

Exercise-1

✎ Marked Questions are for Revision Questions.

ONLY ONE OPTION CORRECT TYPE**Section (A) : EPITHELIAL TISSUE**

1. The ducts of mammary glands are lined by
(1) Stratified columnar epithelium (2) Stratified cuboidal epithelium
(3) Transitional epithelium (4) All of the above
2. A gland cell and an epithelial cell perform different functions, because
(1) They are located differently
(2) Different genes of each of these cells are active while others are not
(3) They do not contain all the necessary genes
(4) During early and fast differentiation of these cell types some genes of each are destroyed
- 3.✎ The tissue which has power of division and regeneration, throughout life, is
(1) Epithelial tissue (2) Muscular tissue (3) Connective tissue (4) Nervous tissue
4. Which type of epithelium is found in oesophagus, cornea and vagina?
(1) Transitional epithelium (2) Columnar epithelium
(3) Non-keratinized stratified epithelium (4) Keratinized stratified epithelium
5. Epithelial tissue which lines the spinal cord is known as
(1) Endothelium (2) Endocardium (3) Ependymal cells (4) Mesothelium
- 6.✎ Gland which is both exocrine and endocrine is
(1) Tubular glands (2) Saccular glands (3) Apocrine glands (4) Heterocrine glands
- 7.✎ Sweat glands are
(1) Apocrine (2) Holocrine (3) Merocrine (Eccrine) (4) None of these

SECTION (B) : CONNECTIVE TISSUE

1. The central shaft of a long bone is known as
(1) Diaphysis (2) Epiphysis (3) Hypapophysis (4) Zygapophysis
2. Tendon is a structure which connects
(1) A bone with another bone (2) A nerve with a muscle
(3) A muscle with a bone (4) A muscle with a muscle
3. The giant cell is formed by the fusion of
(1) Macrophages (2) Plasma cells (3) Mast cells (4) All of these
4. Reticular connective tissue is found in
(1) Heart (2) Spleen (3) Kidneys (4) Skin
- 5.✎ Haversian system is a diagnostic feature of
(1) Avian bones (2) All animals
(3) Mammalian bones only (4) Reptilian bones
6. All the cartilagenous bones are previously

- (1) Elastic cartilage (2) Hyaline cartilage (3) Calcified cartilage (4) Fibrous cartilage
7. Shaft of a bone is called as
 (1) Epiphysis (2) Diaphysis (3) Metaphysis (4) Diagnosis
8. Bone marrow is made up of
 (1) Muscular fibre and fatty tissue (2) Fatty tissue and areolar tissue
 (3) Fatty tissue and cartilage (4) Fatty tissue, areolar tissue and blood vessel
9. Cartilage is formed by
 (1) Osteoblasts (2) Fibroblasts (3) Chondroclast (4) Chondroblasts
10. The bone of mammals contains Haversian canals, which are connected by transverse canals known as
 (1) Bidder's canal (2) Inguinal canal (3) Volkmann's canals (4) Semicircular canal
11. Haversian system is found in
 (1) Atlas of man (2) Ilium of man (3) Femur of man (4) Lumbar of man
12. A femur is kept in dilute HCl for three days, it becomes
 (1) Brittle (2) Soft and elastic (3) Remains as it is (4) Harder
13. The skeletal tissue consists of organic matrix called as
 (1) Hyaline (2) Chondrin (3) Osteoblast (4) Chondroblast
14. The membrane that covers cartilage is known as
 (1) Periostium (2) Perichondrium (3) Perineurium (4) Pericardium
15. External ear (pinna) is a flexible structure composed of
 (1) Bone (2) Cartilage (3) Tendon (4) Ligament
16. Pick up the correct statement.
 (1) Haversian canals are transverse canals
 (2) Volkmann's canals are longitudinal canals
 (3) Haversian canals are longitudinal whereas Volkmann's canals are transverse canals
 (4) Haversian system is present in bone of Aves
17. An osteon contains
 (1) One Haversian canal and Haversian lamellae
 (2) Haversian canal and Volkmann's canal
 (3) Haversian canal and circumferential lamellae
 (4) Haversian canal and osteoblast layer
18. Formation of cartilage is known as
 (1) Diapedesis (2) Chondrogenesis (3) Haemopoiesis (4) Ossification
19. Role of bone marrow in mammals is to
 (1) Assist kidneys (2) Act as haemopoietic tissue
 (3) Assist liver (4) Control blood pressure
20. The percentage of inorganic and organic salts in the matrix of a bone is
 (1) 40% inorganic, 60% organic (2) 62% inorganic, 38% organic
 (3) 80% inorganic, 20% organic (4) 85% inorganic, 15% organic
21. Hyaline cartilage forms

- (1) Tracheal rings (2) Pubic symphysis (3) Epiglottis (4) External ear pinna
22. Osteon is found in the
 (1) Femur of a frog (2) Femur of a bird
 (3) Femur of a reptile (4) Femur of a man and a rabbit
23. Bone forming cells are known as
 (1) Chondroclasts (2) Osteoblasts (3) Chondroblasts (4) Osteoclasts
24. Haversian canals are found in
 (1) Bone marrow (2) Hyaline cartilage (3) Bone matrix (4) Calcified cartilage
25. Patella is an example of
 (1) Cartilaginous bone (2) Dermal bone (3) Spongy bone (4) Sesamoid bone
26. The tendons are formed of
 (1) White fibrous tissue (connective) (2) Yellow fibrous tissue (connective)
 (3) Areolar tissue (4) Adipose tissue
27. Egyptian mummies still have intact artery. It is due to
 (1) Resistivity of elastin protein to chemical changes
 (2) Cold weather conditions of egypt
 (3) Hot weather conditions of egypt
 (4) God's grace

Section (C) : MUSCULAR TISSUE

1. Which of the following makes heart wall more thick?
 (1) Pericardium (2) Epicardium (3) Myocardium (4) Endocardium
2. Striped muscles have
 (1) One nucleus (2) Many nuclei (3) Two nuclei (4) No nuclei
3. Skeletal muscles show resemblance with visceral muscles in one aspect. It is in the
 (1) Shape of muscle fibres (2) Number of nuclei in muscle fibres
 (3) Presence of actin and myosin filaments (4) Presence of light and dark band
4. Smooth muscle fibres are
 (1) Cylindrical, unbranched, striated, multinucleate and voluntary
 (2) Spindle shaped, unbranched, non-striated, uninucleate and involuntary
 (3) Cylindrical, unbranched, non-striated, multinucleate and involuntary
 (4) Spindle shaped, unbranched, striated, uninucleate and voluntary
5. Voluntary muscles are present in
 (1) Lung (2) Liver (3) Hind limb (4) Heart
6. At 0° C and below it, there is
 (1) Increase in muscle contraction (2) Decrease in muscle contraction
 (3) Loss of irritability in a muscle (4) Coagulation of muscle proteins
7. Sarcoplasm is the
 (1) Cytoplasm of nerve fibres (2) Cytoplasm of muscle fibres
 (3) Unit of muscle contraction (4) Cell membrane of muscle cells
8. The strongest muscle, in human body, is found in the
 (1) Jaws (2) Thighs (3) Neck (4) Hands

9. Total number of muscles in human body is
 (1) 539 (2) 235 (3) 639 (4) 206
10. Ciliary muscles are contractile structures which
 (1) Cause standing of hair in human skin during cold
 (2) Keep the valves of heart in position
 (3) Move cilia of some ciliated protozoans
 (4) Change focus of lens in human eye
11. Shivering in winters is due to
 (1) Voluntary action of striated muscles (2) Voluntary action of unstriated muscles
 (3) Involuntary action of striated muscles (4) Involuntary action of unstriated muscles
12. Contraction of muscles is the best example of conversion of cellular energy to
 (1) Mechanical energy (2) Heat energy (3) Electrical energy (4) Light energy

Section (D) : NERVOUS TISSUE

1. Nerve fibre is different from the muscle fibre due to the presence of
 (1) Myofibrils (2) Lines (3) Sarcolemma (4) Dendrites
2. Myelin sheath is a layer covering
 (1) A nerve fibre in an insect (2) A chick embryo
 (3) A muscle fibre in a vertebrate (4) A nerve fibre in a vertebrate
3. Which of the following is regarded as a unit of nervous tissue?
 (1) Axons (2) Dendrites (3) Neurons (4) Myelin sheath
4. Which one of the following is not essentially a part of nervous system?
 (1) Cyton (2) Axon (3) Myelinated (4) Intermedin (MSH)
5. The most appropriate definition of neuroglial cells is that they are
 (1) Non-sensory supporting cells (2) Secretory cells
 (3) Sensory cells (4) Sensory and supporting cells
6. Schwann cell surrounds a/an
 (1) Axon (2) Cyton (3) Dendrite (4) Dendron
7. Non-excitable cells, found along the neurons are called
 (1) Dendrite (2) Axon (3) Schwann's cells (4) Nissl's granules

Section (E) : COCKROACH

1. Zoological name of cockroach is
 (1) *Glossina palpalis* (2) *Periplaneta americana*
 (3) *Musca nebulo* (4) *Apis indica*
2. Which are the two common indian cockroaches?
 (1) *Periplaneta americana* and *Blatta indica* (2) *Periplaneta indica* and *Blatta orientalis*
 (3) *Periplaneta orientalis* and *Blatta americana* (4) *Periplaneta americana* and *Blatta orientalis*
3. Head of cockroach according to its position is known as
 (1) Hypopharynx (2) Hypocerebral (3) Hypognathus (4) Supragnathus

4. Tongue like structure in. *Periplaneta* is
 (1) Maxilla (2) Hypopharynx (3) Labium (4) Labrum
5. Pseudopodia of *Amoeba* are similar to
 (1) Legs of cockroach (2) Teeth in rabbit
 (3) Spicules of *Leucosolenia* (4) Suckers of *Taenia*
6. The gynoalvular plates in female cockroach are modification of
 (1) 7th tergum (2) 7th sternum (3) 8th Tergum (4) 8 sternum
7. Cockroach and other insects have exoskeleton made up of
 (1) Keratin (2) Spongin (3) Chitin (4) Cuticle
8. The body cavity of cockroach is called
 (1) Pseudocoel (2) Coelom (3) Hydrocoel (4) Haemocoel
9. Saliva of cockroach contains enzyme
 (1) Lipase (2) Amylase (3) Pepsin (4) Trypsin
10. Mouth parts of cockroach are suited for
 (1) Piercing (2) Absorbing (3) Cutting & chewing (4) Drinking
11. An animal which feeds upon organic matter, dead insects and own cast off cuticle may be?
 (1) Herbivorous (2) Scavenger (3) Omnivorous (4) Carnivorous
12. Number of pairs of spiracles in cockroach are
 (1) 4 (2) 6 (3) 8 (4) 10
13. Heart of cockroach is
 (1) Four chambered (2) Ventral to gut
 (3) Longitudinal and beaded (4) Three chambered
14. Physiologically the heart of cockroach is
 (1) Neurogenic (2) myogenic (3) Epigenic (4) Agenic
15. Excretory organs of cockroach are
 (1) Trachea (2) Kidney (3) Nephridia (4) Malpighian tubules
16. In cockroach which is helpful in sexual attraction?
 (1) Hormone ecdysone (2) Pheromone (3) Juvenile hormone (4) Anal cerci
17. Structural units found in the compound eye of cockroach are called
 (1) Rhabdom (2) Cone cells (3) Ommatidia (4) Simple eye
18. Ootheca of Cockroach has fertilized eggs, number of eggs in each ootheca are
 (1) 6 (2) 8 (3) 16 (4) 24
19. Conglobate gland is found in the reproductive organs of
 (1) Earth worm (2) Housefly (3) Male cockroach (4) Female cockroach
20. In the life history of cockroach (*Periplaneta*) there is
 (1) No Metamorphosis (2) Incomplete metamorphosis
 (3) Complete metamorphosis (4) Anamorphosis

21. Life history of cockroach represents

- (1) Ametaboly (2) Holometaboly (3) Paurometaboly (4) Hypermetaboly

MISCELLANEOUS QUESTIONS

1. Phallomeres in male *Periplaneta* arise from:
(1) 7th sternum (2) 8th sternum (3) 9th sternum (4) 7th and 9th sterna
2. Antennae of cockroach function as:
(1) auditory receptor (2) gustatory receptor (3) olfactory receptor (4) tactile sensory receptor
3. Cockroach, housefly and mosquitoes are insects because they have:
(1) chitinous exoskeleton and body divided into head and cephalothorax
(2) six legs, ocelli and body divided into head, thorax and abdomen
(3) segmented body with jointed feet and chitinous exoskeleton
(4) three pairs of legs, one pair of antennae and flame cells
4. Respiratory pigment of blood in cockroach is:
(1) haemozoin (2) haemocyanin (3) haemoglobin (4) absent
5. Exoskeleton of which of the following consists of a chitinous cuticle?
(1) Porifera (2) Annelida (3) Arthropoda (4) Echinodermata
6. Which one of the following is the correct statement about the circulatory system of cockroach?
(1) It is closed type of circulatory system
(2) It is complicated type of circulatory system
(3) It takes place without the participation of tissue
(4) It has 13-chambered heart and in each segment one pair of ostia are present
7. Trophocytes, mycetocytes, oenocytes and urate cells are found in the fat body of cockroach. Which statement is true?
(1) Trophocytes contain reserve food
(2) Mycetocytes contains symbiotic bacteria
(3) Oenocytes secrete wax and urate cells contains uric acid
(4) All of the above
8. Which of the following is the true description about an animal concerned?
(1) Cockroach - 10 pairs of spiracles (2 pairs of on thorax and 8 pairs on abdomen)
(2) Earthworm - The alimentary canal consists of a sequence of pharynx, oesophagus, stomach, gizzard and intestine
(3) Frog - Body divisible into three regions, head, neck and trunk
(4) Rat - Left kidney is slightly higher in position than the right one
9. type of eyes are found in insects:
(1) camera eye (2) red eye (3) normal eye (4) compound eye
10. The number of abdominal segments in male and female cockroach is:
(1) 10, 10 (2) 9, 10 (3) 10, 11 (4) 8, 10
11. Changes that allow the conversion of larva into adult is called:

- (1) alternation (2) metastasis (3) metagenesis (4) metamorphosis
12. Nitrogenous wastes in the Malpighian tubule flows into:
 (1) vacuole (2) intestine (3) duodenum (4) haemocoel
13. The cells present in the fat bodies of cockroach, which contain certain symbiotic bacteria that synthesize amino acids are:
 (1) trophocytes (2) mycetocytes (3) oenocytes (4) urate cells
14. Malpighian tubules are analogous to:
 (1) trachea of cockroach (2) gills
 (3) flame cells (4) none of these
15. Cockroaches can climb smooth or steep' surfaces due to the presence of adhesive pads found on the tarsus of their legs. They are called:
 (1) plantulae (2) tibia (3) pretarsus (4) arolium
16. The cockroach is:
 (1) diurnal and omnivorous (2) diurnal and herbivorous
 (3) nocturnal and carnivorous (4) nocturnal and omnivorous
17. Which of the following correctly stated as it happens in the common cockroach?
 (1) Malpighian tubules are excretory organs projecting out from colon
 (2) The food is ground by mandibles and gizzard
 (3) Oxygen is transported by haemoglobin in blood
 (4) Nitrogenous excretory product is urea
18. Fertilized eggs of *P. americana* are encased in:
 (1) ootheca (2) cocoon (3) genital chamber (4) phallomere
19. The arthropod exoskeleton is composed of :
 (1) several kinds of proteins
 (2) several kinds of polysaccharides
 (3) single complex protein called arthropodin
 (4) layers of proteins and a polysaccharide called chitin
20. About how many times does the nymph of the *Periplaneta americana* undergo moulting before becoming an adult?
 (1) 4 (2) 2 (3) 17 (4) 13
21. Compound eyes are found in:
 (1) frog (2) earthworm (3) cockroach (4) roundworm
22. The cell found in the inner surface of bronchioles which move particles in a specific direction over the epithelium are of
 (1) Glandular epithelium (2) Columnar epithelium
 (3) Cuboidal epithelium (4) Ciliated epithelium
23. Which type of cell junction would be required for cells to communicate with one another?
 (1) Adhering junctions (2) Desmosomes
 (3) Gap junctions (4) Tight junctions

24. Largest smooth muscle present in
 (1) Leg (2) Thigh
 (3) Uterus of pregnant woman (4) Urethra

Exercise-2

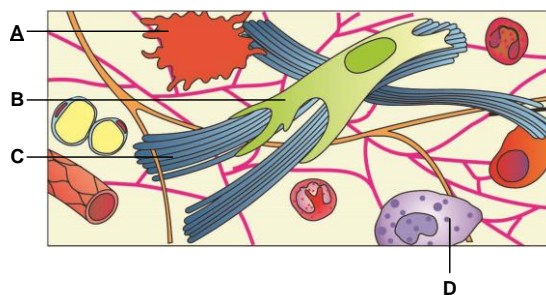
1. The non-excitable variously shaped cells found between neurons are (2th NSO I L)
 (1) Glial cells (2) Schwann cell (3) Dendrites (4) Nissl bodies
2. Bone cells that disintegrate the bone matrix to release Ca^{++} in blood in response to parathormone are
 (1) Osteoblasts (2) Osteoclasts (3) Osteocytes (4) All of these

Exercise-3

PART - I NEET / AIPMT QUESTION (PREVIOUS YEARS)

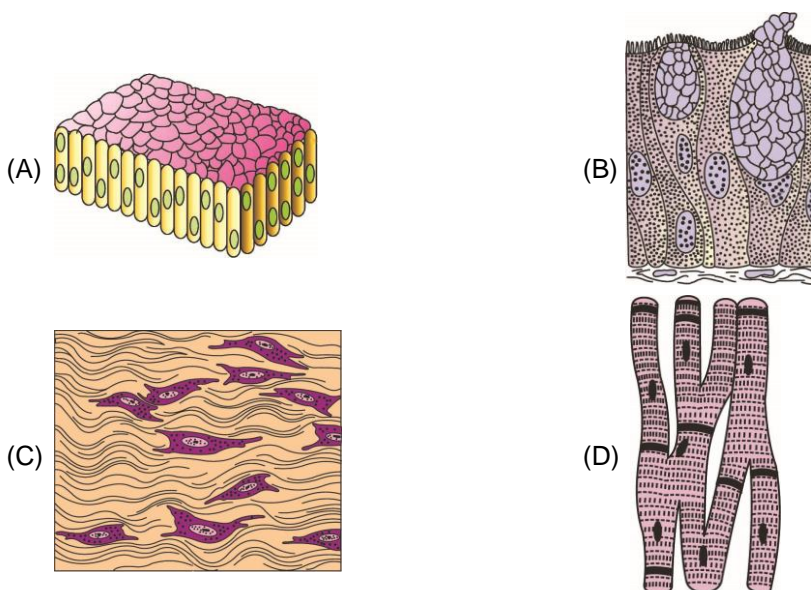
1. Simple epithelium is a tissue in which the cells are (AIPMT-2000)
 (1) hardened and provide support to the organ
 (2) cemented directly to one another to form a single layer
 (3) continuously dividing to provide form to an organ
 (4) loosely connected to one another to form an irregular organ
2. The polysaccharide present in the matrix of cartilage is known as (AIPMT-2000)
 (1) cartilagin (2) ossein (3) chondroitin (4) cassein
3. A piece of bone such as femur of frog if kept in dilute HCl for about a week will (AIPMT-2000)
 (1) assume black colour (2) shrink in size
 (3) turn flexible (4) crack into pieces
4. During an injury, nasal septum gets damaged. For its restoration which cartilage is preferred? (AIPMT-2001)
 (1) Hyaline cartilage (2) Elastic cartilage (3) Calcified cartilage (4) Fibro cartilage
5. Which cells do not form layer and remain structurally separate? (AIPMT-2001)
 (1) Epithelial cells (2) Muscle cells (3) Nerve cells (4) Gland cells
6. Which cartilage is present at the end of long bones? (AIPMT-2002)
 (1) Calcified cartilage (2) Hyaline cartilage (3) Elastic cartilage (4) Fibrous cartilage
7. Collagen is a (AIPMT-2002)
 (1) fibrous protein (2) globular protein (3) lipid (4) carbohydrate
8. Which one of the following contains the largest quantity of extracellular material? (AIPMT-2003)
 (1) Myelinated nerve fibres (2) Striated muscle
 (3) Areolar tissue (4) Stratified epithelium
9. Mast cells of connective tissue contain (AIPMT-2004)
 (1) vasopressin and relaxin (2) heparin and histamine
 (3) heparin and calcitonin (4) serotonin and melanin

10. Areolar connective tissue joins (AIPMT-2006)
 (1) integument to the muscles (2) bones to the muscles
 (3) bones to the bones (4) fat body to the muscles
11. Which one of the following mammalian cells is not capable of metabolizing (aerobically) glucose to carbon dioxide? (AIPMT-2007)
 (1) White blood cells (2) Unstriated muscle cells
 (3) Liver cells (4) Red blood cells
12. In which one of the following preparations, you are likely to come across cell junctions frequently? (AIPMT-2007)
 (1) Ciliated epithelium (2) Thrombocytes (3) Tendon (4) Hyaline cartilage
13. Which type of white blood cells are concerned with the release of histamine and the natural anticoagulant heparin? (AIPMT-2008)
 (1) Neutrophils (2) Basophils (3) Eosinophils (4) Monocytes
14. The cells lining the blood vessels belong to the category of (AIPMT Mains-2011)
 (1) Smooth muscle tissue (2) Squamous epithelium
 (3) Columnar epithelium (4) Connective tissue
15. Frogs differ from humans in possessing (AIPMT Mains-2011)
 (1) paired cerebral hemispheres (2) hepatic portal system
 (3) nucleated red blood cells (4) thyroid as well as parathyroid
- 16.# Given below is the diagrammatic sketch of a certain type of connective tissue. Identify the parts labelled A, B, C and D, and select the right option about them. (AIPMT Mains-2012)



	Part A	Part B	Part C	Part D
(1)	Macrophage	Fibroblast	Collagen fibres	Mast cell
(2)	Mast cell	Macrophage	fibroblast	Collagen, fibres
(3)	Macrophage	Collagen fibres	Fibroblast	Mast cell
(4)	Mast cell	Collagen fibres	Fibroblast	Macrophage

- 17.# The four sketches (A, B, C and D) are given below, represent four different types of animal tissues. Which one of these is correctly identified in the options given, along with its correct location and function? (AIPMT Mains-2012)



	Tissue	Location	Function
(1)	Glandular epithelium	Intestine	Secretion
(2)	Collagen fibres	Cartilage	Attach skeletal muscles to bones
(3)	Smooth muscle tissue	Heart	Heart contraction
(4)	Columnar epithelium	Nephron	Secretion and absorption

18. Choose the correctly matched pair (AIPMT-2014)
- (1) Tendon-Specialized connective tissue (2) Adipose tissue-Dense connective tissue
 (3) Areolar tissue- Loose connective tissue (4) Cartilage-Loose connective tissue

19. Choose the correctly matched pair: (AIPMT-2014)
- (1) Inner lining of salivary ducts - Ciliated epithelium
 (2) Moist surface of buccal cavity - Glandular epithelium
 (3) Tubular parts of nephrons- Cuboidal epithelium
 (4) Inner surface of bronchioles - squamous epithelium

20. The terga, sterna and pleura of cockroach body are joined by : (AIPMT-2015)
- (1) Muscular tissue (2) Arthrodial membrane
 (3) Cartilage (4) Cementing glue

21. Which type of tissue correctly matches with its location? (NEET-1-2016)

	Tissue	Location
(1)	Cuboidal epithelium	Lining of stomach
(2)	Smooth muscle	Wall of intestine
(3)	Areolar tissue	Tendons
(4)	Transitional epithelium	Tip of nose

22. Which of the following features is not present in *Periplaneta americana*? (NEET-1-2016)
- (1) Metamerically segmented body
 (2) Schizocoelom as body cavity

(3) Indeterminate and radial cleavage during embryonic development

(4) Exoskeleton composed of N-acetylglucosamine

23. In male cockroaches, sperms are stored in which part of the reproductive system?

(NEET-2-2016)

(1) Vas deferens (2) Seminal vesicles (3) Mushroom glands (4) Testes

24. Smooth muscles are

(NEET-2-2016)

(1) voluntary, spindle-shaped, uninucleate (2) involuntary, fusiform, non-striated
(3) voluntary, multinucleate, cylindrical (4) involuntary, cylindrical, striated

25. Select the correct route for the passage of sperms in male frogs

(NEET-2017)

(1) Testes → Bidder's canal → Kidney → Vasa efferentia → Urinogenital duct → Cloaca
(2) Testes → Vasa efferentia → Kidney → Seminal vesicle → Urinogenital duct → Cloaca
(3) Testes → Vasa efferentia → Bidder's canal → Ureter → Cloaca
(4) Testes → Vasa efferentia → Kidney → Bidder's canal → Urinogenital duct → Cloaca

26. Frog's heart when taken out of the body continues to beat for sometime

(NEET-2017)

Select the best option from following statements

(a) Frog is a poikilotherm. (b) Frog does not have any coronary circulation.
(c) Heart is "Myogenic" in nature. (d) Heart is autoexcitable.
(1) Only (c) (2) Only (d) (3) (a) and (b) (4) (c) and (d)

27. Which of the following features is used to identify a male cockroach from a female cockroach?

(NEET-2018)

(1) Presence of a boat shaped sternum on the 9th abdominal segment
(2) Presence of anal cerci
(3) Forewings with darker tegmina (4) Presence of caudal styles

28. The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in :

(NEET-2019 P-1)

(1) Bronchioles and Fallopian tubes (2) Bile duct and Bronchioles
(3) Fallopian tubes and Pancreatic duct (4) Eustachian tube and Salivary duct

29. Which of the following statements is **INCORRECT** ?

(NEET-2019 P-2)

(1) Cockroaches exhibit mosaic vision with less sensitivity and more resolution
(2) A mushroom-shaped gland is present in the 6th-7th abdominal segments of male cockroach.
(3) A pair of spermatheca is present in the 6th segment of female cockroach
(4) Female cockroach possesses sixteen ovarioles in the ovaries.

PART - II AIIMS QUESTION (PREVIOUS YEARS)

1. Cardiac muscle fibres are

(AIIMS-2000)

(1) Striated involuntary (2) Striated voluntary

(3) Non-striated involuntary

(4) Non-striated voluntary

2. The major protein of the connective tissues is (AIIMS-2001)

(1) Keratin

(2) Collagen

(3) Melanin

(4) Myosin

3. Which one feature is common to leech, cockroach and scorpion? (AIIMS-2004)

(1) Nephridia

(2) Ventral nerve cord

(3) Cephalization

(4) Antennae

4. Which one of the following groups of structures/organs have similar function? (AIIMS-2005)

(1) Typhlosole in earthworm, intestinal villi in rat and contractile vacuole in *Amoeba*.

(2) Nephridia in earthworm, Malpighian tubules in cockroach and urinary tubules in rat.

(3) Antennae of cockroach, tympanum of frog and clitellum of earthworm.

(4) Incisors of rat, gizzard (proventriculus) of cockroach and tube feet of starfish.

5. The type of epithelial cells which line the inner surface of Fallopian tubes, bronchioles and small bronchi are known as (AIIMS-2009)

(1) squamous epithelium

(2) columnar epithelium

(3) ciliated epithelium

(4) cuboidal epithelium

6. Which exocrine glands are present in skin? (AIIMS-2018-I)

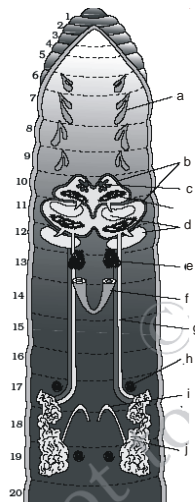
(1) Sweat gland, eccrine

(2) Sweat gland, merocrine

(3) Sweat gland, apocrine

(4) Sweat gland, sebaceous gland

7.# Choose the correct option from the following based on the diagram (AIIMS-2018-I)



(1) (a) Spermathecae (e) ovary (f) ovarian funnel (j) prostate gland

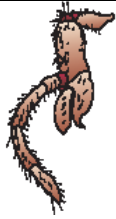
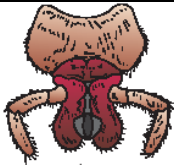



(2) (a) testis sac (h) accessory glands (g) ovarian funnel, (i) prostate gland

(3) (h) Spermathecae (a) ovary (j) ovarian funnel (c) accessory glands

(4) (h) testis sac (a) accessory glands (i) ovarian funnel, (g) prostate gland

8. Select the option with correct matching – (AIIMS-2018-II)

A.		(i)	Mandible
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B.		(ii)	Labrum
C.		(iii)	Labium
D.		(iv)	Hypopharynx
E.		(v)	Maxilla

Option:

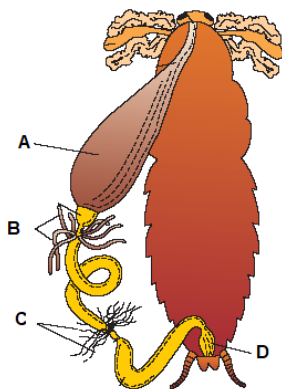
(1) A - (i), B - (ii), C - (iii), D - (iv), E - (v)

(2) A - (ii), B - (iii), C - (i), D - (iv), E - (v)

(3) A - (v), B - (iii), C - (i), D - (ii), E - (iv)

(4) A - (v), B - (iii), C - (i), D - (iv), E - (ii)

9. Select the option having correct matching of parts of the digestive tract of cockroach – (AIIMS-2018-III)



- (1) A - Hepatic caecae, B - Crop, C - Malpighian tubules, D - Rectum
 (2) A - Crop, B - Hepatic caecae, C - Malpighian tubules, D - Rectum
 (3) A - Malpighian tubules, B - Crop, C - Hepatic caecae, D - Rectum
 (4) A - Crop, B - Hepatic caecae, C - Malpighian tubules, D - Rectum

10. In smooth and cardiac muscles, cell junctions are represented by –

(AIIMS-2018-III)

(1) Gap junction

(2) Desmosomes

(3) Tight junction

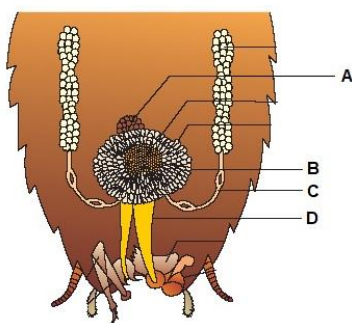
(4) Zonula occludens

11. Which among the following is predominant epithelia in digestive tract? (AIIMS-2018-III)
- (1) Stratified squamous epithelia (2) Simple cuboidal epithelia
(3) Simple squamous epithelia (4) Pseudostratified ciliated epithelia

12. Which of the following is correct? (AIIMS-2018-IV)

Column-I		Column-II	
(1)	Blood & lymph	(a)	Connective tissue
(2)	Bones and muscles	(b)	Skeletal tissue
(3)	Skin epidermis	(c)	Nervous tissue
(4)	Cartilage and muscles	(d)	Connective tissue

13. Select the option having correct matching for different parts of male reproductive system of cockroach – (AIIMS-2018-IV)



- (1) A - Phallic gland, B- Seminal vesicle, C- Vas deferens, D - Ejaculatory duct
(2) A - Phallic gland, B- Seminal vesicle, C- Ejaculatory duct, D - Vas deferens
(3) A - Seminal vesicle, B- Phallic gland, C- Vas deferens, D - Ejaculatory duct
(4) A - Phallic gland, B- Vas deferens, C- Seminal vesicle, D - Ejaculatory duct
14. Select the correct matching– (AIIMS-2018-IV)
- (1) Cuboidal epithelium - Alveolar wall
(2) Columnar epithelium - Stomach
(3) Ciliated epithelium - Intestine
(4) Squamous epithelium - Germinal epithelium

Answers

EXERCISE - 1

SECTION (A)

1. (2) 2. (2) 3. (1) 4. (3) 5. (3) 6. (4) 7. (3)

SECTION (B)

1. (1) 2. (3) 3. (1) 4. (2) 5. (3) 6. (2) 7. (2)
 8. (4) 9. (4) 10. (3) 11. (3) 12. (2) 13. (2) 14. (2)
 15. (2) 16. (3) 17. (1) 18. (2) 19. (2) 20. (2) 21. (1)
 22. (4) 23. (2) 24. (3) 25. (4) 26. (1) 27. (1)

SECTION (C)

1. (3) 2. (2) 3. (3) 4. (2) 5. (3) 6. (3) 7. (2)
 8. (1) 9. (3) 10. (4) 11. (3) 12. (1)

SECTION (D)

1. (4) 2. (4) 3. (3) 4. (4) 5. (1) 6. (1) 7. (3)

SECTION (E)

1. (2) 2. (4) 3. (3) 4. (2) 5. (1) 6. (2) 7. (3)
 8. (4) 9. (2) 10. (3) 11. (2) 12. (4) 13. (3) 14. (1)
 15. (4) 16. (2) 17. (3) 18. (3) 19. (3) 20. (2) 21. (3)

MISCELLANEOUS QUESTIONS

1. (3) 2. (4) 3. (2) 4. (4) 5. (3) 6. (4) 7. (4)
 8. (1) 9. (4) 10. (1) 11. (4) 12. (2) 13. (2) 14. (3)
 15. (1) 16. (4) 17. (2) 18. (1) 19. (4) 20. (4) 21. (3)
 22. (4) 23. (3) 24. (3)

EXERCISE - 2

1. (1) 2. (2)

EXERCISE - 3

PART-I

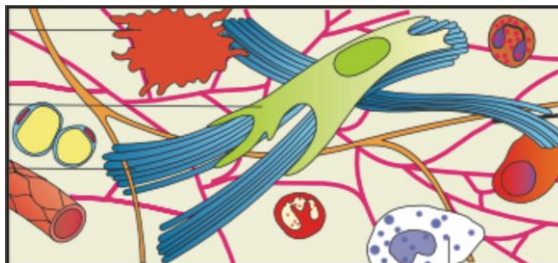
1. (2) 2. (3) 3. (3) 4. (1) 5. (3) 6. (2) 7. (1)
 8. (3) 9. (2) 10. (1) 11. (4) 12. (1) 13. (2) 14. (2)
 15. (3) 16. (1) 17. (1) 18. (3) 19. (3) 20. (2) 21. (2)
 22. (3) 23. (2) 24. (2) 25. (4) 26. (4) 27. (4) 28. (1)
 29. (1)

PART- II

1. (1) 2. (2) 3. (2) 4. (2) 5. (3) 6. (4) 7. (1)
 8. (3) 9. (2) 10. (1) 11. (1) 12. (1) 13. (1) 14. (2)

Self Practice Paper (SPP)

1. # Which of the following structure is absent in following diagram?



- (1) Reticular Fibre (2) Basophil
(3) Adipocytes (4) All are present
2. Intercalated discs are characteristic feature of –
(1) Skeletal Muscle (2) Cardiac Muscle
(3) Smooth Muscle (4) Epithelial tissue
3. Which of the following cell can't be grown by tissue culture -
(1) Epithelial cell (2) Fibroblast (3) Monocyte (4) Neuron
4. Gap junctions present in epithelial tissue are responsible for exchange of material between cells. A special protein is required to perform this function. Name of the protein is-
(1) Tubulin (2) Connexin (3) Cadherin (4) Fibrillin
5. Endocardium of heart wall is made up of which tissue?
(1) Simple squamous epithelia (2) Simple cuboidal epithelia
(3) Cardiac muscles (4) Areolar connective tissue.
6. Upper part of respiratory tract and lower part of respiratory tract are lined by-
(1) Ciliated pseudostratified epithelia and ciliated cuboidal epithelia respectively.
(2) Ciliated columnar epithelia and ciliated cuboidal epithelia respectively.
(3) Ciliated pseudostratified epithelia and ciliated columnar epithelia respectively.
(4) Ciliated cuboidal epithelia and ciliated columnar epithelia respectively.
7. Which of the following statement is **false** about nervous tissue?
A. Neurons transmit sensory informations to and from brain.
B. Both CNS and PNS contain neurons and glial cells.
C. Neurons produce and conduct electrical impulses.
D. All cells of nervous tissue conduct electrical impulses.
E. All cells of nervous tissue are ectodermal in origin.
(1) A and C (2) A and D
(3) B, C and E (4) A, D and E

8. Which of the following statements is incorrect regarding basement membrane of epithelial tissue?
- (1) Basal lamina is composed of mucopolysaccharides and glycoproteins secreted by epithelial cells.
 - (2) Fibrous lamina is composed of collagen and reticular fibres secreted by mast cells of underlying connective tissue.
 - (3) Basal lamina is thinner than fibrous lamina.
 - (4) Basement membrane is absent in transitional epithelia.
9. Which of the following tissue found in human body is associated with diffusion and filtration?
- (1) Simple squamous epithelia
 - (2) Simple cuboidal epithelia
 - (3) Simple columnar epithelia
 - (4) Pseudostratified epithelia
10. Ciliated columnar epithelia called ependyma is present in the lining of-
- (1) Bronchioles
 - (2) Epididymis of male
 - (3) Ventricles of brain
 - (4) Inner chamber of eye
11. Human mammary glands belong to one of the following types of gland, identify-
- (1) Simple alveolar
 - (2) Compound alveolar
 - (3) Simple tubular
 - (4) Compound tubulo-alveolar.
12. Here are two columns, **column A** has some tissues and **column B** has its principal cells. Find the match which shows the tissue which is most abundant in human body, along with correct principal cell.

(1)	A- Adipose tissue	B- Adipocyte
(2)	A- Areolar tissue	B- Fibroblast
(3)	A- Muscular tissue	B- Mast cell
(4)	A- dense irregular connective tissue	B- Plasma cell

13. Fibre, which can be digested by pepsin and upon boiling converts in to gelatin-
- (1) Collagen fibre
 - (2) Elastic fibre
 - (3) Reticular fibre
 - (4) Muscle fibre
14. Even after sudden temperature change, a new born baby doesn't shiver due to presence of-
- (1) Fat laden reticular tissue
 - (2) White fat of adipose tissue
 - (3) Brown fat of adipose tissue
 - (4) High secretion of histamine which is a vasoconstrictor.
15. The bone matrix consist of
- (1) 65% inorganic matter and 35% organic matter.
 - (2) 30% inorganic matter and 70% organic matter.
 - (3) 50% inorganic matter and 50% organic matter.
 - (4) 40% inorganic matter and 60% organic matter.
16. Spongy or cancellous bone is present in vertebrae, ribs, skull and epiphysis of long bones. They have-
- (1) Haversian canals
 - (2) Volkman's canals
 - (3) Red bone marrow
 - (4) Yellow bone marrow
17. Cardiac muscles are
- (1) Striated, voluntary with syncytial condition
 - (2) Unstriated, involuntary, uninucleated
 - (3) Striated, involuntary, uninucleated
 - (4) Involuntary, non striated, syncytial

18. Body of Cockroach is covered by a rigid substance called chitin to prevent water loss yet this exoskeleton is flexible due to presence of-
- (1) Tergites (2) Sternites (3) Pleurites (4) Arthroal membranes
19. Cockroach exhibit sexual dimorphism. Male cockroach can be distinguished from females by-
- (1) Anal Style and wings longer than abdomen
 (2) Anal cerci and wings longer than abdomen
 (3) Anal style and wings shorter than abdomen
 (4) Anal cerci and wings shorter than abdomen
20. In cockroach elytra or tegmina are articulated to tergites of-
- (1) Prothorax (2) Mesothorax (3) Metathorax (4) First abdominal segment
21. Which mouth parts of cockroach act as upper lip and lower lip?
- (1) Labium and labrum respectively (2) Labrum and labium respectively
 (3) Mandible and maxilla respectively (4) Hypopharynx and maxilla respectively
22. Here are some details about cockroach, find out the correct match-
- (1) Head - prognathous
 (2) Heart - 12 chambers
 (3) Alary muscles - 13 pair
 (4) Anal cerci - female cockroach
23. How many segments are present in leg of cockroach?
- (1) Four (2) Five (3) Six (4) Seven
24. Stomodaeal valve is present in gut of cockroach. It prevent regurgitation of food from
- (1) Mid gut into crop (2) Hind gut to mid gut
 (3) Crop to pre oral cavity (4) Gizzard to crop
25. How many mature cartilage cells can be present in a lacunae?
- (1) One (2) One to two (3) Many (4) One to four
26. Which of the following part is absent in long bones of a person, whose age is 28 years?
- (1) Epiphysis (2) Metaphysis
 (3) Diaphysis (4) Both metaphysis and diaphysis
27. The cockroach crushes food with the help of its:
- (1) Labium (2) Mandibles (3) Antennae (4) First maxillae
28. Here are certain statements, correct statements of them are-
- A. Skeletal muscles after birth grows by increase in volume and not by increase in cell number.
 B. Mature adipocytes is anaerobic.
 C. Lymph contains leucocyte cells and plasma only.
 D. Microgliocyte of nervous tissue is mesodermal in origin.
 E. All the neurons of our body never divide in lifetime.
- (1) A, D and E (2) B, C and E (3) A, B, D & E (4) B and C only

29. You got a frozen sample of blood plasma for chemical analysis. Which of the following constituents would be absent in given sample-
(1) Globulin proteins (2) Albumin proteins (3) Na^+ and K^+ ions (4) Thrombocytes
30. Type of cartilage present in epiglottis is also present in-
(1) Cartilage of Santorini (2) Cricoid Cartilage
(3) Thyroid Cartilage (4) Pubis of frog
31. In cockroach, the gizzard contains:
(1) six teeth (2) five teeth (3) four teeth (4) eight teeth
32. Exoskeleton of arthropods called chitin is:
(1) Lipid (2) Protein (3) Nucleic acid (4) Polysaccharide
33. Average size of cockroaches is ---A---cm, while particularly of *Periplaneta* is---B---
(1) A=0.6 to 7.6, B=3.4 to 5.3 (2) A=3.4 to 5.3, B=0.6 to 7.6
(3) A=2.6 to 6.7, B=2.3 to 3.5 (4) A=2.3 to 3.5, B=2.6 to 6.7
34. Here are certain statements about cockroach, find the incorrect one-
(1) Head is formed by fusion of six segments.
(2) A pair of thread like antennae arise from membranous sockets lying in front of eyes.
(3) In males, genital pouch or chamber lies at the hind end of abdomen bounded dorsally by 9th and 10th terga and ventrally by the 9th sternum.
(4) In both sexes, the 9th segment bears a pair of jointed filamentous structures called anal cerci.
35. Which of the following structure is associated with alimentary canal yet has no role in digestion or absorption of food?
(1) Gizzard (2) Malpighian tubules (3) seminal vesicle (4) hepatic ceaca
36. Select the correct statement from the ones given below with respect to *Periplaneta americana*:
(1) Nervous system located dorsally, consists of segmentally arranged ganglia joined by a pair of longitudinal connectives.
(2) Males bear a pair of short thread like anal styles.
(3) There was 16 very long Malpighian tubules present at the junctions of midgut and hindgut.
(4) Grinding of food is carried out only by the mouthparts.
37. In cockroach, the sense organs are antennae, eyes, maxillary palps, labial palps, anal cerci, etc. how many of them are correct?
(1) Three (2) Four (3) Five (4) Two

38. Which of the following statements about *Periplaneta* is correct?
- (1) On an average, females produce 10-20 oothecae, each containing 14-16 eggs
 - (2) The development of *P. Americana* is paurometabolous, which mean that a larval stage is present.
 - (3) The nymph grows by moulting about 13 times to reach the adult form
 - (4) Ootheca is a dark reddish to blackish brown capsule, about 3/8" (18 mm) long
39. Pigmented epithelium is found in-
- (1) Choroid (2) Retina (3) Cornea (4) Pupil
40. Chemically 5- hydroxyl tryptamine is name of-
- (1) Histamine (2) Serotonin (3) Heparin (4) Anophelin
41. Animals which lack bone marrow are-
- (1) Mammals (2) Aves (3) Reptiles (4) Amphibian
42. Pseudopenis and tritillator present in external genitalia of male cockroach are parts of-
- (1) Right phallomere (2) Ventral phallomere (3) Left phallomere (4) Dorsal phallomere
43. In cockroach spermatophore are stored in --- A --- and released at the time of copulation-
- (1) Spermatheca (2) Ejaculatory duct (3) Vas deferens (4) Seminal vesicle
44. Which of the following statement about respiratory system of cockroach is false?
- (1) 10 pair of spiracles are present, 2 pair in thorax and 8 pair in abdomen.
 - (2) Trachea divides to tracheole which ends in tracheal end cells from which diffusion of gases take place.
 - (3) Circulatory system plays integral role on exchange of gases.
 - (4) Tergo-sterna muscles play role in movement of gases to and from body by spiracle.
45. Multicellular organisms are composed of many small cells, however some of the cells are comparatively long. Longest cell of human body is-
- (1) Neuroglial cell (2) Nerve cell (3) Fibroblast cell (4) Plasma cell.

SPP Answers

- | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|
| 1. (4) | 2. (2) | 3. (4) | 4. (2) | 5. (1) | 6. (3) | 7. (4) |
| 8. (2) | 9. (1) | 10. (3) | 11. (4) | 12. (2) | 13. (1) | 14. (3) |
| 15. (1) | 16. (3) | 17. (3) | 18. (4) | 19. (1) | 20. (2) | 21. (2) |
| 22. (4) | 23. (2) | 24. (1) | 25. (4) | 26. (2) | 27. (2) | 28. (3) |
| 29. (4) | 30. (1) | 31. (1) | 32. (4) | 33. (1) | 34. (4) | 35. (2) |
| 36. (2) | 37. (3) | 38. (3) | 39. (1) | 40. (2) | 41. (2) | 42. (3) |
| 43. (4) | 44. (3) | 45. (2) | | | | |