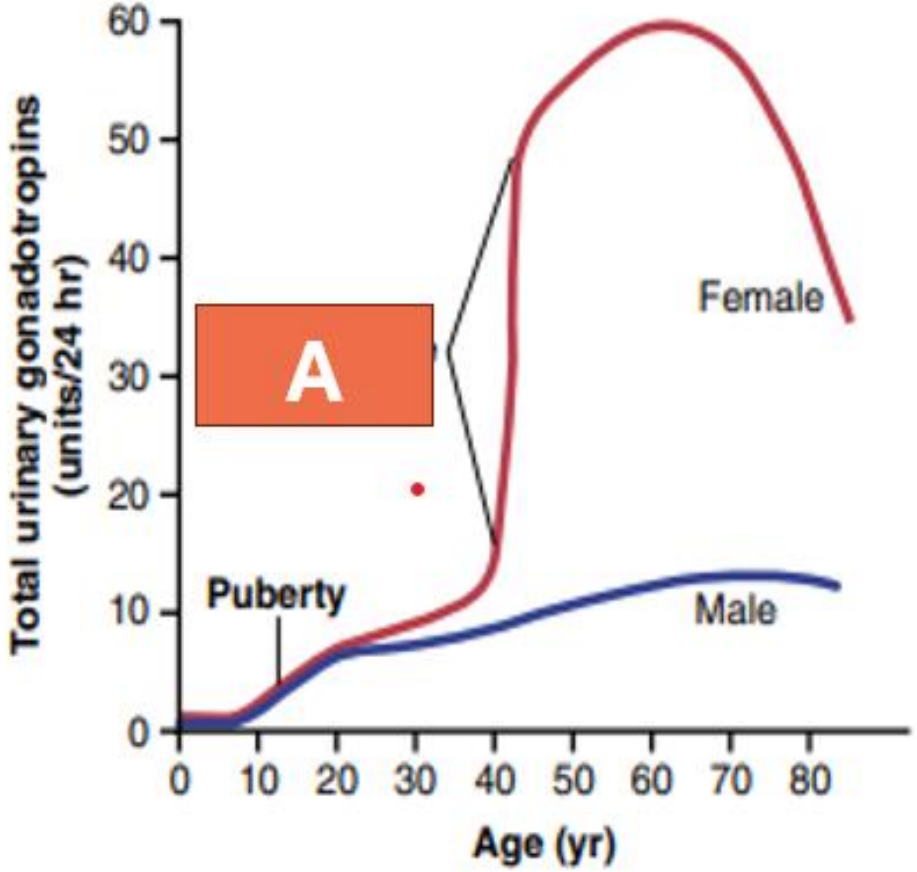
a) Identify the Structures marked as A and B(2)

b) Differentiate between Cortical and Juxtamedullary Nephrons. (3)



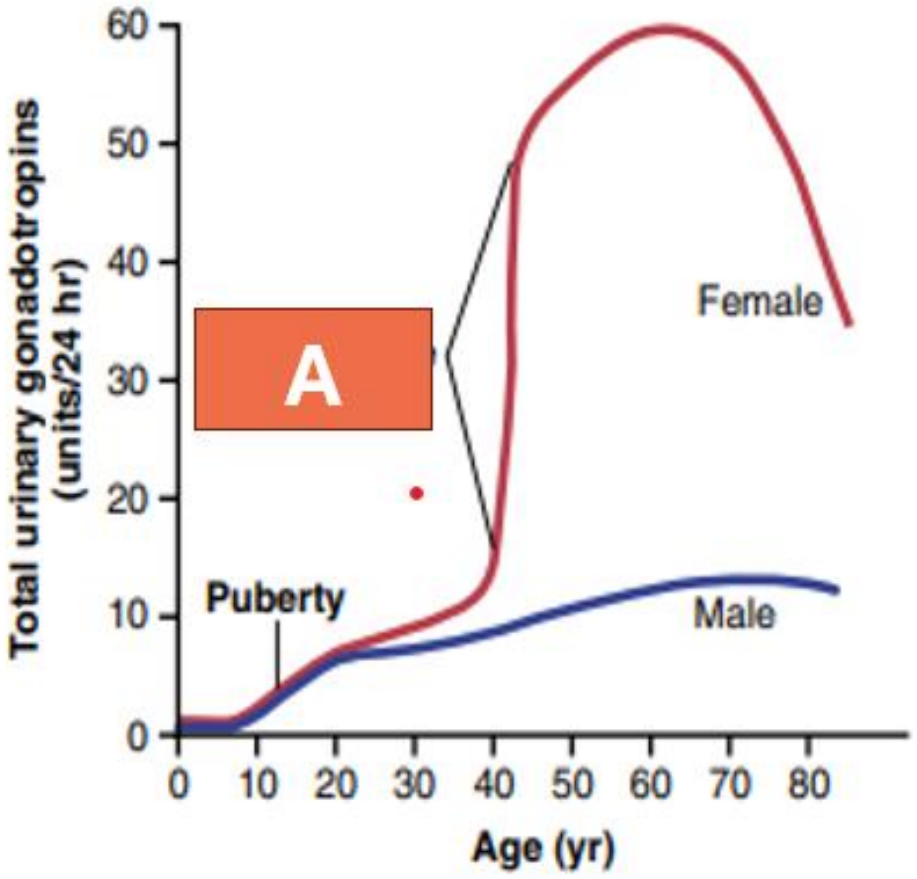
REPRODUCTION MODULE

Please observe this graph for 30 seconds, the questions related to this image will be on the next slide.

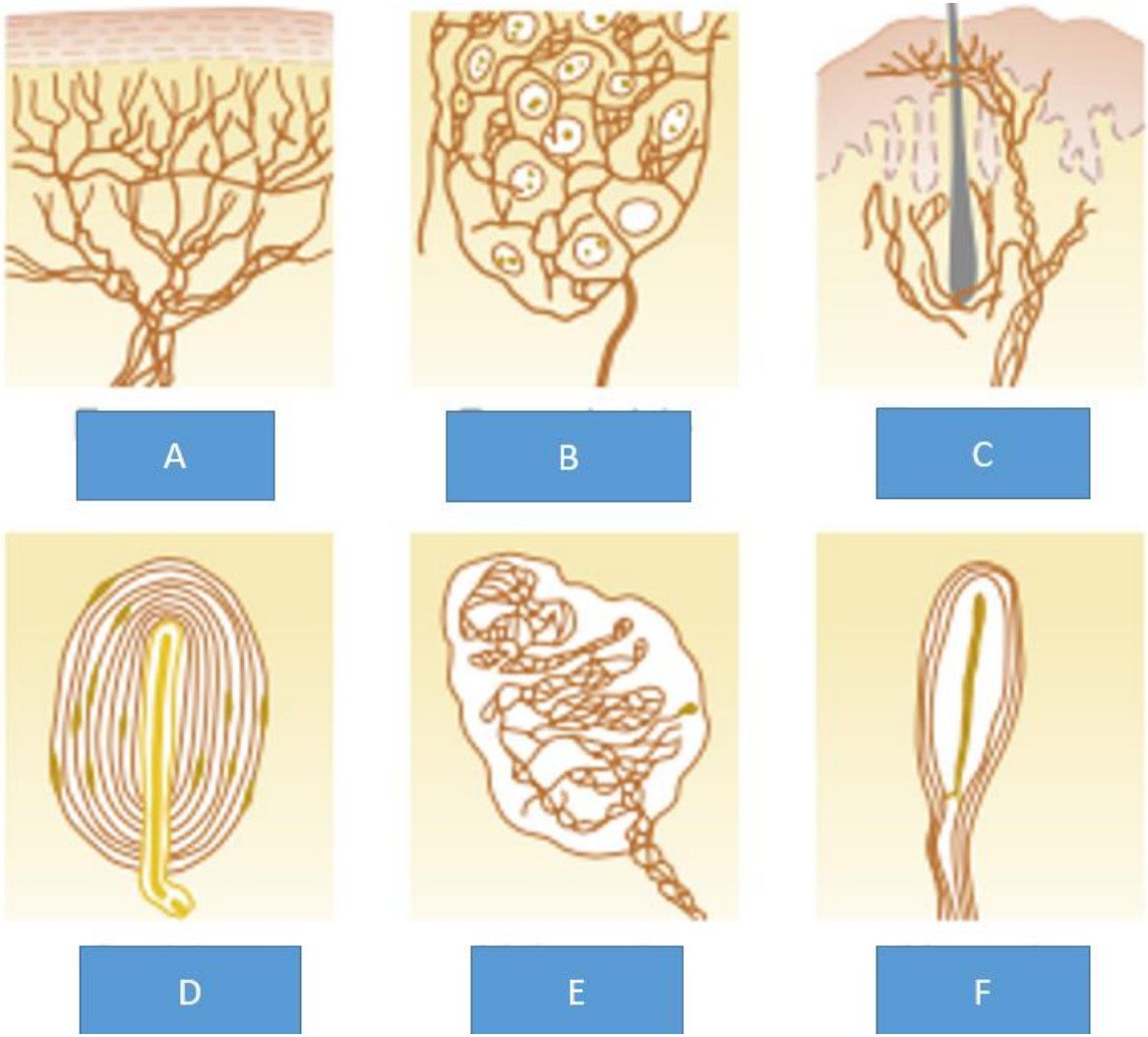


Identify the condition marked as A. (2)

What are Clinical Symptoms that occur after Menopause? (3)

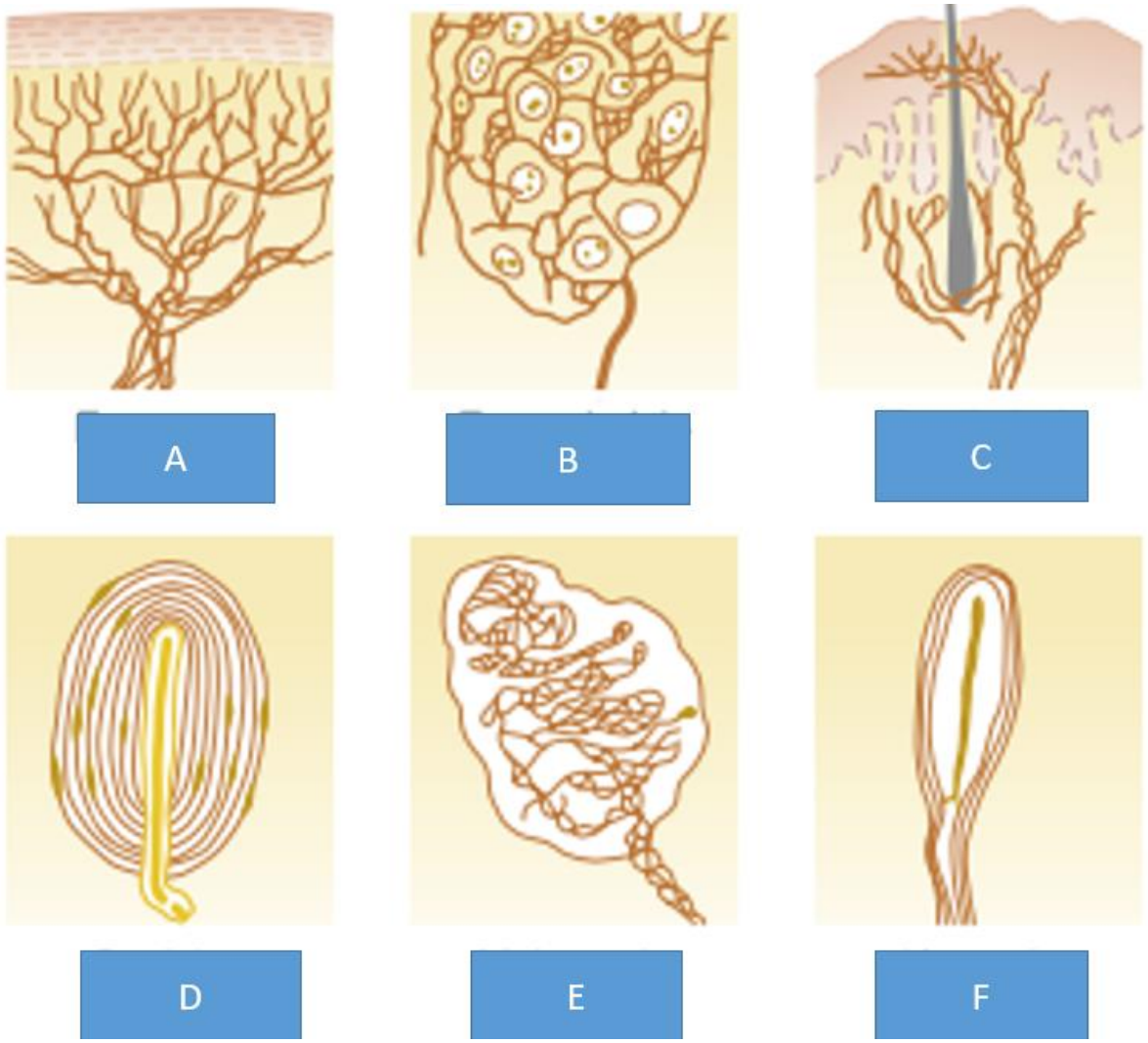


Please Observe This Image for 30 sec.



Identify the Structures marked as A, C and E (3).

Name the Receptor From Given Diagram which Detects Light Touch and Texture changes. (2)



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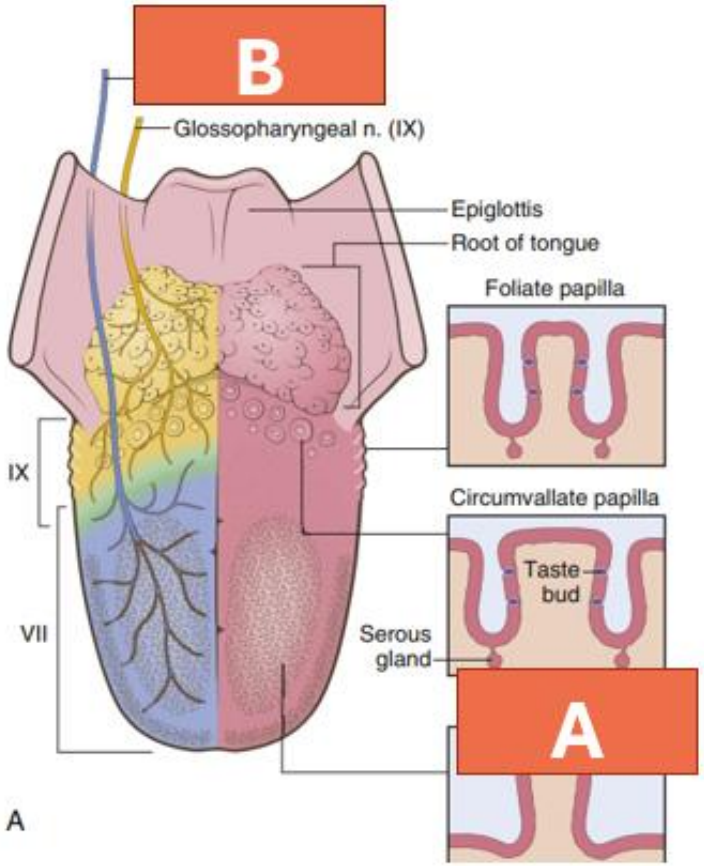
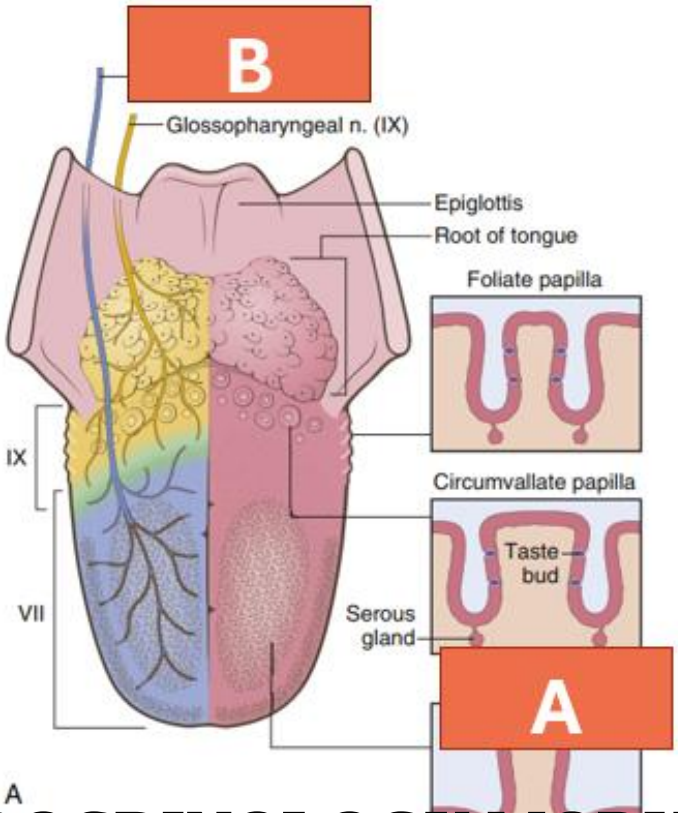


Identify the Structures marked as A. (1)

Which substance is used to demonstrate taste blindness. (1)

Identify the Structures marked as B. (1)

Enlist the two classes responsible for elliciting bitter taste. (1)



ENDOCRINOLOGY MODULE

Please watch this image carefully,the questions related to this image will be on the next slide.

This 7-year-old girl is brought to the clinic for poor growth, fatigue, and difficulty concentrating in school. On examination, she has a puffy face, dry skin, and a protruding tongue.

a)Whats your diagnosis ?(2)

b)What are the other signs you would see in this patient?(3)

Screenshots of Video Clips

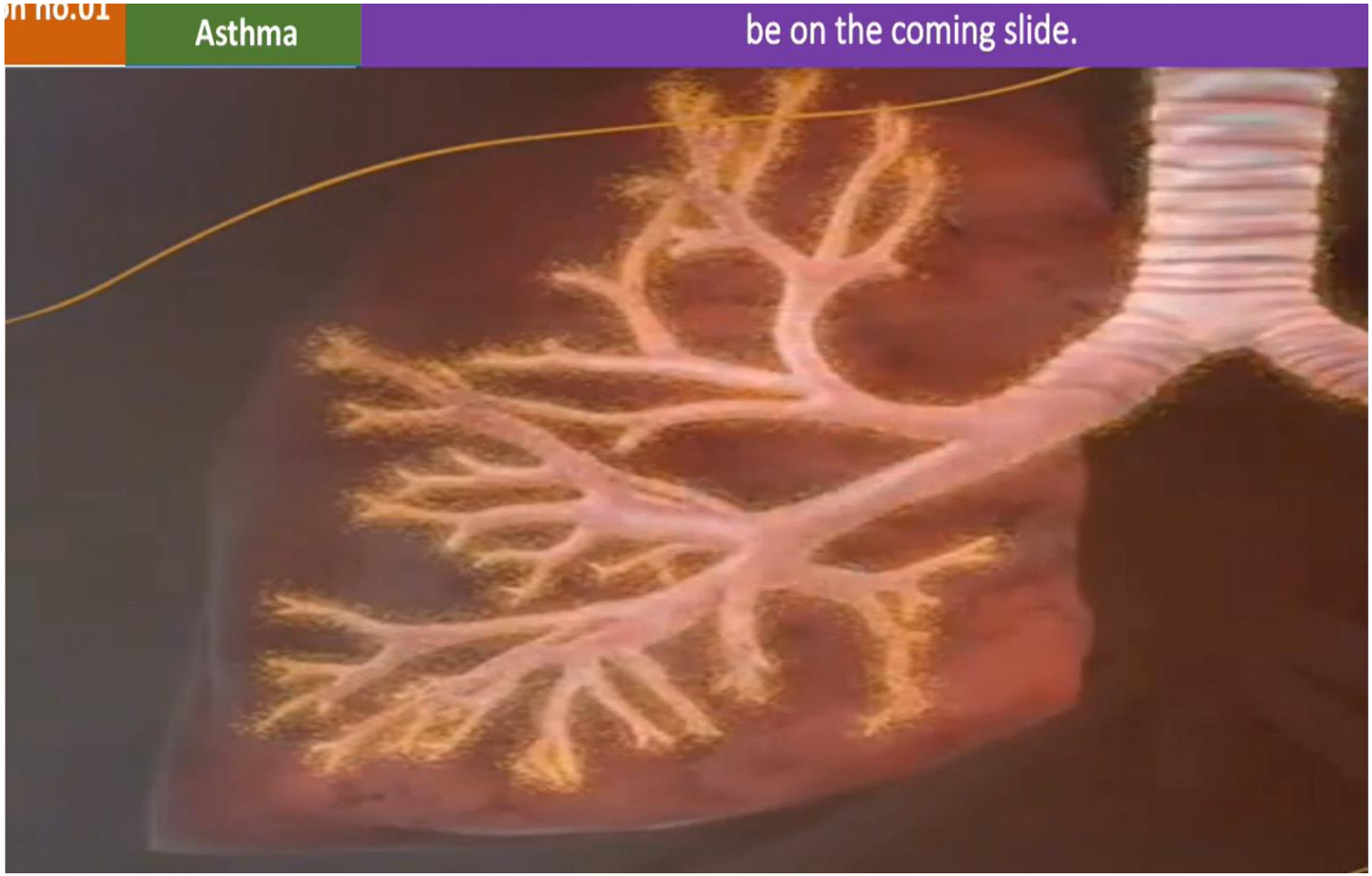
Utilized in Video OSPE Assessments

CARDIOVASCULAR SYSTEM MODULE

ia Player

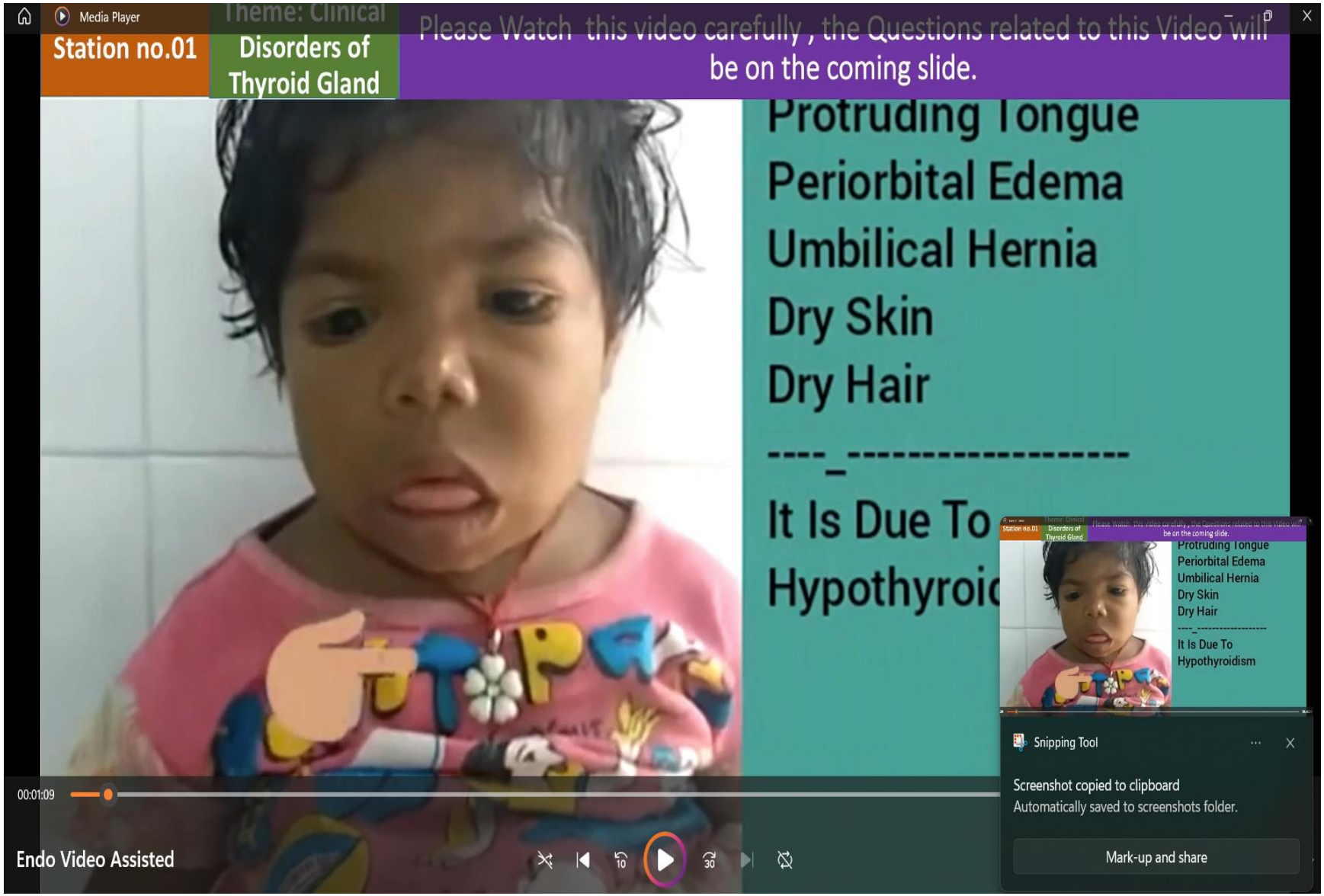
Station no.1 Theme: Coronary Artery Disease

Please Watch this video carefully , the Questions related to this Video will be on the coming slide.


Asthma
be on the coming slide.

SPECIAL SENSES MODULE

ENDOCRINOLOGY MODULE



THE END