Chapter 1

Structural Organisation in Animals (Animal Tissues)

Solutions

SECTION - A

Objective Type Questions

(Epithelial cells)

1. Epithelial cells of the intestine involved in food absorption have

   (1) Pinocytic vesicles (2) Brush border appearance

   (3) Ciliated appearance (4) Phagocytic vesicles

Sol. Answer (2)

Each epithelial cell of a villus (intestine) on its apical surface has many microscopic projections or microvilli, that are exposed to intestinal lumen. These projections give brush border appearance.

2. The epithelial tissue present on the inner surface of trachea and oviducts is

   (1) Squamous (2) Compound (3) Transitional (4) Ciliated

Sol. Answer (4)

Ciliated columnar epithelia occurs in inner surface of hollow organs like fallopian tubes (oviducts) and most of respiratory tract.

3. Which of the following is **incorrect** w.r.t. junction and its function?

   (1) Tight junction – Promotes leaking of substances across a tissue

   (2) Adhering junction – Keep neighbouring cells together

   (3) Gap junction – Connecting the cytoplasm of adjoining cells for rapid transfer of ions and small molecules

   (4) Gap junction – Facilitates the cells to communicate with each other

Sol. Answer (1)

Tight junctions do not allow leaking of substances across tissue. Plasma membranes in apical parts of adjacent epithelial cells become tightly packed together or are even fused to form tight junctions.

4. Which of the following mammalian tissues is associated with filtration and diffusion?

   (1) Simple columnar (2) Simple squamous

   (3) Stratified squamous (4) Stratified columnar

Sol. Answer (2)

Simple squamous epithelium comprises single layer of cells hence helps in filtration and diffusion.

5. Stratified squamous non-keratinised epithelium is present in the lining of

(1) Buccal cavity, oesophagus, pharynx

(2) Skin, hair, horn, nail

(3) Small pancreatic ducts, thyroid follicles and ovary

(4) Intestine, stomach and gall bladder

Sol. Answer (1)

Skin, hair, horn, nail are composed of stratified keratinised epithelium.

6. Human mammary glands belong to one of the following types of glands

(1) Simple alveolar

(2) Coiled tubular

(3) Compound tubulo-alveolar

(4) Simple tubular

Sol. Answer (3)

Human mammary glands belong to category of compound tubulo-alveolar glands.

(Connective tissue)

7. During an injury nasal septum gets damaged. Which cartilage is involved?

(1) Elastic cartilage (2) Hyaline cartilage (3) Calcified cartilage (4) Fibrous cartilage

Sol. Answer (2)

Hyaline cartilage occurs in larynx, nasal septum, tracheal rings and costal cartilage. In hyaline cartilage matrix is fibre-less and glass-like (Hyaline) but translucent. It gives those structure a definite but pliable form.

8. Which cartilage is present at the end of long bones?

(1) Calcified cartilage (2) Hyaline cartilage (3) Elastic cartilage (4) Fibrous cartilage

Sol. Answer (2)

Hyaline cartilage is most abundant type of cartilage. Hyaline cartilage occurs in trachea, the larynx of nose and ends of long bone where they from joint.

9. The kind of tissue that forms the supportive structure in tip of nose is also found in

(1) Eustachian tube (2) Vertebrae (3) End of ribs (4) Nasal septum

Sol. Answer (1)

Yellow elastic cartilage is found in external ear or pinna, external auditory canal, eustachian tube, tip of nose, epiglottis and some laryngeal components. Elastin fibres in yellow elastic cartilage provide both colour and elasticity to cartilage.

10. What happens if the bone of a frog is kept in dilute KOH?

(1) It is unaffected (2) It turns black

(3) It breaks into pieces (4) It shrinks

Sol. Answer (1)

When bone is kept in dilute acid for long hours, then calcium, magnesium and potassium of inorganic part of matrix get dissolved. Organic part remains intact. Bones become flexible if kept in acid as calcium salts are removed from bone. Treatment of bone with dilute KOH doesn't affect the bone.

11. Inflammatory substance produced during allergic reactions by mast cells is

(1) Histamine (2) Heparin

(3) Serotonin (4) Fibrinogen

Sol. Answer (1)

Mast cell contain granules of heparin and histamine. Histamine produces inflammation increases permeability of blood vessels, activates blood platelets and causes contraction of smooth muscles. Heparin prevents blood clotting.

12. Which of the following cells can release heparin and histamine?

(1) Mast cells (2) Eosinophils

(3) Mast cells and basophils (4) Eosinophils and mast cells

Sol. Answer (3)

Both mast cells and basophils have cytoplasmic granules. Granules contain heparin, histamine and other inflammatory substances.

(Muscular and Nervous tissue)

13. Nucleus pulposus is present in

(1) Centre of skull bones (2) Patella

(3) Scapula (4) Centre of intervertebral disc

Sol. Answer (4)

In centre of intervertebral disc, a soft area is present called nucleus pulposus which is supposed to be remnant of notochord.

14. Which of the following tissue is present in maximum amount, joins different tissues, forms the packing between them and helps to keep the organs in place and normal shape?

(1) Areolar (2) Adipose

(3) Tendon (4) Ligament

Sol. Answer (1)

Areolar tissue is the most abundant type of connective tissue that connects integument to muscles.

15. A new born baby has the cold resisting tissue called

(1) Brown adipose tissue

(2) White adipose tissue

(3) Reticular tissue

(4) Areolar tissue

Sol. Answer (1)

Brown fat is called thermogenic as it can produce heat instead of ATP and prevents shivering in newly born.

16. The bone of a mammal contains Haversian canals which are interconnected by transverse canals, known as

(1) Canaliculi (2) Volksmann’s canal

(3) Trabeculae (4) Bidder's canal

Sol. Answer (2)

Long bones of mammals contain haversian canals that are interconnected by transverse canals called Volksmann's canal.

17. Which of the following is **not** a characteristic feature of biceps muscle?

(1) We are usually able to make it contract merely by thinking about it

(2) It has alternate light and dark bands

(3) Its muscle fibre taper at both ends

(4) Its muscle fibres are bundled together in a parallel fashion

Sol. Answer (3)

Biceps muscle is skeletal/striated muscle. Smooth muscle fibres are long, cylindrical unbranched thread like cells which show alternate dark and light band. Smooth muscles are voluntary muscles

Smooth muscle fibres are spindle-shaped with blood middle part and tapering ends.

18. Which of the following is **correct** pairing of a body part and the kind of muscle tissue that moves it?

(1) Iris - Involuntary smooth muscle

(2) Heart wall - Involuntary unstriated muscle

(3) Biceps of upper arm - Smooth muscle fibres

(4) Abdominal wall - Smooth muscle

Sol. Answer (1)

Correctly matched options are

(1) Iris – Involuntary smooth muscles

(2) Heart wall – Cardiac muscle

(3) Biceps of upper arm – Skeletal muscle fibres

(4) Muscles in abdominal wall – Skeletal muscles.

19. Cardiac muscles are

(1) Striated, voluntary with syncytial condition

(2) Unstriated, involuntary, uninucleated

(3) Striated, involuntary with intercalated disc

(4) Involuntary and unstriated

Sol. Answer (3)

Cardiac muscles are striated in appearance are branched and involuntary in nature.

20. Unipolar neurons with an axon and no dendrite are present in

(1) Embryo

(2) Dorsal root ganglia of spinal cord

(3) Brain

(4) Retina

Sol. Answer (1)

Unipolar neurons have only one axon, but no dendron. Such neurons are found in early embryo.

21. In central nervous system the myelin sheath around the nerve fibre is formed by the spiral wrapping of

(1) Neurilemma

(2) Schwann cells

(3) Oligodendrocytes

(4) Neurolemmocytes

Sol. Answer (3)

Schwann cells are neurolemmocytes that form myelin sheath around axons in PNS while oligodendrocytes form myelin sheath in CNS.

SECTION - B

Previous Years Questions

1. Nissl bodies are mainly composed of **[NEET-2018]**

   (1) Proteins and lipids

   (2) DNA and RNA

   (3) Free ribosomes and RER

   (4) Nucleic acids and SER

Sol. Answer (3)

Nissl granules are present in the cyton and even extend into the dendrite but absent in axon and rest of the neuron.

Nissl granules are in fact composed of free ribosomes and RER. They are responsible for protein synthesis.

2. Smooth muscles are **[NEET-Phase-2-2016]**

   (1) Involuntary, fusiform, non-striated

   (2) Voluntary, multinucleate, cylindrical

   (3) Involuntary, cylindrical, striated

   (4) Voluntary, spindle-shaped, uninucleate

Sol. Answer (1)

Smooth muscles are involuntary, fusiform, nonstriated muscles.

3. Which type of tissue **correctly** matches with its location? **[NEET-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

Sol. Answer (2)

Columnar epithelium is present in the lining of stomach.

- Tendon is dense connective tissue and connects muscle to bone.
- Tip of nose consists of elastic cartilage.

4. The function of the gap junction is to : **[Re-AIPMT-2015]**

   (1) Stop substance from leaking across a tissue.

   (2) Performing cementing to keep neighbouring cells together.

   (3) Facilitate communication between adjoining cells by connecting the cytoplasm for rapid transfer of ions, small molecules and some large molecules.

   (4) Separate two cells from each other.

Sol. Answer (3)

Gap junctions are communicating junctions in animals which facilitates communication between two adjoining cells by protein bridges for rapid transfer of ions, small molecules and large molecules.

5. 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

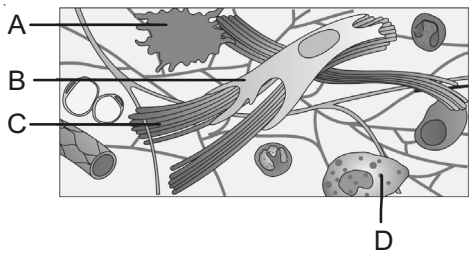
Sol. Answer (3)

6. 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

Sol. Answer (3)

7. 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]**



Options :

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

Sol. Answer (1)

A. Macrophages are irregular in outline. They have many elongated pseudopodia. Cells are attached to matrix fibres.

B. Fibroblast are flat, irregular cells with branched stellate process fibroblast have flattened heterochromatic nucleus and small amount of cytoplasm with fewer organelles.

C. Several collagen fibers (proteinaceous) in matrix of connective tissue.

D. Mast cells are rounded or oval cells having filopodia. Nucleus is small and centrally placed. Cytoplasm contain granules of heparin and histamine.

8. The supportive skeletal structures in the human external ears and in the nose tip are examples of **[AIPMT (Mains)-2012]**

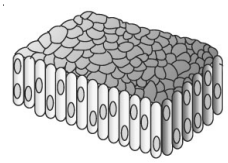
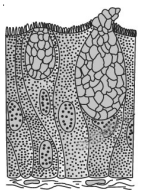
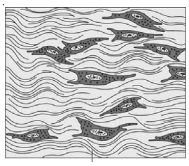
(1) Cartilage (2) Ligament (3) Areolar tissue (4) Bone

Sol. Answer (1)

Yellow elastic cartilage is present in pinna, ear canal, eustachian tube, tip of nose and some laryngeal components.

9. The four sketches (A, B, C and D) 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]

(A)  (B)  (C)  (D) 

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

Sol. Answer (1)

Option	Tissue	Location	Function
A	Columnar epithelium	Intestine and stomach	Secretion and absorption
B	Glandular epithelium	Intestine	Secretion
C	Dense regular connective tissue	Tendons and ligaments	Locomotion
D	Cardiac muscle cells	Heart	Heart contraction

10. The ciliated columnar epithelial cells in humans are known to occur in **[AIPMT (Prelims)-2011]**

(1) Fallopian tubes and urethra (2) Eustachian tube and stomach lining

(3) Bronchioles and Fallopian tubes (4) Bile duct and oesophagus

Sol. Answer (3)

The epithelium consist of columnar cells that possess cilia over their free surface. Ciliated columnar epithelium occurs in respiratory tract (except terminal bronchioles and alveoli), fallopian tube, parts of uterus and cervix and efferent tubules of testes.

11. The cells lining the blood vessels belong to the category of **[AIPMT (Mains)-2011]**

(1) Columnar epithelium (2) Connective tissue

(3) Smooth muscle tissue (4) Squamous epithelium

Sol. Answer (4)

Blood vessels contain a central lumen lined with single layer of flattened epithelial cells-squamous epithelial cells. The smooth surface of squamous epithelium minimizes resistance to flow of blood.

12. The kind of epithelium which forms the inner walls of blood vessels is **[AIPMT (Prelims)-2010]**

(1) Squamous epithelium (2) Cuboidal epithelium

(3) Columnar epithelium (4) Ciliated columnar epithelium

Sol. Answer (1)

13. The epithelial tissue present on the inner surface of bronchioles and fallopian tubes is

[AIPMT (Prelims)-2009]

(1) Glandular (2) Ciliated (3) Squamous (4) Cuboidal

Sol. Answer (2)

14. The cell junctions called tight, adhering and gap junctions are found in: **[AIPMT (Prelims)-2009]**

(1) Connective tissue (2) Epithelial tissue

(3) Neural tissue (4) Muscular tissue

Sol. Answer (2)

15. The kind of tissue that forms the supportive structure in our pinna (external ears) is also found in: **[AIPMT (Prelims)-2009]**

(1) Nails (2) Ear ossicles

(3) Tip of the nose (4) Vertebrae

Sol. Answer (3)

External ears and pinna is made of yellow elastic cartilage.

16. Mast cells secrete **[AIPMT (Prelims)-2006]**

(1) Hippurin (2) Myoglobin

(3) Histamine (4) Haemoglobin

Sol. Answer (3)

17. Epithelial cells of the intestine involved in food absorption have on their surface **[AIPMT (Prelims)-2005]**

(1) Pinocytic vesicles (2) Phagocytic vesicles

(3) Zymogen granules (4) Micro-villi

Sol. Answer (4)

18. Four healthy people in their twenties got involved in injuries resulting in damage and death of a few cells of the following. Which of the cells are least likely to be replaced by new cells? **[AIPMT (Prelims)-2005]**

(1) Osteocytes (2) Malpighian layer of the skin

(3) Liver cells (4) Neurons

Sol. Answer (4)

In nerve cells power of division and regeneration are absent.

19. Identify the tissue shown in the diagram and match with its characteristics and its location

(1) Skeletal muscle, shows striations and closely attached with the bones of the limbs

(2) Smooth muscles, show branching, found in the walls of the heart

(3) Cardiac muscles, unbranched muscles, found in the walls of the heart

(4) Striated muscles, tapering at both-ends, attached with the bones of the ribs

Sol. Answer (1)

Skeletal/striated muscle fibers are long cylindrical unbranched thread-like cells which show alternate light and dark cross-bands. These fibres occur in parallel bundles to form striated muscle. Most of striated muscles are attached to bones and accomplish a range of movements.

20. Which one of the following human organs is often called the "graveyard of RBCs"?

(1) Gall bladder (2) Kidney

(3) Spleen (4) Liver

Sol. Answer (3)

Spleen eliminates worn out or damaged red blood cells so spleen is often called graveyard of RBCs.

21. Phagocytosis and pinocytosis are collectively termed as

(1) Endocytosis (2) Suspension feeding

(3) Omnivores (4) Mucous trap

Sol. Answer (1)

Endocytosis is a process by which material move into cell. Pinocytosis is mechanism by which cells ingest extracellular fluid and its contents; it involves formation of invagination by cell membrane and which closes and breaks off from to form fluid-filled vacuoles in cytoplasm.

Pinocytosis and phagocytosis are both types of endocytosis. Pinocytosis is cellular drinking and phagocytosis is cellular eating.

22. An epithelial tissue which has thin flat cells, arranged edge to edge so as to appear like closely packed tiles, is found to be present at

(1) Outer surface of ovary (2) Inner lining of fallopian tube

(3) Inner lining of stomach (4) Inner lining of cheeks

Sol. Answer (4)

Inner lining of cheeks is stratified keratinised squamous epithelium. This epithelium is compound epithelium in which cells of superficial layer are squamous, *i.e.* polygonal and flattened in outline.

23. The desmosomes are concerned with

(1) Cell division (2) Cell adherence

(3) Cytolysis (4) Cellular excretion

Sol. Answer (2)

Desmosomes are intercellular junctions, these are plaque like areas which provides strong attachment between two adjacent cells with the help of adhesion molecules and filaments. Desmosomes serve anchoring function.

24. *Stratum germinativum* is an example of which kind of epithelium?

(1) Columnar (2) Squamous

(3) Cuboidal (4) Ciliated

Sol. Answer (1)

Stratum germinativum or stratum basale is a layer of columnar epithelium cells that actively divide and are responsible for regenerating epidermis.

25. Basement membrane is made up of

(1) Cell product of epithelial cell

(2) Epidermal cell only

(3) Endodermal cell

(4) Both (2) & (3)

Sol. Answer (1)

Basement membrane is delicate non cellular layer made of extracellular material that lies below epithelium in contact with its basal surface. Basement membrane is made of two parts outer basal lamina and inner reticular lamina. Basement membrane provides elestic support and also anchors epithelial tissues to underlying connective tissue for obtaining nutrients.

Basal lamina : Secreted by epithelial cells and formed by glyco-protein and mucopolysaccharides.

Reticular lamina : Inner thick layer composed of collagen or reticular fibers of underlying connective tissue.

26. The Nissl's granules of nerves cell are made up of

(1) DNA (2) RNA

(3) Ribosome (4) Protein

Sol. Answer (3)

Cyton or cell body of neurons contain characteristic deeply stained particles called Nissl's granules. Nissl's granules are large and irregular masses of ribosomes and rough endoplasmic reticulum.

27. Protein present in cartilage is

(1) Cartilagin (2) Ossein

(3) Chondrin (4) Oesein

Sol. Answer (3)

The ground substance or matrix of cartilage is called chondrin. Chondrin is a bluish-green gelatin-like substance, made of protoglycans consisting of glycoproteins and glucosaminoglycans.

28. Tendon is made up of

(1) Yellow fibrous connective tissue

(2) Modified white fibrous tissue

(3) Areolar tissue

(4) Adipose tissue

Sol. Answer (2)

Tendons are made of white fibrous dense regular connective tissue and contain abundant fasicles of white collagen fibers. Tendons are inelastic in nature and connect muscle to bones.

29. Ligament is a

(1) Inelastic white fibrous tissue

(2) Modified white fibrous tissue

(3) Modified yellow elastic fibrous tissue

(4) None of these

Sol. Answer (3)

Ligaments are yellow elastic fibrous (dense regular) connective tissue. Ligaments are elastic in nature where matrix is pervaded by bundles of elastic fibres and collagen fibres.

30. Why hair loss is more in old age?

(1) Reduction of blood supply

(2) Decrease in protein synthesis

(3) Low energy production

(4) Reduced storage of glycogen

Sol. Answer (1)

Due to reduction in blood supply, hair follicle does not receive proper nutrition. Due to poor nutrition hair fall occurs in old age.

31. What happens if bone of frog is kept in dilute hydrochloric acid?

(1) Will becomes flexible
(2) Will turn black
(3) Will break into pieces
(4) Will shrink

Sol. Answer (1)

When bone is kept dipped in dilute acid for long hours, then calcium, magnesium and potassium of inorganic part of matrix get dissolved but organic part remain intact. Bones become flexible if immersed in acid as calcium salts are removed from bone.

32. Characteristic of simple epithelium is

(1) They are arranged indiscriminately
(2) They make a definite layer
(3) Continue to divide and help in organ function
(4) None of these

Sol. Answer (2)

Simple or unilaminal epithelium is a tissue that is made of single layer of compactly arranged cells all of which rest over a non cellular basement membrane.

33. Which of the following statement is correct for node of Ranvier of nerve?

(1) Neurilemma is discontinuous
(2) Myelin sheath is discontinuous
(3) Both neurilemma and myelin sheath are discontinuous
(4) Covered by myelin sheath

Sol. Answer (2)

Myelinated neurons possess axons enveloped with lipid rich sheath called myelin sheath. Myelin sheath is present as spiral wrapping around axons of each neurons. Myelin sheath in neuron is not a continuous sheath. Certain gaps/intervals are present between adjacent sheaths of single axon. These gaps which are present between two adjacent myelin sheath are called node of ranvier.

34. Which one of the following contains the largest quantity of extracellular material?

(1) Striated muscle
(2) Areolar tissue
(3) Stratified epithelium
(4) Myelinated nerve fibres

Sol. Answer (2)

Connective tissue is most abundant and widely distributed tissue in body of animals. Connective tissue consist of living cell embedded in abundant non-living intercellular matrix which connects different tissues or organs. Areolar tissue loose connective tissue and most widely distributed connective tissue in animal body.

Stratified epithelial tissue consist of variously shaped cells closely arranged in one or more layers. There is little intercellular material between epithelial cells.

Striated muscles are made up of many long, cylindrical, fiber like-cells, arranged in the form of sheet or bundles. The muscle fibers have no intercellular substances.

Myelinated nerve fibers does not possess intercellular substances or extracellular material.

35. Which among following be described as Nissl's granules in a nerve cell are now identified as?

(1) Cell metabolites

(2) Fat granules

(3) Ribosomes

(4) Mitochondria

Sol. Answer (3)

Cyton or cell body of neurons contain characteristic deeply stained particles, called Nissl's granules. Nissl's granules are large and irregular masses of ribosomes and rough endoplasmic reticulum.

36. Mast cells of connective tissue contain

(1) Vasopressin and relaxin

(2) Heparin and histamine

(3) Heparin and calcitonin

(4) Serotonin and melanin

Sol. Answer (2)

Mast cells contain cytoplasmic granules of heparin and histamine. Heparin prevents blood clotting. Histamine produces inflammation, increases permeability of blood vessels and causes contraction of smooth mucles.

37. In which one of the following preparations are you likely to come across cell junctions most frequently?

(1) Thrombocytes

(2) Tendon

(3) Hyaline cartilage

(4) Ciliated epithelium

Sol. Answer (4)

Epithelial cells are held together by intercellular junctions which serve as structural and functional links between them.

SECTION - C

Assertion-Reason Type Questions

1. A : Mammary glands are apocrine glands.

R : The product of secretion is shed with the whole cell leading to its destruction.

Sol. Answer (3)

Assertion is true as mammary glands are apocrine gland.

Reason is false as in apocrine glands only apical portion of cytoplasm is shed along with secretory product.

2. A : Human bone has Haversian canals.

R : Haversian canals are interconnected by Volkmann's canals.

Sol. Answer (2)

Assertion is true as compact bones are composed of many parallel, longitudinal column like structure called haversian canal.

Reason is also true as haversian canals are connected to each other by Volksmanm's canal.

Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.

3. A : In non-keratinised stratified squamous epithelium stratum corneum is without keratin.

R : Such epithelium occurs over surfaces which are not exposed to drying but are subject to abrasions.

Sol. Answer (1)

Assertion is true as non-keratinised stratified squamous epithelium, stratum corneum (*i.e.* superficial layers) are devoid of insoluble protein called keratin.

Reason is also true as due to absence of keratin, this epithelium covers moist surfaces such as buccal cavity, pharynx, oesophagus and are subjected to abrasions.

Both Assertion and Reason are true and Reason is correct explanation of Assertion.

4. A : The nucleus of plasma cell has cart wheel appearance.

R : Nucleus contains peripheral clumps of heterochromatin.

Sol. Answer (1)

Assertion is true as nucleus in plasma cells is eccentric but rounded and have cart wheel appearance.

Reason is also true as cart wheel appearance is due to peripheral clumps of heterochromatin.

Both Assertion and Reason is true and Reason is correct explanation of Assertion.

5. A : Yellow bone marrow is reserve erythropoietic tissue.

R : After severe bleeding yellow marrow may convert to red marrow.

Sol. Answer (1)

Assertion is true as yellow bone marrow is reserve erythropoietic tissue.

Reason is also true as body can convert yellow bone marrow back to red marrow in order to increase blood cell production.

6. A : The cells that produce and secrete fibres are called fibroblasts.

R : Fibroblasts are the characteristic cells of all types of connective tissue.

Sol. Answer (3)

Assertion is true as fibroblast are most abundant cells of areolar tissue. Fibroblast secrete most of extracellular matrix as well as various type of fibers.

Reason is false as fibroblast are not the characteristic cell for specialized connective tissue such as bone, cartilage, blood and lymph.

7. A : Gap junctions connect the cytoplasm of adjoining cells.

R : Gap junctions facilitate the cells to communicate with each other.

Sol. Answer (2)

Assertion is correct as gap junction facilitate cells to communicate with each other by connecting cytoplasm.

Reason is correct as gap junction allow rapid transfer of ions and molecules between adjoining cells.

So both Assertion and Reason are true but Reason is not correct explanation for Assertion.

8. A : Intercellular material is minimum between the cells of epithelial tissue.

R : Epithelial cells are not secretory in nature.

Sol. Answer (3)

Assertion is true as epithelial tissue consist of variously shaped cells closely arranged in one or more layers. There is little intercellular material between epithelial cells.

Reason is false as epithelial cells are secretory in nature, epithelial cells secrete basal lamina (basement membrane)

Assertion is true but reason is false.

9. A : Smooth muscle fibres are unstriated, fusiform and uninucleate.

R : These cells are involuntary in function.

Sol. Answer (2)

Assertion is true as smooth muscles are non-striated, and are fusiform (elongated and spindle shaped, pointed or tapered at ends and broad in middle). Smooth muscles have centrally located single oval nucleus.

Reason is true as smooth muscles are involuntary in their activity, *i.e.* their functioning cannot be directly controlled.

Assertion and Reason is true but Reason is not correct explanation for assertion.

10. A : The inner lining of trachea, bronchi and fallopian tubes has simple epithelium with non-motile cilia.
R : Cilia form the brush-border.

Sol. Answer (4)

Assertion is false as epithelium lining inner surface of hollow organs like fallopian tubes and most of respiratory tract is ciliated columnar cells.

Reason is also false as brush bordered epithelium of intestinal mucosa bear microvilli on surface.

Both Assertion and Reason is false.

❑ ❑ ❑