D. PHARM PART – I HUMAN ANATOMY AND PHYSIOLOGY - 410005

<u>!! JAY AMBE !!</u>

SHORT QUESTIONS AND ANSWER

DIPLOMA PHARMACY PART - I SUBJECT NAME: HUMAN ANATOMY AND PHYSIOLOGY SUBJECT CODE: 410005

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D. PHARM PART – I HUMAN ANATOMY AND PHYSIOLOGY - 410005 CHAPTER -1: INTRODUCTION OF ANATOMY & PHYSIOLOGY

1. Define following terms:

- Anatomy: Anatomy describes the structures of the body -- their scientific names, composition, location, and associated structures. Anatomy ("a cutting open") is a plan or map of the body.
- Physiology: Physiology studies the function of each structure, individually and in combination with other structures.
- **Cell:** It is living structural and functional units of body enclosed by membrane.
- **Cytology:** It is the branch of science concern with the study of cells.
- Tissue: It is a group of cells that usually have common embryonic origin and function together for special activities.
- Blood: It is a liquid connective tissue.
- Lymph: It is a thin, watery, clear, modified tissue fluid formed by the passage of substance from the blood capillaries into the tissue space (interstitial space) and enters in to the closed system of lymphatic capillaries to lymphatic vessels and lymphatic sinus.
- Cardiovascular System: Cardiovascular is the system which includes the study of the heart, blood vessels and blood.
- **Immune System:** It is the collection of cells, tissues and molecules that protects the body from numerous pathogenic microbes and toxins in our environment.

2. Classify anatomy and define it in brief:

The study of anatomy is divided into 2 major fields:

- i. **Gross anatomy** is the study of large visible structures
- ii. **Microscopic anatomy** is the study of structures that are too small to see, such as cells and molecules.
- i. Gross anatomy, also called macroscopic anatomy, is separated into 5 major divisions:
 - A. Surface anatomy describes surface forms and marks.
 - B. **Regional anatomy** describes the organization of specific areas of the body such as the head or hand. This approach is used mostly in professional schools: medical, dental, physical therapy.
 - C. Systemic anatomy describes groups of organs that function together for a single purpose.
 - D. **Developmental anatomy** describes the structural changes in an organism from fertilized egg to maturity. Embryology is the anatomical study of early development.
 - E. **Clinical anatomy** describes various medical specialties, including medical anatomy (changes that occur during illness), and radiographic anatomy.
- ii. Microscopic anatomy is divided into two major divisions:
 - A. Cytology, the study of cells and their structures.
 - B. Histology, the study of tissues and their structures.

D. PHARM PART – I HUMAN ANATOMY AND PHYSIOLOGY - 410005 3. Classify Physiology and define it in brief

Physiology has many specialties. The 4 basic divisions are:

- i. Cell physiology, including chemical and molecular processes within and between cells.
- ii. Special physiology, the study of specific organs such as the heart.
- iii. **Systemic physiology**, the cooperative functions of all the organs in an organ system. We will use a systemic physiology approach in this class.
- iv. Pathological physiology, the effects of diseases on organs and organ systems.

4. Explain level of organization of the body in brief:

- Our bodies are organized at many different levels.
- The levels of organization of living things, from smallest to largest, are:
 - i. Atoms, the smallest functional units of matter.
 - ii. **Molecules,** active chemicals.
- iii. **Organelles**, specialized structures within a cell.
- iv. Cells, the smallest living units.
- v. Tissues, a group of similar cells that work together.
- vi. Organs, two or more tissue types working together.
- vii. **Organ systems,** two or more organs working together.
- viii. **Organism**, a single individual, including all of the above.

5. Enlist human body systems and introduce it in brief:

- 1. **The Integumentary System:** includes the skin & derived structures, it protects internal organs & helps maintain body temperature.
- 2. **The Skeletal System:** includes the bones & joints, it provides support & protection to internal organs.
- 3. The Muscular System: includes skeletal muscle and it provides movement.
- 4. **The Nervous System:** includes the brain, spinal cord, and nerves. It provides regulation of body functions & sensory perception.
- 5. **The Endocrine System:** includes hormone-producing cells & glands. It regulates homeostasis, growth & development.
- 6. **The Cardiovascular System:** includes blood, heart, & blood vessels. It is responsible for delivery of oxygen & nutrients to the tissues.
- 7. **The Lymphatics & Immune System:** includes lymphatic vessels & fluid. It is involved in the defense against infection.
- 8. **The Respiratory System:** includes lungs & airways. It is involved in the absorption of oxygen & release of carbon dioxide.

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- 9. **The Digestive System:** includes organs of the gastrointestinal tract. It is responsible for the absorption of nutrients.
- 10. **The Urinary System:** includes the kidneys, ureters, and bladder. It is responsible for electrolyte balance & waste removal.
- 11. **The Reproductive System:** includes the reproductive organs in males and females. It controls the biological process by which new individuals are produced.

6. Define homeostasis and write their regulators in brief:

• Ability to maintain relatively stable internal conditions despite a changing external environment. Dynamic state of equilibrium, or balance.

A homeostatic regulatory mechanism consists of 5 parts:

- i. **Receptors:** It act as a sensors/receiver that respond to a stimulus. It monitors change in control condition.
- ii. **Sensory Neurons:** It send the input information/message to control center, means information from cell/tissue/organ etc to integrated system i.e brain and spinal cord.
- iii. Integrated System: It analyze the incoming message received from the sensory neurons and sends out commands/messages. In the body there are hundred controlled conditions. A few examples are heart rate, blood pressure, temperature and breathing rate.
- iv. **Motor Neurons:** The output information/message from integrated center (brain and spinal cord) to cell/tissue/organ etc are travelled by motor neurons.
- v. **Effectors:** The cell/tissue/organ etc act as effector that responds according to output command of the control/integrated center.

7. Name the body cavity and explain it in brief:

- The dorsal (posterior) cavity and the ventral (anterior) cavity are the largest body compartments.
- Subdivisions of the Posterior (Dorsal) and Anterior (Ventral) Cavities
- The posterior (dorsal) and anterior (ventral) cavities are each subdivided into smaller cavities.
- In the posterior (dorsal) cavity, the cranial cavity houses the brain, and the spinal cavity (or vertebral cavity) encloses the spinal cord.

The anterior (ventral) cavity has divided by the diaphragm muscle into 2 parts:

- i. A superior thoracic cavity, containing the
 - A. Pleural cavity (left and right, divided by the mediastinum) organs: lungs membranes: visceral and parietal pleura
 - B. Pericardial cavity organs: heart membranes: visceral and parietal pericardium
- ii. Inferior abdominopelvic cavity, containing the
 - A. Peritoneal cavity membranes: visceral and parietal peritoneum

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- B. Abdominal cavity (superior peritoneal) organs: liver, stomach, spleen, intestine
- C. Pelvic cavity (inferior peritoneal) organs: intestine, bladder, reproductive organs

8. Enlist types of fluid present in body.

- A. Intracellular fluid (67%) Inside the cell
- B. Extracellular fluid (33%) Outside the cell
 - a. Interstitial Fluid (ISF).
 - b. Plasma.
 - c. Transcellular fluid
 - i. Cerebrospinal fluid
 - ii. Ocular fluid (Aqueous humor)
 - iii. Joint fluid (Synovial fluid)
 - iv. Urine

9. Enlist optical component of microscope with function.

SR. NO	COMPONENT	FUNCTION				
1.	Diaphragm:	It is flitted just below the stage for regulating the amount of light				
		failing on the object. Diaphragm is of two types, disc and iris.				
2.	Condenser	: It is attached below the diaphragm. Condenser can be moved up and				
		down to focus light on the object.				
3.	Reflector	It is attached just above the base. Both its surface bear mirrors, plane				
	(Mirror):	on one side and concave on other side. Plane side is used in strong				
		light and concave side in weak light. Reflector directs the light on the				
		object through the condenser and diaphragm system.				
4.	Objective	They are fitted over the nose piece. Objective lenses are of three types				
	Lenses:	– low power (commonly 10X or 5X), high power (commonly 45X)				
	N	and oil immersion (commonly 100X, can be more).				
5.	Ocular Lens or	It is lens through which image of the microscopic object is observed.				
	Eyepiece:	It also takes part in magnification. Depending upon magnification,				
		the eye piece is of four types-5X, 10X, 15X, and 20 X				

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1. Classify the parts of cell.

It is mainly divided in to three main parts:

- i. Plasma membrane:
- It is the outer surface of cells. It's separates cells from internal environments to external environments.
- It is a selective barrier that regulates the flow of materials into and out of a cell. This selectivity helps to maintain the normal cellular activities.

ii. Cytoplasm:

- It consist all the cellular contains between plasma membrane and nucleus.
- It consist two components:
- a) Cytosol: The fluid portion of cytoplasm contains water, dissolved solutes and suspended particles.
- **b) Organelles:** This is surrounded by cytosol. Each type of organelles has characteristics shapes and specific functions. Eg: Ribosomes, Endoplasmic Reticulum, Golgi complex, Lysosomes, Peroxisomes and Mitochondria.

iii. Nucleus:

- It is large organelles. It is a house for most of DNA.
- Within the nucleus, each chromosomes a single molecules of DNA associated with several proteins, contains thousand of hereditary units called genes that control cellular structures and functions.

2. Plasma membrane consist which kind of lipids?

- It consist three types of lipids,
- a) Phospholipids: 75% of membrane lipids are phospholipids. It contains phosphate groups.
- **b)** Cholesterol: 20% of membrane lipids are cholesterol. Which is a steroid attached with OH group.
- c) Glycolipids: 5% of membrane lipids are glycolipids. Attached with carbohydrate groups.

3. Plasma membrane consist which kind of proteins?

- Plasma membrane consist two types of proteins
- a) Integrated proteins:
 - It extends across the phospholipids bilayer among the fatty acid tail.
 - Most of integral proteins are glycoprotein, it is attached with sugar groups.
 - The portion of the attaché sugar group faces the extracellular fluids.

b) Peripheral proteins:

- They do not extend across the phospholipids bilayer.
- They are loosely attached to the inner and outer surface of the membrane and are easily separated from it.

4. Explain the function of plasma membrane protein in brief.

- i. Act as channels
- ii. Act as transporter
- iii. Works as receptors
- iv. Works as enzymes
- v. Act as a cytoskeleton anchor
- vi. Work as a cell identity marker

5. Enlist the types of movement of materials across the plasma membrane.

a) Passive process

- Diffusion solute migration
- Osmosis solvent migration

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- Pore transport transport of materials via pore on protein surface
- b) Active process
 - Primary Active Transport
 - Secondary Active Transport
 - Phagocytosis & Pinocytosis

6. Which is the largest organelles of the cytoplasm ?

Mitochondria is the largest organelles of the cytoplasm

7. Which is the largest organelles of the cell ?

- Nucleus is the largest organelles of the cell
- 8. Who is known as power house of cell?
 - Mitochondria is known as power house of cell because it generate ATP

9. What are the functions of rough and smooth endoplasmic reticulum?

- Rough endoplasmic reticulum helpful for the protein synthesis
- Smooth endoplasmic reticulum is useful for fatty acids, phospholipids and steroidal synthesis.

10. Enlist the steps of protein synthesis.

- a) Transcription
- b) Translation
 - Initiation

Elongation

Termination

11. How many types of RNA present into the nucleus. Give their brief introduction.

Three forms of RNA are made from the DNA template,

- a) messenger RNA (mRNA) which direct synthesis of a polypeptide chain,
- b) transfer RNA (tRNA) which bind to amino acid during translation and
- c) ribosomal RNA (rRNA) which comes together with ribosomal protein to make up ribosomes.

12. Enlist the steps for eukaryotic somatic cell division.

Interphase: Cell is between divisions, chromosomes are not seen under light microscope. It include G1 Phase, S Phase and G2 Phase

Cell division: parent cell produce two identical daughter cells, chromosomes are visible under light microscope. It include Mitosis and Cytokinesis.

a) Nuclear division known as mitosis:

- Mitosis is divided in to four stages prophase, metaphase, anaphase and telophase.
- b) Cytoplasmic division known as cytokinesis.

13. Differentiate between active and passive transport mechanism of cell.

Sr. No	Active Transport	Passive transport	
1.	It is energy dependent process	It is energy independent process	
2.	It is uphill process	It is downhill process	
3.	It is against concentration gradient process	It follows the concentration gradients.	
4.	Transport of molecules from lower	Transport of molecules from higher	
	concentration to higher	concentration to lower	
5.	Primary active, secondary active,	Diffusion, osmosis and pore transfer are	
	phagocytosis and pinocytosis are example	the example of passive transport	
	of active transport.		

D. PHARM PART – I HUMAN ANATOMY AND PHYSIOLOGY - 410005 14. Enlist the cell junction molecules.

- a) Selectins,
- b) cadherins,
- c) integrins, and
- d) the immunoglobulin super family.

15. Enlist the types of cell junction.

- 1. Anchoring Junctions:
 - a. Adherens junctions (zonula adherens)
 - b. Desmosomes(macula adherens) and
 - c. Hemidesmosomes
- 2. Gap junctions (communicating junction)
- 3. Tight junctions (occluding junctions)

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1. Define tissue

Definition: "It is a group of cells that usually have common embryonic origin and function together for special activities."

2. Enlist types of tissue with their functions.

Four Types of Tissues and Their Functions

Tissue Type	Function		
Epithelial	Covers body surface and lines internal organs		
Connective	Support and protection		
Nervous	Send and receive information about stimuli		
Muscle	Movement		

3. Classify epithelial tissue:



D. PHARM PART – I HUMAN ANATOMY AND PHYSIOLOGY - 410005 Classify muscular tissue and differentiate between muscular tissue.

Compare muscle tissue

Skeletal	Cardiac	Smooth
Striation: striated	somewhat striated	non-striated
Cells: straight cylindrical parallel, non-branching	tapered cylinders parallel & branched	spindle shape
Nucleus: multi-nuclei, peripheral	mostly uni-nucleus most peripheral	uni-nucleus central
Discs: none	intercalated	none
Location: attach bones	cardiac wall	hollow organs
Control: voluntary	involuntary	involuntary
Function: body movement	heart contraction	visceral & circulatory
Speed of contraction: fastest	intermediate	slowest

6. Classify nervous tissue:

5.



7. Classify neurons according to their structure:

i) Multi polar neurons and give their brief introduction:

- It has several dendrites and one axon.
- Most neurons of brain and spinal cord are of this type.

ii) Bipolar neurons:

- It has one main dendrites and one axon.
- It is found in the eye, inner ear and olfactory areas of the brain.

iii) Unipolar neurons:

- It's originated as bipolar neurons in the embryo but during the development axon and body get fuse into a single process that divides in to two branch and consist one cell body.
- It is always sensory neurons.

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Classify neurons according to function and give their brief introduction:

i) Sensory neurons or afferent neurons:

 It transmits nerve impulse from receptors of skin, sense organ, muscles, and joints into the CNS.

ii) Motor or Efferent Neurons:

8.

It conveys motor nerve impulse from the CNS to the effectors which may be either muscles or glands

9. Classify neurons according to myelin sheath.

- i. Myelinated: Produce white matter in brain and spinal cord
- ii. Unmyelinated or non myelinated: Produce grey matter in brain and spinal cord

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1. Give the numbers of bone in human body

- 206
- 2. Define bone.
 - Bone is a complex and dynamic living tissue.
- 3. State the different division & types of human skeleton.
 - Division of skeleton
 - Axial skeleton
 - Appendicular skeleton

4. State the different types of bone

- Long bone
- Short bone
- flat bone
- Irregular bone
- Sasamoid bone
- Sutural bone

5. Give four function of bones

- Support
- Protection
- Assistance in movements
- Mineral homeostasis
- Blood cell production

6. How many bones are present in vertebral column?

• 26 bones are present in vertebral column

7. Name the suture present in the cranium.

- Coronal suture
- Sagital suture

- Lamboid suture
- Squanous suture
- 8. State the different sinus present in cranium.
 - Maxillary, Ethmoid, Sphenoid, And Frontal

9. How many bones are present in cranium

- 8 bones are present in cranium.
- 10. How many bones are present in face?

• 14 facial bone

11. What are true ribs, false ribs and floating ribs?

- **True Ribs**: The first seven ribs are known as "true ribs" because they connect the thoracic vertebrae directly to the sternum through their own band of costal cartilage.
- False Ribs: Ribs 8, 9, and 10 all connect to the sternum through cartilage that is connected to the cartilage of the seventh rib, so we consider these to be "false ribs."
- **Floating Ribs:** Ribs 11 and 12 are also false ribs, but are also considered to be "floating ribs" because they do not have any cartilage attachment to the sternum at all.

12. Name the part of typical vertebrae.

- Body
- Superior & inferior articular process
- Lamina
- Pedicle
- Spinous process

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- Transverse process
- Vertebral arch
- vertebral foramen

13. Give the name of 1st and 2nd cervical vertebrae.

• 1st vertebrae- Atlas

• 2nd vertebrae- Axis

14. Give the functions of vertebral column.

• The major function of the vertebral column is **protection** of the **spinal cord**; it also provides stiffening for the body and attachment for the pectoral and pelvic girdles and many muscles. In humans an additional function is to transmit body weight in walking and standing.

15. Name the parts of sternum.

- The sternum consists of three main parts, listed from the top:
 - i. Manubrium.
 - ii. Body (gladiolus)
 - iii. Xiphoid process.

16. Name the bone of thoracic cage.

• The sternum, the ribs, and the thoracic vertebrae.

17. Which is the largest and longest bone present in human body?

• Femur of thigh

18. State the list of bones present in wrist region.

• 16 carpel bones present in wrist region

19. How many bones present in fingers of hand?

• 28 phalanges bones present in fingers

20. Name the cavity present in scapula.

• Glenoid cavity articulate with humerus at shoulder joint

21. State the name and their number of axial bones in human body.

SR. NO	BONES	NUMBERS	DAIGRAM		
	CRANIAL BONES				
1	Parietal	2	Parietal bone Frontal bone		
2	Temporal	2	Temporal Sphenoid		
3	Frontal	1	Ethmoid		
4	Occipital	1	the source of th		
5	Ethmoid	1	bone		
6	Sphenoid	1			
			Cranial Bones		
5			FACIAL BONES		
1	Maxilla	2	Facial Bones		
2	Zygomatic	2	Frontal bone		
3	Mandible	1	Parietal bone		
4	Nasal	2	Temporal bone		
5	Platine	2	Nasal bone		
6	Inferior	2	Zygomatic bone		
	nasal		Maxilla		
	concha		Mandible		
7	Lacrimal	2	•••		
8	Vomer	1			





23. List the location and function of the major bones of axial skeleton

Bone(s)	Location	Function	Major grouping
6	5.1		of axial skeleton
Cranium	Head	Supports facial structures, encloses and protects the	Skull
	\sim	brain, provides muscle attachments for chewing	
		and moving the head	
Mandible	Lower jaw	Permits chewing	Skull
Vertebrae	Spine	Permit mechanical stability for the body and protect	Vertebral column
		the spinal cord	
Ribs	Chest wall	Provide protection for the organs of the upper	Thoracic cage
		body	
Sternum	Center of	Provides attachment for many (not all) ribs	Thoracic cage
	the chest		

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 24. List the location and function of the major bones of appendicular skeleton

Bono(s)	Location	Function	Grouping
Sopula	Elat triangular hone located	Articulates with the eleviele and humanic	Dectorel
Scapula	Flat, triangular bone located	Articulates with the clavicle and numerus	Pectoral
	on the posterior side of each		girdle
	shoulder		
Clavicle	Located in each shoulder at	Helps to keep the shoulders in place;	Pectoral
	the base of the neck	connects upper arm to the body	girdle
Humerus	Extends from the scapula to	Provides attachments for muscles that move	Upper
	the elbow	the shoulder and upper arm at the proximal	limbs
		end; articulates with the radius and ulna at the	
		distal end	$\langle \rangle$
Radius	Located on the lateral side of	Provides attachment for muscles that bend	Upper
	the forearm between the	the arm at the elbow and muscles that allow	limbs
	elbow and wrist	movement of the wrist	
Ulna	Located on the medial side of	Provides attachment for muscles that bend	Upper
	the forearm between the	and straighten the arm at the elbow and	limbs
	elbow and wrist	muscles that allow movement of the wrist	
Ilium	Located on the superior	Connects the bones of the lower limbs to the	Pelvic
	portion of the coxal bone	axial skeleton	girdle
Femur	Extends from the hip to the	Provides attachment for muscles of the lower	Lower
	knee	limbs and buttocks; distal end articulates	limbs
	\sim	with the tibia and patella	
Tibia	Located on the medial side of	Articulates with the femur, on its superior	Lower
	the leg between the knee and	side, to form the knee joint; articulates with	limbs
	the ankle	the fibula on the lateral side; articulates with	
		the patella on the anterior side; and the tarsels	
	K C	to form the ankle joint	
	K.		
	Fibula	Forms the lateral part of the ankle joint	Lower
		~ ·	limbs
	Patella	Supports movement of the knee joint	

25. Enlist the types of joints in human skeletal system with examples Fibrous joint:-

- Suture :-Joints between cranial bones
- Syndesmoses :-Tibiofibular joint
- Interossrous membranes :-joint between radius and ulna

Cartilaginous joint

- Synchondroses:- joint between 1st rib and sternum
- Symphyses :-anterior surface of hip joints Synovial joint
- Planner joint :- Intercarple joints, intertatsal joints
- Hinge joint :- Joint of knee, ankle, elbow, Pivot joint
- Condyloid joint:-Joint of wrist, metacarpophalangeal
- Saddle joint :-carpometacarpkes nad metalcarple joints
- Ball-and- Socket joint:- hip and shoulder joints

26. Enlist diseases related to skeletal system

- Rheumatoid Arthritis
- Osteoarthritis
- Gout
- Joint dislocation

- 1. What is arthrology and amphiarthorses ?
 - Study of joints is known as arthrology. Slightly movable joints are called amphiarthorses.
- 2. What is the meaning of diarthrosis?
 - Synovial joint is also known as diarthrosis.
 - It joins bones with a fibrous joint capsule that is continuous with the periosteum of the joined bones, constitutes the outer boundary of the synovial cavity, and surrounds the bones articulating surfaces. The synovial cavity is filled with synovial fluid.

3. What is arthritis?

 Arthritis is inflammation and painful joints due to degradation of cartilages or synovial membrane or deposition of uric acid.

4. What is the meaning of sutures?

Sutures are immovable joints. In sutures, skull bones are joined by strong bundles of white fibers.

5. Classify the joints.

The joints can be classified into three main types.

- a) Immovable or synarthrose joints,
- b) Slightly movable or amphiarthrose joints, and
- c) Freely movable or synovial joints.

6. Explain the ball and socket joints.

- Ball and socket joints have a ball like spherical end called head which fits into cup like depression.
- It is freely movable in all directions.
- It lies at the shoulder joint and hip joint

7. Write brief note of synovial joints?

- In synovial joint one bone forms knob like swelling while other one forms a depression.
- The ends of both the bones are covered by smooth articular cartilages.
- Between two bones is synovial cavity filled with synovial fluid.

8. Where the hinge joints present?

 Hinge joints are formed between two or more bones where the bones can only move alone one axis to flex or extend.

9. Introduce pivot joints.

- Pivot joint is also called rotary joint. It allows only rotary movement around single axis.
- The moving bone rotates within a ring that is formed from second bone and adjoining ligament.

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 5: BLOOD

1. Define blood:

"It is a liquid connective tissue". Which consist WBCs, RBCS, Platelets and other dissolved solutes and protein.

2. What are the functions of blood?

- i. Transportation of oxygen, carbon dioxide, nutrients etc
- ii. Maintains Body Temperature:
- iii. Controls pH
- iv. Removes toxins from the body
- v. Protection.
- 3. Why human is known as warm blooded animal ?
- Because human blood temperature is high than the normal body temperature i.e 38°C
- 4. What is the Ph of Blood ? Blood Ph is 7.3 to 7.4

5. What is the normal blood volume in adult human ?

- Healthy adult consist 8 % of blood of their total body weight
- Adult male contains 5-6 liters of blood while adult female contains 4-5 liters of blood.



7. Write brief introduction about hemopoiesis.

- Hematopoiesis or hemopoiesis is the Process of blood cell production
- About 0.05-0.1% of red bone marrow cells are known as hemopoetic Stem cells or hemopoetic cells produce five different blast cells.
 - **Proerythroblasts:** Develop into red blood cells (erythrocytes)
 - Myeloblasts: Develop into basophils, neutrophils, eosinophils
 - Lymphoblasts: Develop into lymphocytes
 - Monoblasts: Develop into monocytes.
 - Megakaryoblasts: Develop into platelets

8. What is **RBCs** ?

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- RBCs means Red blood cells also known as erythrocytes
- The average normal RBC count is
 - For men 5.4 million/uL
 - For women 4.8 million/uL.
- They are tiny (7.5u in diameter, 2u thick) biconcave and anucleate.

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- They survive for about 120 days.
- About 5 X 10^{11} RBCs are destroyed everyday, in the liver and spleen.

What is WBCs? 9.

- WBCs means white blood cells also known as leucocytes
- Normal value of WBCs in healthy adult is 4000-11000/cmm



State the common site of collection of blood. 7.

- Ball of finger (left ring finger)
- Ear lobe

- Heel or big toe in infants
- Pad of thumb

8. Why left ring finger is chosen for blood collection in pricking method?

- Because:-Synovial sheath of ring finger stop short of the hand or not covered the entire figure and due to this, the infection does not exceed the limit.
- It is least used as compared to other fingers.

9. State the principle of Sahli's method.

- When the blood is mixed with N/10 HCl RBCs are haemolyzed and Hb is liberated.
- This Hb is converted in to acid hematin which reddish brown in colour.
- The solution is diluted with distilled water till it matches with the standard glass tubes.
- The Hb% can directly be read from the graduated tube.

13. Why 0.1 N HCl used in estimation of Hb?

- HCl causes haemolysis
- The standards side tubes with which colour are being matched are available with the dilution of HCl.

14. Give 2 advantages of Sahli's method of Hb estimation

Advantages

- Easy to handle
- Simple method based on matching visual colour with a standard

15. Name the methods of Hb estimation

Direct methods

- Determination of O2 carrying capacity
- Iron estimation
- Spctrophotometry

Indirect methods

- Sahli's method
- Haldane's method
- Tallquist method

16. State Hb gram percent in infants, adult male and adults women.

- Infant:- 23 gm%
- Adult male:- 13-15 gm% [average 14.8 gm%]
- Female:- 12-15 gm% [average 13.7 gm%]

17. Why female Hb conc. is lesser than the male.

• Low Hb in female due menstruation cycle, pregnancy, lactation and in male testosterone stimulates formation of RBC., hence Hb is higher in male than female.

18. State the function of Hb.

- Transport of O₂ from lungs to tissue and CO₂ from tissue to lungs
- Maintained of pH

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 19. Define Anemia. Give the type of anemia.

Anemia: Deficiency of haemoglobin leads to decrease oxygen carrying capacity of blood is called anemia.

Type of anemia

- Pernicious anemia
- Megaloblastic anemia
- Haemolytic anemia
- Aplastic anemia

20. What is O₂ carrying capacity of the blood? State the quantity of O₂ carried by 1g of Hb?

Amount O₂ in cc carried out by 100ml blood during one pulmonary circulation. 1.34 cc of O₂ carried out by 1gm of Hb.

21. Define colour index. What is hypochromic and hyperchromic anemia?

The colour index is defined as relative amount of haemoglobin present in one RBC. Normal colour index is **0.85-1.15**. It is finding out by formula:

Colour index= Hb%

RBC%

*Hypochromic anemia = If colour index is less than 0.85

****Hyperchromic anemia**= If colour index is more than 1.15

22. What is haematin? Which is the colour of acid haematin?

- Haemoglobin reacts with acid (HCl) to form acid haematin, which is reddish brown in colour.
- 23. State meaning of bleeding time. State normal value of bleeding time.
 - The time between the moment of escape of blood from blood vessels and the cessation of its flow is defined as bleeding time.
 - Usual bleeding time is 1-3 min.

24. State meaning of clotting time. State normal value of clotting time

- The time between the moment of escape of blood from blood vessels and development of fibrin (clot) is defined as clotting time.
- Usual clotting time is 4-10 min.

25. State the principle of clotting time.

 During coagulation sol form of the change to gel from. The time elapsed between the moment of blood outside the vessels and the observation of physical change is taken as clotting time.

Name the methods used to find clotting time.

- Lee and White's method
- Wright's method
- Dukes method

- 27. Defines thrombocytopenia, hemophilia, purpura and what their effect on bleeding time and clotting time is.
 - **Thrombocytopenia:-** Is the condition caused by the decrease thrombocyte count or platelets count. It prolongs bleeding time.

- **Hemophilia:-** Is the condition caused by the absence of any one of the factor required for the clotting of blood. It prolongs clotting time.
- **Purpura:** Is the condition caused by platelet deficiency and characterized by the appearance of red spot on the skin. It prolongs bleeding time.
- 28. When the patient having fever, is there any change in the bleeding time and clotting time? Why?
 - Yes, if patient have fever it prolongs bleeding time and clotting time is shorten in warmth condition. Because clotting factor are slowly released in warmth condition.

29. State the condition in which prolongs clotting time.

- Absence of clotting factor
- Decrease in temperature
- Smoothness of surface
- Dilution of blood.

30. State the condition in which prolongs bleeding time.

- Purpura
- Thrombocytopenia
- Scurvy (deficiency of Vit. C)

31. Why bleeding time is smaller than clotting time? Give reason.

- Bleeding time is smaller than clotting time because bleeding is stopped by vascular spasm and platelet plug formation, while clotting involves a series of enzymatic reaction taking more time.
- 32. What is blood group? State the basic classification of blood group. Write down summary of ABO system of blood group.
 - Blood group is grouping of blood according to the type of agglutinogen (antigen) present in blood.

Classification of blood group:-

 Classification of blood group based on presence and absence of antigen & rhesus factor in blood cells



B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE Summary of ABO system

Sr. No.	group	Agglutinogen (Antigen in RBC)	Agglutinins (Antibodies)	Can donate to groups	Can receive from groups
1	AB	A and B	None	AB	All groups
2	А	А	Anti-B	A & AB	A & O
3	В	В	Anti-A	B & AB	В &О
4	0	none	Anti-A &	All groups	Only O
			Anti-B		

33. State the principle of blood group findings (Landsteiner Law).

Principle: The ABO system of blood group is based on the presence of Agglutinogen A, B, both A & B or none. Landsteiner stated, if particular type of Agglutinogen is present in the blood, then the corresponding agglutinin always absent and if particular type of Agglutinogen is absent in the blood, then the corresponding agglutinin always presents. Anti sera-A consist agglutinin alpha and it causes clumping of RBCs of blood containing agglutinogen A. Anti sera-B consist agglutinin beta and it causes clumping of RBCs of blood containing agglutinogen B.

34. Blood group is determined as follows:

- 1] Clumping in antisera A
- 2] Clumping in antisera B
- 3] Clumping in antisera A & antisera B
- ---- Blood group B ---- Blood group AB

Blood group A

- 4] No Clumping in antisera A & antisera B ---- Blood group O
- The blood group assigned as +ve & -ve, according to the Rh system. If Rh system is present then blood group assigned as +ve and if Rh system is absent then blood group assigned as -ve.
- Antisera D contains antibodies against Rh factor, hence, if clumping is seen in this sere, blood group will be +ve and if not seen, then will be -ve.

35. Why blood group AB is called universal recipient?

 Blood group AB is called universal recipient because it does contain any agglutinins hence can receive blood of any group.

36. Why blood group O is called universal donor?

 Blood group O is called universal donor because it does not contain any agglutininogen hence can donate blood to any group.

37. State complication and indication of blood transfusion.

Complication of blood transfusion:-

- When incompatible blood is transfused intravenously from donor to recipient antibodies present in recipient blood bring coagulation of blood take place due to antigen antibody reaction in recipient blood.
- Indication of blood transfusion:-Haemolysis of erythrocytes, damage of urinary passages, blockage of capillaries and death.

38. State 2 precautions to be taken while selecting the donor.

- Blood group should be match
- Donor should be free from any disease, infection or disorder

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 39. What happen when Rh- mother has conception of Rh+ foetus? How will you prevent such complication?

Conception of Rh+ foetus takes place

- If mother is Rh- and father is Rh+, the child may inherited the dominant Rh+ gene from father.
- So During pregnancy some blood of foetus is passed to mother blood from placenta. So Rh+ antibodies are form in mother's blood.
- Generally 1st pregnancy is safe but not 2nd because antibodies are present in mother blood so during 2nd pregnancy mother's antibodies crosses placenta and enter into foetus blood so it causes clumping of foetus blood and this condition is called erythroblastosis foetalis

Precaution:

- To Rh- mother of an Rh+ foetus, Rh-antibodies are given to destroy the Rh+ cells that enter from foetus to mother within the 2-3 days after the birth of child. So prevent complication in both mother as well as child.
- e.g RHOGAM antibodies.
- 40. What is haemocytometry? Enlist parts of haemocytometer. Differentiate between RBC & WBC dilution tubes.
 - The counting of RBCs & WBCs in blood using haemocytometer set is called haemocytometry

Parts of haemocytometer

- Dilution pipettes
- Neubauer's counting chamber
- Thomas cover slip.

41. Give composition & purpose of WBCs dilution fluid

Sr. No.	Constituent	Amount	Purpose
1	Glacial acetic acid	2 ml	Destroy RBCs
2	Gentian or methyl violet (1%)	1 ml	Stain nuclei of WBCs
3 2-	Water	Upto 100 ml	Diluent

- 42. Give the reason the first few drops of the blood fluid mixture is discarded before charging squares.
 - Because it does not contain blood so the first few drops of the blood fluid mixture is discarded before charging squares.

43. State the principle of WBC count.

Principle The number of WBCs in blood is too many and the size of the cells is too small. It is therefore, impossible to count the cells even under high power. This difficulty is partially overcome by diluting the blood with suitable dilution of known degree. The dilute blood is placed in capillary space of known capacity in the counting chamber and cover slip. The cells thus spread out in single layer in this space and the number of cells can be count under low power of a microscope. The count can be calculated by multiplying with dilution factor and are reported as cells per cubic mm of blood.

44. What normal WBC count of blood per cubic millimeter.

Normal WBC count- 4000-10,000/cmm of blood

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45. What is leucopenia & leucocytosis.

- Leucopenia:- If total WBCs count is decrease below than 4000/cmm of blood
- Leucocytosis:- If total WBCs count is increase above than 10000/cmm of blood

46. Give some general characteristics of WBCs/leucocytes.

- Wandering cells which are nucleated and do not contain Hb.
- They are slightly bigger in size and less in number than RBCs
- Origin is extravacular
- Life span is too short, that is few hrs to few days

47. Enlist functions of WBCs.

- Phagocytosis
- Antibody formation
- Formation of fibroblast
- Liberation of histamine and allergic reactions
- Secretion of heparin
- Protection from antigens

48. What is leukemia? What are its types?

- Leukemia is malignant (cancerous) disease in which total WBCs count goes beyond 1,00,000/cmm. Premature cells are increased in large number in the blood These are functionless.
- Types of leukemia:-
 - Chronic leukemia
 - Acute leukemia
 - Myeiogenous leukemia
 - Lymphocytic leukemia

49. Give the reason why RBCs are not seen while counting WBCs.

 Because glacial acetic acid contain of WBCs dilution fluid destroys RBCS so RBCs are not seen while counting WBCs.

50. State the principle of RBC count.

Principle The number of WBCs in blood is too many and the size of the cells is too small. It is therefore, impossible to count the cells even under high power. This difficulty is partially overcome by diluting the blood with suitable dilution of known degree. The dilute blood is placed in capillary space of known capacity in the counting chamber and cover slip. The cells thus spread out in single layer in this space and the number of cells can be count under low power of a microscope. The count can be calculated by multiplying with dilution factor and are reported as cells per cubic mm of blood.

Sr. No.	Constituent	Amount	Purpose
1	Sodium chloride	1 gm	Provides isotonicity, & prevents hemolysis
2	Sodium sulphate	5.5 gm	Provides isotonicity, & prevents roulex formation
3	Mercuric chloride	0.5 gm	Causes fixation of the cells; prevent bacterial growth.
4	Water	Upto 100	Diluent
		ml	

Give composition	& purpose	of RBCs	dilution	fluid.
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51. Give the RBCs count of foetus, infants, child, adult male, adult female in per cmm of blood.

- Foetus:- 7-8 millions/cmm
- Infants:- 6-7 millions/cmm
- Child:- 7-8 millions/cmm
- Adult male:- 5 millions/cmm
- Adult female:- 4.5 millions/cmm

52. Why RBCs count is high in the people living at high altitude?

- Because at high altitude oxygen contain is less so RBCs count high.
- 53. Are RBCs form by cell division? Yes/No. Give reason.
 - No because RBCs does not consist nucleus.
- 54. State the process of formation of RBCs.
 - Erythropoiesis

55. Give general characteristics of RBCs.

- RBCs are circular, dumb bell shape, biconcave & non nucleated cell.
- Contain heamoglobin
- 7.2 in diameter, 2.2 in thickness

56. Where the RBCs are formed in foetus and adults.

- RBCs are formed in spleen and liver in embryo in fetus
- RBCs are formed in red bone marrow in adults

57. Explain the properties of RBCs.

- Haemolysis; RBCs in isotonic solution, swells and finally break to liberate haemoglobin
- Rouleaux formation;- It is the property of RBCs to come together over one another like pile of coin.
- Suspension stability:- Remains suspended in plasma as long as blood flowing
- Erythrocyte sedimentation rate
- **Agglutination:** RBCs contain specific antigens called agglutinogens, if expose to specific agglutinins, clumping of RBCs take place as Ag-Ab reaction called agglutination.

58. What is polycythemia? Give the reason of polycythemia.

• Increase in RBCs count is called polycythemia

Reason of polycythemia-

- Higher altitude
- During muscular exercise
- Increase temp. in environment
- Loss of body water
- Ingection of adrenaline

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- Carbon monoxide poisoning
- 59. What is microcytic and megaloblastic anemia?
 - Microcytic anemia;- In hypochromic anemia Hb is reduced and hence deficiency of iron due to which size of RBCs is reduced so t is called as microcytic anemia.
 - Megaloblastic anemia:- In hyperchromic anemia is due to defective RBCs formation. Size of RBCs is large so it is called as Megaloblastic anemia.



B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 60. Which stain is used for differential WBCs count? Give composition of that stain.

- Leishman's stain is used for differential WBCs count
- Composition:-
- **Methyl alcohol:** precipitates the protein which sticks to slide; thus it prevent loss film during washing
- Metylene blue: dye which stains nucleus of the cell to blue colour and also stain basophils
- Eosin: a dye which stains cytoplasm of the cell to pink and also stains neutrophils granules

61. Which lens is used for differential WBCs count under microscope?

Oil immersion lens

62. Name oil used in differential WBCs count

Cedarwood oil

63. Give the normal values of differential WBC count.

- Neutrophils :- 50 70 %
- Eosinophils :- 1-4%
- Basophils :- 0-1%
- Lymphocytes:- 20 30 %
- Monocytes :- 2 5 %

64. Differentiate between neutrophils and eosinophils

I] Have multiple lobes | I] Have bubble lobes

II] Purple colour with die

II] Red colour with die

65. What is ESR?

 Erythrocyte sedimentation rate is the settling of erythrocytes in plasma when allowed to stand.

66. Name the methods used to find ESR.

- Westegren's method
- Wintrobe's method

67. State the principle of ESR.

• **Principle** Erytrocytes of blood have a tendency to settle down because of their greater density than plasma and rouleaux formation. Thus the blood mixed with anti –coagulant, placed in a long vertical tube, the sedimentation of erythrocytes occurs leaving small clear plasma at the top in a vertical column in one hour.

68. State the clinical significances of ESR.

• Used to diagnosed various infections or diseases like- septicemia, pulmonary tuberculosis, anemia, jaundice, malignant tumor etc

69. Name the factors affecting on ESR sedimentation rate.

- Large protein molecule
- Globulin concentration
- Increase RBCs (polycythemia)
- Increase size of RBCs

70. Define osmosis, isotonic solution and paratonic solution .

- **Osmosis:** If two solution having different concentration of solute are separated by semipremiable membrane then molecules of solvent moves from the solution i.e lower concentration to that of higher concentration. This phenomenon is called osmosis.
- **Isotonic solution:** The solutions having same osmotic pressure are called isotonic solutions e.g. 0.9% NaCl is isotonic to protoplasm of RBCs.
- Paratonic solutions:- The concentration of solutions is different than that of isotonic solutions are called paratonic solutions
- If conc. less then called hypotonic and if more the called hypertonic solutions.

71. State the principle of effect of osmotic pressure on RBCs.

The cell membrane of RBCs behaves as semipermiable membrane between protoplasm of RBCs and plasma of blood in which they are suspended. If they are placed in hypotonic solution, the solvent penetrate into cell by process of osmosis. As result, the biconcave cell becomes spherical, enlarged and further increases leads rupture of cell (haemolysis). If placed in the hypertonic solution, they causes shrinking of RBC.

72. What is crenation point?

 When RBCs are kept in hypertonic solution RBCs shrinks and as a result cell membrane is wrinkled. This shape of RBC is called crenation.

73. What is fragility point?

 The ability of RBC to rupture and liberate haemoglobin called fragility. Fragility point is the point at which 50% of RBCs are ruptured.

74. Types of WBCs.

- Wbcs divide in two types:
- i. Granular Cells: a) Basophiles b) Eosinophil c) Neutrophil
- ii. Agranular Cells : a) Lymphocytes b) Monocytes

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 6: LYMPHATIC SYSTEM

1. **Define lymphatic system:**

• "Lymph is a thin, watery, clear, modified tissue fluid formed by the passage of substance from the blood capillaries into the tissue space (interstitial space) and enters in to the closed system of lymphatic capillaries to lymphatic vessels and lymphatic sinus known as lymphatic system."

2. Explain formation, composition and flow of lymph.

A) Formation:

- The blood consist manly two composition blood plasma and formed elements in which blood plasma freely filter through the capillary walls to interstitial space and known as interstitial fluid.
- Most of fluids get reabsorb by the blood capillaries but the excess or remain fluid enter in to the lymphatic vessels known as lymph.
- This excess fluid is about 3 liters/day and form lymph.

B) Composition:



C) Flow of lymph:

Arteries (Blood Plasma) --- Blood Capillaries (Blood Plasma) --- Interstitial Space (Interstitial Fluid) --- Lymphatic Capillaries (Lymph) --- Lymphatic Vessels (Lymph) --- Lymphatic Nodes (Lymph) --- lymphatic Trunks (Lymph) --- Lymphatic Ducts (Lymph) --- Subclavian Veins (Blood Plasma).

Lymphatic capillaries are not found in which part of the body,

- Avascular Tissue
- The Central Nervous System
- Splenic Pulp
- Bone Marrow

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 4. Enlist the lymphatic trunks present in to the body.

- The principle trunks are:
 - a) Lumber Trunks: Drains lymph from lower limbs, pelvis, kidneys, adrenal glands, abdominal walls.
 - b) Intestinal Trunk: Drain lymph from stomach, intestine, pancreas, spleen & part of lever.
 - c) Bronchomediastinal: Drain lymph from the thoracic wall, lungs and heart.
 - d) Subclavin trunk: Drain lymph from upper limbs.
 - e) Jugular Trunks: Drain lymph from head & neck.

5. Enlist the lymphatic duct present in to the body.

- Lymph passes from lymphatic trunks to two main lymphatic ducts;
 - a) Thoracic duct (Left Lymphatic Duct)
 - b) Right Lymphatic Duct

6. Classify the lymphatic organs.

Lymphatic organs are mainly classified in two types:

- i. Primary lymphatic organs
 - Red bone marrow and
 - Thymus gland.
- ii. Secondary lymphatic organs
 - Lymph nodes and
 - Spleen.

7. Where the B-Cell and T- Cell produce and matured a

- Bone marrow produce B Cell and Premature T Cell,
- B-Cell get matured in bone marrow
- Premature T-Cell migrate to thymus gland and matured in thymus gland so it is known as T-Cell

8. Explain the functions of lymph

- Fluid and Protein Balance:
- Transportation of Nutrients:
- Digestion of fats in GIT tract:
- Excretion of waste material from body
- Protections against the harmful bacteria and virus.

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 9. Define the following terms:

Antibodies:

• Chemicals produced by white blood cells to fight bacteria, viruses, and other foreign substances

Immunoblasts:

• Lymphocytes that becomes stimulated and enlarged when they encounter foreign substances

Interstitial fluid:

• Fluid that leaks out of capillaries (the tiniest blood vessels) and bathes body tissues

Lymph vessels:

• Channels or ducts that contain and convey lymph; also called lymphatics

Lymph:

• It is a fluid that bathes the body tissues, passes into lymphatic vessels, and is discharged into the blood by way of the thoracic duct; it consists of a liquid resembling blood plasma and contains white blood cells

Lymph nodes:

• Organized masses of lymphoid tissue that are distributed along the branching system of lymphatic vessels; they contain numerous lymphocytes and other cells that filter bacteria, dead tissue, and foreign matter from the lymph that flows through them

Lymphocytes:

• White blood cells (B- Cell & T- Cell)

Macrophages:

• White blood cells that remove damaged cells from the bloodstream spleen: organ found on the left side of the abdomen; it helps control the amount of blood and blood cells that circulate through the body and helps destroy damaged cells

Thoracic duct:

• Major lymphatic vessel, which begins near the lower part of the spine and collects lymph from the lower limbs, pelvis, abdomen, and lower chest; lymph flowing through the duct eventually empties into a large vein in the upper chest and returns to the bloodstream.

CHAPTER 7: CARDIOVASCULAR SYSTEM

1. Write brief anatomy of heart:

- Cone shaped heart is relatively small, about the same size of closed fist of person.
- It is 12 cm (5 in.) long, 9 cm (3.5 in.) wide and 6 cm (2.5 in.) thick.
- In an adult, average weight of heart is 300gm.
- The heart consist four chambers:
 - a) Two atria or atrium
 - **b**) Two ventricles
- It is located near to the middle of thoracic cavity in the mediastinum (the space between the lungs) and it rest on to the diaphragm.
- About two third of the mass of the heart lies to the left of the body's midline. Pointed end portion which is formed by the tip of left ventricle is known as apex and opposite to apex the wide superior and posterior margin is known as base.

2. **Enlist the layer of heart:**

3.



c) Endocardium (Inner layer):

The endocardium is an innermost, thin, smooth layer of epithelial tissue that lines the inner surface of the heart chambers and valves.

Classify the valve of heart: 4.



5. **Enlist the types of circulation through the heart:**

- i. Coronary circulation
- ii. Systemic circulation
- iii. Pulmonary circulation

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6. Write the path of conduction system via heart: SA-node→ AV-node→ AV bundle→ Right & Left Bundle braches→ Purkinje fibers

7. What is ECG? Give brief introduction of ECG

- ECG known as electrocardiogram.
- It has mainly three waves:
 - P Wave: Atrial depolarization
 - QRS Complex: Ventricle depolarization
 - T Wave: Ventricle repolarization

A typical ECG tracing of the cardiac cycle (heartbeat) consists of a P wave, a QRS complex, a T wave, and a U wave which is normally visible in 50 to 75% of ECGs. The baseline voltage of the electrocardiogram is known as the *isoelectric line*. Typically the isoelectric line is measured as the portion of the tracing following the T wave and preceding the next P wave.



8. Define cardiac cycle. Enlist the steps of cardiac cycle.

- Definition: A cardiac cycle include all the events associated within one heart beat"
- The normal heart beats in healthy adult is 75 beats/min and cardiac cycle last for 0.8 sec.
- i. Atrial systole Represent P wave
- ii. Ventricle systole Represent QRS complex
- iii. Ventricle systole Represent T wave

9. What is stoke volume?

The blood ejection per beat from each ventricle is known as stroke volume.

Stroke volume = EDV - ESV = 130 ml - 60 ml = 70 ml

10. What is isovolumetric contraction ?

For about 0.05 sec all four valve are closed which is known as isovolumetric contraction.

11. What is preload?

- The blood supply to the ventricle is often referred to as preload. Technically, the definition of preload is the volume or pressure in the ventricle at the end of diastole or refers as end-diastolic volume.
- 12. What is afterload ?

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• The resistance to the ejection of blood by the ventricle is called afterload.

13. Define pulse and pulse rate. State normal pulse rate.

- Pulse is the rhythmic wave of increased blood pressure propagated with each ventricular blood ejection at an increased velocity.
- Pulse rate means frequency of pulse per minute.
- Normal pulse rate 70-75 beats per minute

14. What is bradycardia and tachycardia?

- Bradycardia- abnormally decreased pulse rate per minute [less than 70-75 beat/min]
- Taxchycardia- abnormally increased pulse rate per minute [more than 70-75 beat/min]

15. Give the reason in infants pulse rate is high and in old pulse rate is low.

 Children are smaller, so it takes less time for blood to circle the body. Their heart beats faster to keep the cycle going.

16. Name the factors affects the pulse rate.

- Rate/ min
- Rhythm
- Volume
- Tension and force of the pulse
- Condition of the vessel wall

17. Give the significances of pulse rate.

- Pulse rate given information about.
- Rate/ min
- Rhythm
- Volume
- Tension and force of the pulse
- Condition of the vessel wall

18. Which types of sounds are appears in heart? And describe them.

- Two sounds may be heard due to passive closing of valves.
- **i.** Lubb;- Due to closing of atrio-ventricular valves from which backflow of blood contracting ventricles to the relaxing heart. This is long and dull systolic sound.
- ii. Dupp:- Due to closing off aortic and pulmonary valves. This sound is short and sharp.

19.

Which instrument is used to listening heart sound?

Stethoscopes

20. Define blood pressure. State normal value of BP.

- Blood pressure is the lateral pressure produce by the blood on the wall of blood vessels.
- Systolic blood pressure: It is maximum pressure during the systole of the heart.
- Diastolic blood pressure: It is minimum pressure during the systole of the heart.
- Normal value of BP:-90 mmHg 130 mmHg

21. Name the instrument is used to measure BP. Enlist part of that instrument.

- Sphygmomater is the instrument is used to measure BP
- Part of that Sphygmomater:- Mercury manometer
- Cuff
- Rubber pump with valve
- Rubber pump
- 22. Name the methods used to measure BP.
 - Palpitory method
 - Oscillatory method
 - Auscultatory method

23. What is hypertension? Give types of hypertension.

- Increased in blood pressure than the normal, that condition is called hypertension.
 - Types of hypertension:- Primary hypertension Second hypertension

24. Why systolic BP is high than diastolic BP.

BP depends upon two factors. Systolic blood pressure is mainly depending upon the cardiac output while diastolic BP depend on peripheral resistance. Both these factors increase systolic BP significantly. However, is not much alters diastolic pressure so systolic BP is high than diastolic BP.

25. Enlist factors affecting BP.

- Age: Increases with age
- Obesity: Generally associated with high BP
- Climate:- BP is higher in cold climate than hot climate
- Exercise & emotions: Increases systolic BP
- Food intake: May increases BP
- During pregnancy: May increases BP
- Gravity; Higher in standing position, lower in lying and intermediate in the sitting position

26. What is ECG?

- Graphical records of electric changes occurring during the cardiac cycle of the heart is known as electrocardiogram (ECG or EKG)
- 27. Name the instrument used to measure ECG.
 - The instrument used to record ECG is known as electrocardiograph
- 28. Name the waves observed in ECG. Explain it.

Sr.	Name of the	Potential	Time	Indication	Clinical significance
No.	wave	(mV)	(sec)		
10.	P-wave	0.02	0.08	Atrial depolarization	Enlargement of atria
11.	QRS complex	1.8	0.06	Ventricular	Myocardial infarction
				depolarization	Enlargement of ventricles
12.	T-wave	0.4	0.12	Ventricular repolarization	Coronary artery diseases
				7	(CAD), hyperkalemia
13.	P-Q interval	-	0.12-	Indicates the conduction	CAD, arrhythmia
			0.2	of impulse from SA node	
				to AV node	
14.	ST segment	-	0.12	Time when ventricles	Myocardial infraction
				contracts	
15.	Q-T interval			Time between ventricular	Myocardial damage,
				depolarization to	myocardial ischemia
				ventricular repolarization	

CHAPTER 8: RESPIRATORY SYSTEM

1. Explain the pattern of respiration.

- i. Pulmonary ventilation: Exchange of gases between environment and lungs
- ii. External respiration: Exchange of gases between lungs and blood
- iii. Internal respiration: exchange of gases between blood and cells

2. Name the organs of respiratory system.

Organs of Respiratory System:

- Nose
- pharynx
- larynx
- trachea
- primary bronchi
- lungs: Bronchioles, alveoli/respiratory membrane

3. Enlist the parts of pharynx.

- i. Nasopharynx
- ii. Oropharynx
- iii. Laryngopharyx

4. Nasopharynx consist how much opening.

Nasopharynx consist 5 opening in its wall.

- i. Two opening of internal nares
- ii. Two opening of auditory tubes (Eustachian Tube)
- iii. One opening of oropharynx

5. State the functions of respiratory system.

- The functions of the respiratory system include
 - Gas exchange,
 - Acid-base balance,
 - iii. Phonation [the production or utterance of speech sounds],
 - iv. Pulmonary defense and metabolism.

6. Name the 9 cartilages of larynx

11

- The laryngeal skeleton is nine cartilages:
 - **3 Unpaired Cartilages:-**thyroid **cartilage**, cricoid **cartilage**, epiglottis,
 - **3 Paired Cartilages:-** arytenoid **cartilages**, corniculate **cartilages**, & cuneiform **cartilages**

7. State reason the voice box of women is high pitched as compared to men

- The pitch of a sound is determined by its frequency. The higher the pitch higher the voice.
- As the sounds produced by vocal cords of women are higher than men so women have shriller voices than men.
- Because their vocal cord is of smaller size.

8. How many lobes are present in each lung?

- Right side 3 lobes
- Left side- 2 lobes

9. Differentiate between right lung and left lung.

	Right lung	Left lung
length	Shorter.	Longer.
width	Wider.	Narrower.
lobes	3 (upper, middle and lower).	2 (upper and lower).
fissures	oblique, horizontal.	Oblique.
cardiac notch	absent.	present.
Lingula	absent.	present.

10. Each minute adult human doing how many number of respiration?

• Healthy adult doing 12 respiration in each minute.

11. What is tidal volume?

• Air breath in one respiration is known as tidal volume i.e 500 mL

12. What is total lungs volume/minute volume capacity of lungs?

Healthy adult can do 12 respiration in a minute and take 6 liters of air in and out is known as lungs volume capacity.

Calculation:

Tidal Volume: 500 mL

Inspiratory Reserve Volume (IRV) = 3100 mL (Tidal volume + IRV known as Inspiratory Capacity = 3600 mL)

Expiratory Reserve Volume (ERV) = 1200 mL Residual Volume = 1200 mL (ERV + Residual Volume known as Functional Residual Capacity = 2400 mL)

Vital Capacity = Sum of IRV + Tidal Volume + ERV

```
= 3100 \text{mL} + 500 \text{mL} + 1200 \text{mL} = 4800 \text{mL}
```

Total Lungs capacity = sum of Tidal Volume + IRV + ERV + Residual Volume

= 500 mL + 3100 mL + 1200 mL + 1200 mL

= 6000 mL = 6 L

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 9: URINARY SYSTEM

1. State the 3 functions of kidney

The 7 functions of the kidneys: <u>A WET BED</u>

- A Acid-base balance.
- W Water balance.
- E Electrolyte balance.
- T Toxins and waste products removal from the body.
- B Blood pressure control.
- E Erythropoietin hormone production for RBCs synthesis.
- D Vitamin D3 formation calcitriol.
- 2. State the reason the right kidney is slightly below than the position of left kidney.
 - In humans, the kidneys are located in the abdominal cavity. The right kidney is placed at a slightly lower level than the left kidney in order to accommodate the largest gland/organ of the body, the liver.

3. Layer of kidney

- i. Renal Capsul
- ii. Adipose capsule
- iii. Renal facia

4. Introduction of kidney

- The paired kidneys are reddish (purplish-brown organs) in color and it is bean shaped.
- They are located just above the waist between the peritoneum and posterior wall of the abdominal cavity so it is also known as retroperitoneal organs.
- It is located at the level of last thoracic and third vertebrae as well as it is partially protected by the eleventh and twelfth pair of ribs.
- Right kidney is slightly lower than the left kidney because right lobes of the kidney occupied more space than the left lobes.
- Adult kidney is 9-12 cm long, 6-9 cm wide and 3 cm thick.
- Each kidney weighs about 125–175 g in males and 115–155 g in females.
- The medial surface of the kidney is concave with a deep vertical fissure known as hilum through which ureters leaves kidney as well as blood, lymphatic vessels and nerves exit and entre the kidney through the renal hilus.

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 5 Histology and path of urine



B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 9. State the normal capacity of urinary bladder.

• The normal capacity of the bladder is 400-600 mL.

10. Give the 2 functions urinary bladder.

- Stores urine,
- Allowing urination to be infrequent and controlled.

11. Name the 2 internal portion of the kidney.

- Cortex & Medulla
- 12. Name the 3 general processes involve in the urine formation.
 - Glomerular filtration
 - Renal reabsorbtion
 - Renal secretion

13. Where the tubular secretion does takes place?

- Tubular secretion occurs in the proximal part of the nephron and the descending limb of the loop of Henle.
- 14. What effect does ADH has on urine volume or concentration?
 - Decreases urine volume and increases urine concentration

15. What is net filtration pressure?

The net filtration pressure (NFP) is mainly describe by following three mechanism, in which one process promote the filtration and two oppose the filtration process.

• Glomerular Blood Hydrostatic Pressure (GBHP):

Afferent arteries have the larger diameter and efferent arteries have smaller diameter so large amount of blood comes into the glomerulus and small amount of blood out from the glomerulus it create pressure into the glomerulus that is 55 MmHg. Which is positive and it promote the filtration.

• Capsular Hydrostatic Pressure (CHP):

- The wall of the capsule where there is no pores as well as the fluid filled into the capsule oppose the filtrate for filtration. This is the negative pressure which oppose the filtration rate that is 15 MmHg.
- Blood Colloidal Osmotic Pressure (BCOP):
- Some of the protein of blood plasma cannot pass through the endothelial capsular membrane and it block the pore for filtration site, so it oppose the filtration rate and the pressure created by this oppose is 30 MmHg which is also the negative pressure.

NET FILTRATION PRESSURE (NFP) = GBHP - CHP - BCOP = 55 mm Hg - 15 mm Hg - 30 mm Hg = 10 mm Hg

- **16.** Each kidney consist how many number of nephron. Each kidney consist 1 million number of nephron
- **17.** State how much amount of urine is filtered in each day.

180 L

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 10: MUSCULAR SYSTEM

1. Classify the muscular system.

Muscular system is classified in to three types

- a) Skeletal muscles
- b) Cardiac muscles
- c) Smooth muscle

2. Explain the functions of skeletal muscles.

- Movement of the body
- Body heat production
- Posture and Support of body

3. Give brief introduction about skeletal muscle fiber

- a) Sarcolemma: Cell membrane of the muscle fiber
- b) Sacoplasmic reticulum: It is a network of membranous channels that extends through the cytoplasm of the cell
- c) Sarcoplasm: The cytoplasm of the fiber
- d) **T tubules** (transverse tubules): It is a system of tubules that run perpendicular to the sarcoplasmic reticulum.
- e) Myofibrils:
 - It is a contractile element of the skeletal muscles.
 - They are 1-2 μm in diameter and contain three smaller structures which are known as myofilament:
 - i) Thin filament
 - ii) Thick filament
 - iii) Elastic filament

4. Give brief introduction about the structure of myofibril.

- Inside the myofibril, the filament is not extent the entire length of muscles fiber but it
 produce compartment known as sarcomeres which are the basic functional units of
 straight muscles fiber.
- Between two filaments narrow plate shaped regions of dense material is known as Zdisc which separate one sarcomere to next.
- Within the sarcomere is a dark area called A-band, it consist the thick filament overlap by thin filaments.
- Lighter and less dense area are called the I-band, it consist only thin filament.
- In the centre of each A-band consist only thick filament so it is known as H-band.
- Each H-band is centrally divided by M-line.
- The Z-disc passes from the centre of each I-band.
- The thick filament is made up by myosin protein and thin filament is made up by actin protein, tropomyosin and troponin.
- Myosin proteins look like as two golf clubs twisted together or head and tail like portion.
- Actin has myosin binding side where myosin head are attached during the contraction and relaxation process.

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 11: NERVOUS SYSTEM

CENTRAL NERVOUS SYSTEM

1. Brain consist how many number of neurons ?

- Brain consist 100 billion neurons
- 2. Brain consist how many numbers of neuroglia ?
 - Brain consist 1000 billion neuroglia

3. Classify the parts of brain.

Brain mainly divided into four parts:

- 1. **Brain Stem:** It is the superior portion and continuous with the spinal cord consist medulla oblongata, pons and midbrain.
- 2. Cerebellum: It located posterior to the brain stem.
- 3. **Diencephalon:** It is located superior to the brain stem. It consist thalamus, epithalamus, subthalamus, hypothalamus and pineal gland.
- 4. **Cerebrum:** It look like cap of mushroom. It occupies the most of the part of cranium and it is divided into right and left halves known as cerebral hemispheres.
- 4. According to embryonic development brain divided in how many number of primary vesicles?

According to the embryonic development brain is divided mainly into the three parts at the third weeks of embryonic development which is also known as primary brain vesicles:

- 1. Prosencephalon Forebrain
- 2. Mesencephalon Midbrain
- 3. Rhombencephalon Hindbrain
- 5. According to embryonic development brain divided in how many number of secondary vesicles?

During the further development of the embryo primary vesicles is divided and form secondary vesicles at the 5th weeks of embryonic development.

- Procencephalon develop telencephalon and diencephalon
- Mesencephalon develop midbrain
- Rhombencephalon develop metencephalon and Myelencephalon

6. At the final stage of embryonic development how the brain form from the secondary vesicles?

At the final stage of embryonic development:

- Telencephalon forms cerebrum
- Diencephalon forms epithalamus, hypothalamus, subthalamus, thalamus and pineal gland
- Metencephalon forms pons and cerebellum
- Myelencephalon forms medulla oblongata

7. Who protect the brain?

• Cranial bones and cranial meninges mainly protect the brain.

8. Entire nervous system consist how much amount of Cerebrospinal Fluid (CSF)?

The entire central nervous system contains between 80 – 150 mL of CSF, and about 500 mL is generated every day.

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9. Explain the composition of CSF

Compositions of cerebrospinal fluid:



Substance	Plasma	CSF
Na ⁺ (mEq/l)	145.0	150.0
K ⁺	4.8	2.9
Ca ⁺⁺	5.2	2.3
Mg ⁺⁺	1.7	2.3
Cl	108.0	130.0
HCO ₃ -	27.4	21.0
Lactate	7.9	2.6
PO ₄	1.8	0.5
Protein	7000.0	20.0
Glucose	95.0	60.0
(protein and glucose expressed as mg/100 ml)		

Composition of CSF

10. Explain the function of cerebrospinal fluid.

Functions of cerebrospinal fluid (CSF):

- 1. Mechanical Protection:
 - Cerebrospinal fluid absorb the shock and protect the delicate tissue of the brain and spinal cord.
 - It also act as a lubricating fluid and reduce the friction during the movement.
- 2. Chemical Protection:
 - It maintain the electrolytes and chemical balance which is required for regulation of post synaptic potential and action potential.
- 3. Provide nutrients:
 - It provide the essential nutrient through the circulation in brain and spinal cord.
- 4. Provide immunity:
 - It consist some amount of the WBCs which can fight against the harmful bacteria and virus.
- 5. Remove the toxin:

• CSFs remove the metabolites, waste products and toxin from the brain and spinal cord through the circulation.

11. Name the site of CSF production in the brain.

CSF is produced mainly by a structure called the choroid plexus in the lateral, third and fourth ventricles. CSF flows from the lateral ventricle to the third ventricle through the interventricular foramen

12. Give the name of the ventricles present in the forebrain.

• The ventricular system is composed of 2 lateral ventricles, the third ventricle, the cerebral aqueduct, and the fourth ventricle

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 13. Enlist cranial nerves and their functions.

Number	Name	Function	
I	Olfactory	Sense of smell	
п	Optic	Vision	
III	Oculomotor	Motor control of some eye muscles and eyelid	
IV	Trochlear	Motor control of some eye muscles	
v	Trigeminal	Chewing muscles and some facial sensation	
VI	Abducent	Motor control of some eye muscles	
VII	Facial	Motor control of facial muscles, salivation. Taste and cutaneous sensations.	
VIII	Acoustic	Equilibration, static sense and hearing	
IX	Glossopharyngeal	Salivation, sensations of skin, taste and viscera	
х	Vagus	Motor control of the heart and viscera, sensation from the thorax, pharynx and abdominal viscera	
XI	Accessory	Motor impulses to the pharynx and shoulder	
XII	Hypoglossal	Motor control of the tongue, some skeletal muscles, some viscera, sensation from skin and viscera	

14. Give the important function of hypothalamus.

- Body Temperature
- Thirst
- Appetite And Weight Control
- Emotions
- Sleep Cycles
- Sex Drive
- Childbirth
- Blood Pressure And Heart Rate
- Production Of Digestive Juices
- Balancing Bodily Fluids

15. State the position of gray and white matter in the medulla oblongata and cerebrum.

• In the cerebral hemisphere, there is an outer "rind" of gray matter and deep to that is white matter with a few scattered islands of gray matter.

16. Which part of the brain is the largest part?

• The cerebrum is the largest and most highly developed part of the human brain.

17. Give the name of 5 lobes of brain.

Each cerebral hemisphere is divided into five lobes, four of which have the same name as the bone over them: the frontal lobe, the parietal lobe, the occipital lobe, and the temporal lobe. A fifth lobe, the insula or Island of Reil, lies deep within the lateral sulcus.

18. Enlist spinal nerves.

• 31 pairs: 8 cervical, 12 thoracic, 5 lumbar, 5 sacral, and 1 coccygeal.

19. Enlist protective layers of spinal cord.

• The meninges refer to the membranous coverings of the brain and spinal cord. There are three layers of meninges, known as the dura mater, arachnoid mater and pia mater.

20. State the position of gray and white matter in the spinal cord.

Outer white matter and inner grey matter

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE PERIPHERAL AND AUTONOMIC NERVOUS SYSTEM

21. Give brief introduction about autonomic nervous system (ANS)

• It is the part of nervous system that deals with the involuntary movements. It is also known as visceral nervous systems. It works under the conscious and unconscious conditions and maintain the involuntary functions. It control automatically, pumping of blood, beating of heart, contraction of blood vessel, lungs and GI tract, secretion of saliva, lacrimal fluid etc....

22. Write subdivision of ANS:

- Parasympathetic Nervous System (Cholinergic Nervous System)
- Sympathetic Nervous Systems (Adrenergic Nervous System)
- 23. Classify the receptors of parasympathetic system.



24. Name the neurotransmitter of parasympathetic nervous system.

- Parasympathetic nervous system consist Acetylcholine as a neurotransmitter in ganglionic as well as neuroeffector junction.
- 25. Write the effects of Ach on various organ according to location of receptors.

M₁ receptors:

Location		Function
Autonomic ganglion/junction (Junction – I)		Activation of post ganglionic neuron/fiber
M ₂ receptors:		
Location Function	Function	
Heart Decrease	Decrease force of contraction (Negative Inotropic)	
Decrease	heart rate (Negativ	ve Chronotropic)
Decrease	conduction (Nega	tive dromotropic)
M ₃ receptors:		O Y
Location	Function	N.
GI smooth muscle	Contraction of C	GI smooth muscle
Bronchial smooth muscle	Contraction of bronchial smooth muscle (Lungs contraction)	
Urinary tract	Contract detrusor – urinary bladder muscle which relax trigon of	
	urinary bladder and produce micturition.	
Salivary secretion	Increase secretion of saliva	
Lacrimal secretion	Increase secretion of tear/lachrymal fluid	
Gastric secretion	Increase secretion	on of HCl in GI tract
EyeProduce meiosis (Contraction of pupils)		s (Contraction of pupils)
	Iris consist two	types of smooth muscles 1) Sphincter pupillae 2)
	Dilator pupillae	e (Radial Muscle). Contraction of sphincter
	pupillae constri	ct pupil known as meiosis and contraction of
	dilator pupillae	produce dilation of pupil known as mydriasis.

N_N receptors:

Location	Function	
Autonomic ganglion/junction (Junction – I)	Activation of post ganglionic neuron/fiber	

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B.PHARM SEM – II PRACTICAL VIVA AND	SYNOPSIS SHORT QUESTION SAMPLE
Adrenal medulla	Release of adrenalin and some nor adrenalin
CNS	Complex undefined action but inhibitory

N_M receptors:

Q1

Location	Function
Neuromuscular Junction	Contraction of skeletal muscle

26. Explain the neurotransmitters of sympathetic nervous system

. Sympathetic nervous system consist two neurotransmitters, in autonomic ganglia it consist Acetylcholine as neurotransmitter and Adrenalin on neuroeffector junctions.

β₂ζ

Classify the receptors present in sympathetic nervous system 27.



Explain the action of adrenaline or nor adrenaline on sympathetic systemaccording 28. to location of receptors. C.r . •

11 receptors:	\sim		
Location	Function		A
Blood vessels	Produce vasoc	onstriction	N N
Iris	It contract radi	al muscles and dilate the pu	ıpil known as mydriasis
GI tract	Contract the G	I sphincter and relax the the	e GI muscle
Urinary bladder	Contract the trigon and relax the urinary bladder		
Glands	Increase the se	cretion of glands	
Uterus	It produce cont	traction in nonpregnant uter	rus •
Heart	Weak action of	n heart	
Male sex organ	Penile erection	and ejaculation	4
Skin	Contraction of	pilomotor muscles.	
2 receptors:			
Location	Functio	on R	
Presynaptic nerve ending	It reduc	e release of noradrenalin	

α ₂ receptors:	
Location	Function
Presynaptic nerve ending	It reduce release of noradrenalin
Blood vessels	Produce constriction of blood vessels
CNS	Reduction in central sympathetic flow due to decrease of
	Noradrenalin level ~
Pancreas	Reduce insulin level so increase blood sugar level
Platelets	Aggregate platelets
GI muscle	Relaxation of GI muscle
	\sim

β1 receptors:

Location	Function
Heart	Increase force of contraction (Positive Inotropic)
	Increase heart rate (Positive Chronotropic)
	Increase conduction (Positive dromotropic)
Kidney	Release of renin, so renin activate angiotensinogen I which convert in
	angiotensinogen II by the help of angiotensinogen converting enzyme (ACE)
	and activate the aldosterone. Which retain the Na ⁺ and water and increase
	the blood volume as well as angiotensinogen act on AT-I and AT-II receptor
	and contract the blood vessels.

II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE
Function
Dilation of blood vessels
Dilation of bronchial smooth muscles and lungs
Relaxation of GI muscle
Relaxation of detrusor produce relaxation in urinary bladder (contract the
trigon)
Produce glycogenolysis means conversion of glycogen to glucose and
increase blood sugar level
Increase glucagon secretion which increase blood sugar level
Lipolysis (Break down of fats)
Produce relaxation in pregnant uterus

 β_3 receptors: Role and functions of β_3 receptors are not clearly defined.

L

29. Differentiate between parasympathetic and sympathetic nervous system.

Sympathetic and Parasympathetic Effects			
Structure	Sympathetic	Parasympathetic	
Eye (pupil)	Dilation	Constriction	
Nasal Mucosa	Mucus reduction	Mucus increased	
Salivary Gland	Saliva reduction	Saliva increased	
Heart	Rate increased	Rate decreased	
Arteries	Constriction	Dilation	
Lung	Bronchial muscle relaxation	Bronchial muscle contraction	
Gastrointestinal Tract	Decreased motility	Increased motility	
Liver	Conversion of glycogen to glucose increased	Glycogen synthesis	
Kidney	Decreased urine	Increased urine	
Bladder	Contraction of sphincter	Relaxation of sphincter	
Sweat Glands	↑Sweating	No change	
Neurotransmitter Neurotransmitter – I is acetylcholine and Neurotransmitter – II is Adrenalin Acetylcholine			
Preganglionic fiber S	Short Long		
Postganglionic fiber I	Long	Short	

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 12 SENSE ORGAN

1. Enlist parts of the ear.

The parts of the ear include:

- 1. External or outer ear, consisting of:
 - Pinna or auricle and External auditory canal or tube
- 2. Tympanic membrane middle ear (tympanic cavity), consisting of:
 - Ossicles -Malleus, Incus and Stapes
 - Eustachian
- 3. Inner ear, consisting of:
 - Cochlea (contains the nerves for hearing)
 - Vestibule (contains receptors for balance)
 - Semicircular canals (contain receptors for balance)

2. Name the nerve supply to ear

• Vestibularcochear nerve [VIIIth auditory nerve]

3. Enlist the bons of middle ear

- Malleus
- Incus
- Stapes
- 4. Which is the smallest bone of the body.
 - Stapes is the smallest bone of the body

5. Name the fluid present in ear.

• The cochlear canals contain two types of fluid: perilymph and endolymph. Perilymph has a similar ionic composition as extracellular fluid found elsewhere in the body and fills the scalae tympani and vestibuli. Endolymph, found inside the cochlear duct (scala media), has a unique composition not found elsewhere in the

body.

6. Which is the organ of the sense of sight?

• Eye

7. Enlist the layers of tissues in wall of the eye.

- The Fibrous Tunic,
- The Vascular Tunic, And
- The Nervous Tunic

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 8. State the functions of parts of eyeball

Cornea	The clear front window of the eye. The cornea transmits and focuses light into the eye.
Iris	The colored part of the eye. The iris helps regulate the amount of light that enters the eye.
Lens	The transparent structure inside the eye that focuses light rays onto the retina.
Macula	A small area in the retina that contains special light-sensitive cells. The macula allows us
	to see fine details clearly.
Optic	The nerve that connects the eye to the brain. The optic nerve carries the impulses formed
Nerve	by the retina to the brain, which interprets them as images.
Pupil	The dark center in the middle of the iris. The pupil determines how much light is let into
	the eye. It changes sizes to accommodate for the amount of light that is available.
Retina	The nerve layer that lines the back of the eye. The retina senses light and creates impulses
	that are sent through the optic nerve to the brain.
Vitreous	The clear, jelly-like substance that fills the middle of the eye.

9. Name the fluid present in the eye,

• Aqueous humor & vitreous fluid

10. State the difference between rods and cones.

	Rod Cells	Cone Cells
Location in retina	Found around periphery	Found around centre (fovea)
Optimal light conditions	Dim light ('night' vision)	Bright light ('day' vision)
Visual acuity	Low resolution (many rods : one bipolar cell)	High resolution (one cone : one bipolar cell)
Colour sensitivity	All wavelengths	Certain wavelengths (red, green, blue)
Type of vision	Achromatic (black and white)	Colour
Number of types	One (all contain rhodopsin)	Three different iodopsin pigments
Relative abundance	Many	Fewer

11. Give name and location of suspensory ligaments.

• **Suspensory ligament** of lens - a series of fibers that connect the ciliary body of the **eye** with the lens, holding it in place. Upper eyelid - top, movable, superior fold of skin that covers the front of the eyeball when closed, including the cornea.

12. Which nerve supplies to eye?



• Optic nerve [Cranial nerve II]

13. What is the meaning of gustatory sensation?

• The gustatory system is the sensory system responsible for the perception of taste and flavour.

14. Give short introduction of gustatory sensation.

• The tongue is covered with thousands of small bumps called papillae, which are visible to the naked eye.Within each papilla are hundreds of taste buds.

- The exception to this is the filiform papillae that do not contain taste buds.
- There are between 2000 and 5000 taste buds that are located on the back and front of the tongue. Others are located on the roof, sides and back of the mouth, and in the throat.
- Each taste bud contains 50 to 100 taste receptor cells.

15. Explain the site of various kind of taste on tongue.



16. Describe the hypodermis. Is it part of the skin?

Yes, it's part of the skin. The hypodermis is the innermost and thickest layer of the skin. It cushions the body and helps regulate skin and body temperature.

17. Describe the composition of the epidermis.

• The epidermis is made up of Stratified Squamous Epithelium.

18. Name two types of sweat glands and differentiate between the two.

Eccrine and Apocrine sweat glands.

- The apocrine glands are slightly larger and produce a thicker and more odorous sweat.
- The eccrine glands are located over almost the entire body,
- the apocrine glands are located mainly in the armpits, genital area, and around the nipples
- **19.** What are mammary glands and what is their function?
 - It's a modified sweat gland that is highly specialized for milk production.
- 20. What are ceruminous glands and what is their function?
 - Another type of modified sweat gland that protects against insects by producing a bitter waxy antibacterial secretion.
- 21. What are sebaceous glands, where are they found, and what is their function?
 - Connected to hair follicles; located in the dermis. Most secrete directly into follicles but some directly onto the skin. Their gland shape differs depending on location. Function is to secrete oil.

22. Explain the layer of skin.

The skin is composed of two main layers:

- a) the epidermis, made of closely packed epithelial cells, and
- **b**) the dermis, made of dense, irregular connective tissue that houses blood vessels, hair follicles, sweat glands, and other structures.
 - Beneath the dermis lies the hypodermis, which is composed mainly of loose connective and fatty tissues.

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 13: DIGESTIVE SYSTEM

16. What is digestive system

• Digestive system consisting digestive organs the collectively performs the mastication, digestion, absorption, ejection that constitute digestive system.

17. Define digestion.

• The breakdown of the large and complex molecules into smaller and simpler molecules with the effects of enzymes is called as digestion.

18. Enlist the parts and the accessory digestive organs of digestive system with their functions.

Sr.	Organ	Secretion	Enzyme/	Act on	Function		
No.			chemical	substance			
1.	Mouth/ Oral c	avity:	Q-i				
	Lips		R	C	Gate if digestive system		
	Teeth				Cutting, tearing, crushing &		
					grinding of food		
	Salivary	Saliva	Ptyline	Carbohydrates	Make food moist, smooth &		
	glands				palatable		
		1		<u> </u>	Digestion of carbohydrates		
	Tongue	A		$O_{\mathcal{L}}$	Taste, mastication, deglutition, speech & moistening		
2.	Pharynx	7	0		Transport of food, air, production		
		\sim		ナ	of voice		
3.	Oesophagus 🔨	mucus			Transmission of food to stomach		
	~				by peristalsis		
4.	Stomach 🔨	Gastric	Pepsin,	Emulsified fats	Digestion of fat, protein,		
		juice	HCl,		coagulation of milk		
			Renin				
5.	Duodenum				Absorption of water, alcohol,		
		D'1	4 11 11		saline, glucose.		
6.	Liver & gall	Bile	Alkaline	Fats Q.Y	Emulsification of fats		
	bladder		salts	N	Changes of ph to alkaline		
7	Detrovers	Domonosti	Turunain	Dentence Foto	Excretion		
/.	Pancieas		Steensin	Pepiones, Fais,	protein and foto		
		c juice	Amylase	Disacchanues	protein, and fats.		
8.	Small	Intestinal	Erepsin.	Polypeptide.	Digestion of proteins, lipids and		
N	intestine	juice	Maltase,	maltose, sucrose,	carbon		
		5	lactase,	fats, lactose	Abosorption.		
			surcease		-		
			lipase				
9.	Large	Mucus	mucus	Microbial	Absorption of amino acids, water,		
	intestine			organism act on	vitamins		
				undigested food			
10.	Rectum				Reservoir of faeces		
11.	Anus				Defecation		

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE 19. Give composition of gastric juice.

• Dil. HCl, mucus and enzymes rennin, pepsin, gastric lipase, intrinsic factors.

20. Name the enzymes present in pancreatic juice.

• Trypsin (act on peptones), steapsin (act on fats), amylase (act on disaccharides).

21. Name the 4 layers of small intestine.

- Serosa
- Muscularis
- Submucosa
- Mucosa

22. Give four function of liver

- Carbohydrate metabolism- gluconeogensis, glycogenolysis, glycogenesis
- Lipid metabolism
- Protein metabolism
- Synthesis og bile salts, coagulation factors
- Break down of heamoglobin

23. Name the different parts of large intestine.

- Cecum
- Colon
- Acending colon

24. Histology of stomach

Trasnverse colon Desendging colon Sigmoidal colon

Muscularis mucosa

Lamina propia

Epithelial

GASTRIC MUCOSA	CELL TYPES	SUBSTANCE SECRETED	STIMULUS FOR RELEASE	FUNCTION OF SECRETION
CALLAN - CALLAN	Mucous	Mucus	Tonic secretion; with irritation of mucosa	Physical barrier between lumen and epithelium
	neck cell	Bicarbonate	Secreted with mucus	Buffers gastric acid to prevent damage to epithelium
	- Parietal	Gastric acid (HCI)	Acetylcholine,	Activates pepsin; kills bacteria
	cells	Intrinsic factor	gastrin, histamine	Complexes with vitamin B ₁₂ to permit absorption
TRA	Enterochromaffin- like cell	Histamine	Acetylcholine, gastrin	Stimulates gastric acid secretion
	Chief cells	Pepsin(ogen)	Acetylcholine, acid	Digests proteins
		Gastric lipase	secretion	Digests fats
唐雷	D cells	Somatostatin	Acid in the stomach	Inhibits gastric acid secretion
	G cells	Gastrin	Acetylcholine, peptides, and amino acids	Stimulates gastric acid secretion

25. Daily secretion of GIT fluid Daily Secretion of Intestinal Juices

	Daily Volume (ml)	pH
Saliva	1000	6.0-7.0
Gastric secretion	1500	1.0-3.5
Pancreatic secretion	1000	8.0-8.3
Bile	1000	7.8
Small intestine secretion	1800	7.5-8.0
Brunner's gland secretion	200	8.0-8.9
Large intestinal secretion	200	7.5-8.0
Total	6700	

CHAPTER 14: ENDOCRINE SYSTEM

5. What is hormone?

- Hormones are the chemical messengers which are secreted by the ductless glands called endocrine glands.
- These glands are controlled by the endocrine system.
- Hormones are released by specialized cells of the endocrine glands and act on distantly located target cells. A single hormone can contribute many functions and sometimes many hormones can perform a single function.

6. Introduce endocrine gland

- Endocrine glands are called ductless glands.
- They secrete their products directly into the bloodstreams and circulate in the body.

7. Hypothalamus and thalamus are the endocrine gland?

 Hypothalamus and thymus are not classified as an endocrine gland, but included in the endocrine system as they involve in the secretion of hormones.

8. Chemically hormone is divided in how many types?

 Chemically, hormone can be divided into two categories, i.e., lipid soluble and water soluble hormones.

9. What is the precursor of steroid hormone?

 Cholesterol acts as a precursor of steroid hormone. DHEA is a natural steroid hormone which is synthesized from cholesterol.

10. Name the fat soluble hormone.

Thyroid is a lipid soluble hormone while amine, peptide, and protein hormones are water soluble, ranging from size 3 to over 200 amino acids.

11. Which hormone is synthesized from histidine amino acid?

 Epinephrine, norepinephrine, and dopamine are amine hormones, which are synthesized by modifying amino acid tyrosine.

12. Name the protein hormone.

 Insulin and human growth hormones are protein hormone while oxytocin and antidiuretic hormones are peptide hormones. TSH or thyroid stimulating hormone has carbohydrate attached to the protein so it comes under glycoprotein hormone.

13. Which gland release neurohormone?

- Hypothalamus release the neurohormone.
- Neurohormone are those which changes their function according to their requirements like they can be releasing hormones or inhibiting hormone.

14. Name the hormone which takes part in the release of FSH and LH from the anterior pituitary.

 GnRH is Gonadotropin Releasing Hormone, which is responsible for the release of follicle stimulating hormone (FSH), and luteinizing hormone (LH).

15. Which hormone is Growth hormone inhibiting hormone?

- Somatostatin works against the growth hormone (GHRH), so it is known as growth inhibiting hormone.
- It consists of two peptides of 14 and 28 amino acids and is released from neurosecretory nerves.

16. What is the effect of dopamine hormone?

- Dopamine is prolactin inhibiting hormone (PIH), which inhibit the release of prolactin from the anterior pituitary.
- It also functions as a neurotransmitter

17. Which hormone is release by posterior pituitary gland?

 Oxytocin and vasopressin are released by the posterior pituitary. Posterior pituitary does not synthesize hormones, but it can store and release these two hormones.

B.PHARM SEM – II PRACTICAL VIVA AND SYNOPSIS SHORT QUESTION SAMPLE CHAPTER 15: REPRODUCTIVE SYSTEM

1. Define reproductive system.

- The reproductive system or genital system is a system of organs within an organism which work together for the purpose of reproduction.
- Reproduction is the process by which new individuals of species are produced via which genetic material pass from generation to generation.

2. Enlist the organs of male reproductive system.

Penis, scrotum, testes, epididymis, vas deferens, prostate, and seminal vesicles.

3. Which muscles produce wrinkle like structure on scrotum.

Dartos muscles

4. Which cell produce sperm in male reproductive system.

 Seminiferous tubule consist spermatogenic cell is taking part in the production of sperm cell, the process is known as spermatogenesis.

5. How many number of sperm produce by healthy male in each day.

• Each day healthy male produce 300 million sperm

6. Explain the types of urethra in male reproductive system.

There are three types of urethra in male reproductive system

- **The prostate urethra:** 2 3 cm long, passage from prostate gland.
- The membranous urethra: 1 cm in length
- Spongy urethra: 15-20 cm long.

7. What is the Ph of semen?

Ph of semen is alkaline that is 7.2 to 7.7

8. Enlist the accessory sex gland of male reproductive system

Male reproductive system consistelow accessory sex glands

- Seminical vesicles
- Prostate gland and
- Bulbourethral gland

9. What is the meaning of infertile male ?

 Normally semen consist 50 to 150 million number of sperm per mL of semen but when the sperm count decrease below the 20 million per mL in sperm that male is known as infertile male.

10. What is the difference between infertile and impotent male?

- Infertile male have less number of sperm but penis erection is normal
- Impotent male have normal amount of sperm but erection of penis not occur

11. State the 2 function of testis

Sperm production, secretion of testosterone

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12. State the 2 function of leydig cells.

 Function of Leydig cells is to produce the androgen, testosterone, under the pulsatile control of pituitary luteinizing hormone (LH)

13. State the 2 function of scrotum.

- It contains the testicles (also called testes), as well as many nerves and blood vessels.
- The scrotum has a protective function and acts as a climate control system for the testes. For normal sperm development, the testes must be at a temperature slightly cooler (3oC lower than normal body temperature) than the body temperature

14. Give the functions of seminal vesicles, bulbourethral gland and prostate gland.

• The prostate gland, the seminal vesicles, and the bulbourethral glands contribute seminal fluid to semen, which carries and protects the sperm.

15. Give the composition of semen.

- Fluid from the seminal vesicles accounts for approximately 70% of semen volume. The seminal vesicles are the source of fructose in semen. Fructose is used by the spermatozoa as an energy source.
- The prostate gland supplies about 20% of the volume of semen. Its fluids include acid phosphatase and proteolytic enzymes that lead to coagulation and subsequent liquefaction of semen. The prostate also contains most of the IgA found in semen.
- The bulbourethral gland produces mucoproteins that make up about 5% of the volume of semen.

16. What are the basic functions of female reproductive system?

- Its functions include producing female gametes called eggs,
- Secreting female sex hormones (such as estrogen),
- Providing a site for fertilization,
- Gestating a fetus if fertilization occurs,
- Giving birth to a baby, and
- Breastfeeding a baby after birth.

17. Enlist the parts of female reproductive system?

- Internal reproductive organs
 - Vagina, uterus, fallopian tubes, cervix, and ovary.
- External reproductive organs
 - The mons pubis, pudendal cleft, labia majora and minora, vulva, Bartholin's gland, and the clitoris.

18. State the 2 layer of ovary.

• Germinal epithelium & Tunica albuginea

19. Name the 3 layers of uterus.

- A. Perimetrium -
 - It is a thin covering on the outside of the uterus. It is actually part of the peritoneum.
- B. Myometrium –
- Consists of three layers of smooth muscle. Longitudinal, circular, and spiral.
- C. Endometrium –

Is the inner mucosal lining. It consists of two layers:

1. Stratum functionale - contains secretory glands. This is the portion that is shed during Mensus.

2. Stratum basale - is a highly vascularized layer which serves to regenerate the stratum functionale.

20. Name the hormones secreted by ovary.

- Estrogen continues uterine wall development
- Progesterone stimulates and maintains the uterine wall.

21. State the 2 roles of corpus luteum.

- It is essential for establishing and maintaining pregnancy in females.
- Secretes progesterone, which is a steroid hormone responsible for the development of the endometrium and maintenance, respectively.

22. State the different parts of ovarian tube.

- i. Isthmus:- The first segment, closest to the uterus.
- ii. Ampulla:- The second segment, more dilated & common site for fertilization.
- **iii.** Infundibulum:- The final segment, located farthest from the uterus.

23. What are the phases of menstrual cycle?

The duration of the female reproductive cycle is 24 - 35 days.

Menstrual cycle is divided in to three phases:

i) Menstrual Phase ii) Preovulatory Phase

24. Memory gland present in which organ?

- Memory gland present in breast
- 25. Which hormone is responsible for the secretion of milk?
 - Prolactin

26. Name the hormones regulating growth of female reproductive system.

- The hormones controlling the female reproductive system include
 O Produced in the brain
 - Gonadotropin-releasing hormone (GNRH),
 - Follicle-stimulating hormone (FSH) and
 - Leutenizing hormone (LH),
 - Produced by the ovaries
 - Oestrogen and progesterone

27. Enlist the different methods of contraception.

- Hormonal contraception, such the pill or the Depo Provera injection.
- Barrier methods, such as condoms.
- Surgical contraception
- Emergency contraception.

28. Enlist the different methods of surgical contraception. Explain hysterectomy.

- Vasectomy.
- Tubal ligation (tubes tied)
- Hysteroscopic sterilization.
- Hysterectomy.

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iii) Postovulatory Phase

• A hysterectomy is an operation to remove a woman's uterus.

29. Condom is made up by which materials?

Rubber latex

30. What is barrier method? Enlist the barrier methods of contraception.

- Barrier contraceptives are devices that attempt to prevent pregnancy by physically preventing sperm from entering the uterus.
- They include male condoms, female condoms, cervical caps, diaphragms, and contraceptive sponges with spermicide.

31. What is hCG?

- Human chorionic gonadotropin (hCG) is a hormone produced by the placenta after implantation.
- The presence of hCG is detected in some pregnancy tests (HCG pregnancy strip tests).

32. Why 1st morning urine sample taken for the pregnancy test?

• Because **first morning urine** typically contains the highest concentration of human chorionic gonadotropin (hcg), the **pregnancy** hormone.

33. What is spermatogenesis?

- Spermatogenesis is the process by which haploid spermatozoa develop from germ cells in the seminiferous tubules of the testis.
- This process starts with the mitotic division of the stem cells located close to the basement membrane of the tubules.

34. What is oogenesis?

• Oogenesis is the process of producing the female gametes, the Ovum, from the primordial germ cells.

35. What is DNA?

• DNA is a molecule composed of two chains that coil around each other to form a double helix carrying genetic instructions for the development, functioning, growth and reproduction of all known organisms and many viruses.

36. What is RNA?

- Ribonucleic acid (RNA) is a single strand polymeric molecule essential in various biological roles in coding, decoding, regulation and expression of genes.
- RNA and DNA are nucleic acids, and, along with lipids, proteins and carbohydrates, constitute the four major macromolecules essential for all known forms of life.