

Date: 14/05/2026

Duration: 01 hour

Answer the following questions by choosing ONLY ONE correct answer

**1/-The ectoblast gives rise to:**

- A. Digestive tract      B. Skeleton      C. Skin      D. Cartilage      E. Urinary system

**2/-Non-keratinized stratified squamous epithelium:**

- A. Has a cornified layer      B. Is present in the skin  
C. Is ciliated      D. Lines the esophagus      E. Is simple columnar

**3/-Metaplasia is:**

- A. Cell death      B. Transformation of one epithelium into another.  
C. Cell division      D. Infection      E. Apoptosis

**4/- The endothelium:**

- A. Is stratified      B. Lines the vascular cavities  
C. Is columnar      D. Is keratinized  
E. Is pseudo-stratified

**5/-Regarding stereocilia:**

- A. They are motile      B. They are rich in microtubules  
C. They are long immobile projections      D. They are present in the bronchi  
E. They ensure mucociliary transport

**6/-Type I collagen fibers are :**

- 1-the most widespread in the body  
2-the fibers specific to the basal laminae  
3-highly present in hyaline cartilage  
4-present in the dermis  
5-visible after silver impregnation

- A-1,2      B-2,3      C-1,4      D-3,4      E-2,5

**7/- At the level of the common connective tissue, the fibroblast is a cell that:**

- 1- is rich in intracellular organelles  
2- is a mature and relatively inactive cell  
3- synthesizes the extracellular matrix  
4- allows for lipid storage  
5- secretes cytokines and growth factors

- A-1,2,3      B-2,3,4      C-3,4,5      D-1,2,5      E-1,3,5

**8/- Mucous connective tissue:**

- 1- Is predominant in the submucosa  
2- Is very rich in fibers  
3- Is characterized by an abundance of ground substance  
4- Is predominant in the uterine lining of pregnant women  
5- Is found in Wharton's jelly

- A-1,4      B-2,3,4      C-3,5      D-1,3,4      E-1,3,5



**9/- Dense, bi-extended connective tissue is found in:**

- A- Tendons                      B- Periosteum                      C- Ligaments  
D- Organ capsules                      E- Corneal dermis

**10/- Primary adipose connective tissue:**

- 1- Serves to store lipids.
- 2- Is located in brown fat.
- 3- Is very abundant in the fetus.
- 4- Is located in white fat.
- 5- Can represent up to 25% of body weight in women.

A- 1.2                      B- 3.4                      C- 2.3                      D- 4.5                      E- 1.5

**11/- Osteoblasts:**

1. Are bone-forming cells
2. Have cytoplasm rich in intracytoplasmic organelles
3. Reside in osteoplasts
4. Are left at rest in the form of osteocytes
5. Are slender cells with a brush border.

A-1,2                      B-1,3                      C-2,4                      D-2, 4,5                      E-1,5

**12/- The endosteum:**

- A. Allows for the longitudinal growth of the bone
- B. Contains Sharpey's fibers
- C. Lines the periphery of the bones
- D. Lines the articular surfaces
- E. Lines the walls of the vascularized cavities of bones

**13/- Haversian Canals:**

1. Are transverse canals
2. Connect the Volkmann's canals to the periosteum
3. Are longitudinal canals
4. Allow the passage of blood vessels
5. Are interstitial systems.

A-1,2                      B-1, 2,3                      C-3, 4,5                      D-3,4                      E-4,5

**14/-Enchondral ossification :**

- A. Occurs in a connective tissue model
- B. Occurs in a cartilaginous model
- C. Begins at the epiphyses
- D. Is a periosteal ossification
- E. Ensures the growth in thickness of long bones.

**15/- Lamellar bone tissue is characterized by :**

- 1- Regular bone lamellae
- 2- Irregular orientation of collagen fibers
- 3- Very high mineralization
- 4- A large number of dispersed osteocytes
- 5- Osteoblasts located between the lamellae.

A-1, 2,3                      B-2,3                      C-3, 4,5                      D-1, 3                      E-4,5

**16/-In the striated muscle cell, the triad is formed by :**

- A. One T-tubule and one terminal cisterna.
- B. Three successive T-tubules.
- C. Three myosin filaments.
- D. Two T-tubules and one terminal cisterna.
- E. One T-tubule flanked by two terminal cisternae of the sarcoplasmic reticulum.

**17/-Type II muscle fibers (white fibers) are characterized by:**

- A. Having the highest myoglobin content.
- B. Having the highest content of mitochondria and redox enzymes.
- C. Rapid contraction and significant fatigue.
- D. Scarcity of contractile myofibrils.
- E. The absence of neuromuscular spindles.

**18/-During the contraction of striated muscle fibers, the troponin subunit that binds calcium is:**

- |                     |                     |                     |
|---------------------|---------------------|---------------------|
| A. Troponin C (TnC) | B. Troponin I (TnI) | C. Troponin T (TnT) |
| D. F-actin          | E. G-actin          |                     |

**19/-Intercalated Discs (Traits Scalariformes):**

- A. They are lines of intercellular junctions composed solely of tight junctions.
- B. Actin filaments terminate at their level and associate with the sarcolemma.
- C. They are extensions of the smooth endoplasmic reticulum.
- D. They block the passage of membrane excitation.
- E. None of the answers is correct.

**20/-In comparison to other muscle types, skeletal striated muscle is characterized by:**

- A. Involuntary and rapid contraction.
- B. Mononucleated and fusiform cells.
- C. Multinucleated skeletal muscle cells (rhabdomyocytes) under voluntary control.
- D. The absence of actin and myosin filaments.
- E. Cells connected by Eberth's intercalated discs.

**21/-Erythrocytes (red blood cells) are characterized by:**

- A. A lifespan of 200 days.
- B. An oval and nucleated shape.
- C. A role in humoral defense (immunoglobulins) and cellular defense.
- D. Cytoplasm containing large basophilic granules.
- E. A biconcave disc shape.

**22/-Regarding neutrophil polymorphonuclear cells:**

- A. They have a single nucleus with several lobes.
- B. A cytoplasm devoid of granules.
- C. Anucleated cell fragments.
- D. A population representing 1% of total leukocytes.
- E. The capacity to produce immunoglobulins.

**23/-Hyalin cartilage is:**

- 1-located primarily in the auricle of the ear
- 2-formed by type II collagen fibers
- 3-the most abundant in the body
- 4-present in the articular menisci
- 5-formed of a thick network of type I collagen fibers

- |       |       |       |       |       |
|-------|-------|-------|-------|-------|
| A-1,2 | B-3,4 | C-2,3 | D-4,5 | E-1,5 |
|-------|-------|-------|-------|-------|

**24/-Elastic cartilage is found in all these locations except one. Which one?**

- A-The larynx
- B-The epiglottis
- C-The external auditory canal
- D-The auricle (or pinna)
- E-The Achilles tendon

**25/-Fibrocartilage is:**

- 1-stainable histologically with Masson's trichrome
- 2-rich in type I collagen fibers
- 3-present in intervertebral discs
- 4-rich in type II collagen
- 5-represented primarily by articular cartilage

A-1,2,4

B-2,3,4

C-1,2,3

D-1,3,5

E-3,4,5

**26/-What type of glial cell produces myelin in the central nervous system?**

- A.Oligodendrocytes
- B.Astrocytes
- C.Schwann cells
- D.Microglia
- E.Neurons

**27/-Ependymal cells line:**

- A.Blood vessels
- B. Cerebral ventricles
- C. Peripheral nerves
- D. White matter
- E. Spinal ganglia

**28/-A pentalamellar junction corresponds to :**

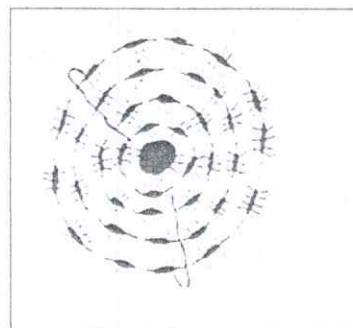
- A. Desmosome
- B. Tight junction
- C. Hemidesmosome
- D. Intermediate junction
- E. Interdigitation

**29/-Merocrine secretion corresponds to:**

- A.exocytosis without cellular alteration
- B.total cell destruction
- C. partial loss of cytoplasm
- D.apoptosis
- E. Endocrine secretion

**30/-This diagram represents:**

- A. an external fundamental system
- B. an internal fundamental system
- C. an incomplete osteon
- D. a Haversian system
- E. an interstitial system.



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