Histology

Past Papers

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Bone tissue and Bone ossification

Q1) In the diaphysis of a typical long bone which of the following structures is in closest proximity to the trabeculae of cancellous bone?

- A)Interstitial lamella
- B Sharpey's fibers
- C) Inner circumferential lamellae
- D)Osteons
- E) Outer circumferential lamellae
- Answer: C

Q2) Several layers of cells reside within epiphyseal plates of developing long bones. Which layer is responsible for anchoring the plate to the bony epiphysis?

- A) Cells undergoing mitosis
- B)Cells enlarging and becoming calcified
- C)Dead cells with calcified intercellular substance
- D) Resting cells
- E)None of the above
- Answer: D

Q3)Bone Histology, Choose the wrong statement:

A) the Bone hardness results from the presence of collagen type 1

b.) Both compact and spongy bones are considered lamellar bones.

C) the Lamellae of compact bone are organized into the haversea system.

D) Bone collar is formed only during endochondral ossification

E) Interstitial lamellae are remnants of once existed concentric lamellae

Answer: A

Q4) after birth, growth in the length of long bones occurs primarily through:

A)The action of osteoblasts in the primary ossification center

B)increased bone deposition under periosteum

C)The action of osteoblasts in the secondary ossification center

D)Appositional growth from the periphery

E)Interstitial growth of cartilage cells in the epiphyseal plate

Answer: E

Q5) In endochondral ossification, what happens to the chondrocytes?

- A) They die in the calcified matrix that surrounds them
- B) They grow and form periosteum
- C)They increase in size and persist throughout life
- D)They group together to form the primary ossification center
- E)They develop into osteocytes

Answer: A

Q6)Regarding joints, choose the WRONG match?
A) Diarthrosis: synovial joints
B)Symphysis: hyaline cartilage
C)Synarthrosis: no movement
D)Syndesmosis: interosseous membrane
E)Synchondrosis: growth plate
Answer: B

Q7) Which of the following you won't find intramembranous ossification? ANSWER : Osteoclasts appear Basophilic in H&E sections.

Q8) Which of the following is wrong? Answer : Osteoclasts appear Basophilic in H&E sections.

Q9) Which of the following statements is wrong? Answer : You always find perichondrium around hyaline cartilage.

Q10).Which of the following statements is wrong? Answer: Spongy bone is formed only by intramembranous ossification.

Q11) In a section of spongy bone solely formed by intramembranous ossification ,which of the following would not be seen? Answer: Calcified cartilage.

Q12). In differentiating between bone and hyaline cartilage ,which of the following is least valuable? Answer : Lacunae Q13) Howships's lacunae are found around? Answer: Osteoclasts

Q14) .Which of the following is wrong? Answer: Growth can continue after the closure of epiphyseal growth plate .

Q15) .Which of the following is correct about woven bone? Answer: It is formed during fractures repairing.

Q16) .Common between osteoblasts and chondroblasts?

Answe: Both are differentiated mesenchymal cells.

Q17) Which of the following is NOT true about canaliculi?

- A) they connect lacunae by tiny channelsb.
- B) they contain cytoplasmic extensions of osteocytesc.
- C) tiny nerves pass through them
- D) nutrients diffuse through them
- E) all of the above are true

Answer : C

Q18) The CT framework used for the formation of bones by intramembranous ossification:

- a. cartilage
- b. collagen fibers
- c. calcified cartilage matrix
- d. a and c can be correct

Answer: B

Q19) The mesenchymal cells on the edges differentiate into to form the outer layer periosteum in intramembranous ossification:

a. osteoblasts

- b. osteoclasts
- c. fibroblasts
- d. osteocytes
- e. none of the above

Answer: C

Q20) regarding fetal intramembranous ossification, choose the correct statement -if any

- a. only one centre of ossification can exist simultaneously
- b. both compact and spongy bone are formed at the same time
- c. some parts of fibrous membrane in skull is not be replaced by bone tissue.
- d. it is responsible for long bones formation such as femur
- e. all of the above are incorrect

Answer: C

Q21) T or F: In intramembranous ossification, the formation of trabeculae occurs before the osteoblasts promote calcification (before the bone matrix is hardened)

true false cannot be determined Answer: F Q22) Choose the incorrect statement, if any, regarding the endochondral ossification:

- a. death of chondrocytes creates a porous structure consisting of calcified cartilage remnants
- b. bone starts solid, and then becomes hollow later on
- c. one or more secondary ossification centers can exist simultaneously
- d. chondrocytes surrounded by bone collar in the mid. of diaphysis experience "gradual" death
- e. all of the above are correct

Answer : E

Q23) Appositional growth is due to bone formation _____

- a. in epiphysis
- b. in the growth plate
- c. in the medullary cavity
- d. beneath the periosteum
- e. none of the above
- Answer: D

Q24) An astronaut has experienced no gravity for a long time, what is your conclusion?

- a. a decrease in bone mass
- b. an increase in bone mass
- c. gravity has nothing to do with bones. It's just physics.

Answer:A

Q25) Regarding joints classification, choose the incorrect statement

- a. syndesmosis joint is fibrous and amphiarthrotic
- b. sutures have no joint cavities
- c. the capsule of elbow joint is not reinforced by ligaments
- d. The articular surface in synovial joint is covered by articular cartilage
- e. all of the above are true

Answer: C



Q26) .Distal zone in a distal epiphyseal growth plate :

Answer : Resting zone.

(pay attention and don't mix up with the ossification zone)



Q27) Identify the pointed zone : Answer: Hypertrophy zone



Q28) Which of the following you can't find in this section? Answer : Secondary ossification center.



- Q29) Choose the WRONG regarding sections these ?
- a) Canaliculi can be identified in section B
- B)Osteoid matrix, red bone marrow and endosteum can be identified in section B
- C) Interstitial lamellae can be identified in section A
- D)Volkmann's canal can be identified in section A
- E) Section A is a ground bone section, while section B is a decalcified section



Answer :A

Muscle tissue

Q30) Cardiac muscle cells, choose the WRONG statement:

- a) Are not capable of extensive cell division in repairing damaged heart tissue
- b)Have adherens junctions
- c)Cardiac tissue lacks satellite cells
- d) Lack intermediate filaments
- E) Are electrically coupled to each other via gap junctions

Answer: D

Q31) With the transmission electron microscope skeletal muscle fibers can be seen to contain structures called triads. What do the two lateral components of a triad represent?

- a) Sites for ATP production
- b)Sites for synthesis of proteins to be secreted outside the cell
- c) Sites for calcium sequestration and release
- d) Attachment sites for thick myofilaments
- E)Sites for impulse conduction into the fiber

Answer: C

32)Red fibers, choose the CORRECT statement:

- a)Are larger in diameter compared to white fibers
- b) Can be diferentiated from white fibers using H & E
- C) Their oxidative capacity is high
- D) Their glycolytic capacity is high
- E) Their ATPase activity is high

Answer: C

Q33) Which of the following is present in all three types of muscle cells:

A) Intercalated discs

b) Troponin

c)Dense bodies

D) Myosin

E) A and I bands

Answer: D

Q34) muscle tissue, choose the CORRECTstatement:

A) Intrafusal muscle fibers form the bulk of the skeletal muscle

B)Epimysium is a loose type of connective tissue

C)Intracytoplasmatic dense bodies of smooth muscle cells functionally correspond to the Mlines of the other muscle types

D)The motor unit may contain both red and white muscle fibers

E) Skeletal muscle cells are not connected by gap junctions

Answer:E

Q35) In the A band of a sarcomere of voluntary muscle:

A)There are only thin myofilaments

B The M line is found

C)The Z line is found

D)There are no myofilaments

E)There are only thick myofilaments

Answer: B

Q36) Intercalated discs , choose the correct statement: A)are characteristics of striated muscle cells b containing only two types of junctions C)It can be easily visualized when observing a longitudinal section of cardic muscle cells D)producing cross striations ofstriated muscle E)are found at every Z line Answer: C

Q37) Sarcoplasmic network, choose the correct phrase:

- A) is associated with T tubules in all muscle types
- B) is more extensive in cardial muscle cells compared to skeletal
- c) is rudimentary in smooth muscle cells
- d) forms diads in skeletal muscle cells
- e) None of the above

Answer: C

Q38) cell of smooth muscle , Choose the correct statement:

- A)Upon contraction they becomes globular
- b) Have a distinct sarcomere
- C)lacke gap junctions
- D)ottenebranching
- E)are controlled by somatic neurons

Answer: A

Q39) Which of the following is incorrect regarding the functions of muscles:

- A) To produce a movement, muscle should at least cross two joints
- B) Contraction of muscles, results in locomotion only
- C) When we feel cold we shiver due to contraction of muscles
- D) All of the above are incorrect except C

Answer:D

Q40) All of the following are correct according to skeletal muscle EXCEPT:

- A) Their cells have obvious striations
- B) They represent almost half of body weight
- C) Their contraction is voluntary
- D) It can be found in viscera
- E) All of the above are correct
- Answer : D

Q41) Which of the following statements regarding the connective tissue of a skeletal muscle is correct?

- A) the perimysium surrounds the individual muscle fibers within a fascicle
- B) The epimysium separates each muscle fascicle from others
- C) The endomysium consists of loose connective tissue and surrounds the muscle fiber
- D) The perimysium envelopes the whole muscle
- E) endomysium is not involved in formation the tendon that connects the muscle to the bone

Answer : C

Q42) All of the following are correct regarding myofibrils in skeletal muscle except:

- A) They are short rows of repeating sarcomeres
- B) They are composed of myosin and actin filaments
- C) They are organelles within the sarcolemma
- D) All of the above are incorrect except B
- Answer: D

Q43) The sarcomere is composed of:

- A) One A band, One I band, One T tubules
- B) One A band, Two I band, Two T tubules
- C) One A band, Two halves of I bands, Two T tubules

D) One A band, Two halves of I bands, We cannot determine the number of T tubules Because we don't know the type of muscle

Answer : D

Q44) Which of the following is the lightest staining area in the sarcomere:

- A) H band
- B) A band
- C) I band
- D) A and C are correct
- Answer: C

Q45) All of the following are correct regarding to myosin filaments, except

- A) It has 2 heads and one tail
- B) It has 2 binding sites in each head
- C) It is anisotropic
- D) All of the above are correct
- E) none of the above is true

Answer: D

Q46) When a skeletal muscle contracts the arrangement of the alternating light and dark bands traversing each skeletal muscle cell changes. Which of the following statements is not correct?

- A) The dark A bands length remains constant
- B) The space occupied by the H zone will not change
- C) The light I bands will shorten
- D) The z lines come closer together
- E) B and D
- Answer: B

Q47)) Which of the following is incorrect:

- A) If T tubules are absent, only the peripheral myofibrils will be stimulated
- B) The triad is located at the junction between A and I bands
- C) Binding between myosin head and actin filaments is called cross bridge
- D) Movement of myosin heads toward M line is called power stroke
- E) All of the above are correct

Answer: E

Q48) The correct arrangement of muscle fibers resistance to fatigue is A) Red > White > Intermediate FIBERS B) White > Intermediate > Red FIBERS C) Red > Intermediate > White FIBERS D) Intermediate > White > Red FIBERS E)none of the above

Answer: C

Q49) All of the following are correct regarding HYPERTROPHY except:

- A) It is caused by increasing in number of myofibrils only
- B) It is caused by increasing in size of myofibers
- C) It is caused by increasing in size and number of myofibrils
- D) All of the above are correct

Answer: A

Q50) Concerning Cardiac and Skeletal muscle, which statement is most accurate?

A) Cardiac Myofibril nuclei are eccentrically located whereas skeletal myofibers nuclei are centrally placed.

B) Skeletal muscle fibers exhibit more branching than cardiac muscle fibers

C) The striations of cardiac muscle cells are more distinct than that of skeletal muscles

D) Cardiac muscle contains structures known as intercalated discs while skeletal muscle does not

Answer:D

Q51) The correct answer according to Intercalated junctional disks in cardiac muscle is:

A) fascia adherens forms belt like structure around the cardiac cell

B) Desmosomes are associated with actin filaments

C) Fascia adherens are associated with intermediate filaments

D) It contains 3 types of junctions

Answer :D

Q52) What type of muscle is mainly composed of spindle shaped cells?

- A) Skeletal muscle
- B) Cardiac muscle
- C) Smooth muscle
- D) Both "a" and "b"
- Answer: C

Q53) There are certain structures called caveolae. Which of the following is not correct:

- A) They are short depressions of the sarcolemma
- B) They have high concentration of sensory receptors
- C) We can find them on the plasma membrane of skeletal muscle cells
- D) All of the above are correct

ANSWER :C

Q54) All the following are correct regarding all muscle types EXCEPT:

A) Smooth muscles are the only type that has high regeneration power.

B) All types of them can undergo hypertrophy

C) Cardiac muscle lacks satellite cells and has little capacity for regeneration

D) all of the above are correct

Answer:D

Q55) Which of the following is correct?

ANSWER: Desmosomes are perpendicular

Note: (I think what Doctor meant is perpendicular to gap junctions in intercalated discs,

desmosomes are found in the vertical part)

Q56) Which of the following statements is true regarding Sarcoplasmic reticulum?

A : Smooth muscles have less sarcoplasmic reticulum than cardiac and skeletal muscle cells.

Q57:Human myosin fibers are?

ANSWER : Anisotropic.

<u>Lab:</u>

Q58) Which if the following is wrong about this type of muscles? Answer: Innervated by somatic PNS.



Q59) Identify the pointed structure ,and where can you find it? Answer: intercalated discs found in cardiac muscle fibers.



Q59) Choose the CORRECT regarding the cells in this tissue:

A)Are cylindrical in shape

B) Are multinucleated cells

C)Their plasma membranes lack caveolae

d)Have peripherally located nucleus

E)Can undergo hyperplasia and hypertrophy



Answer:D

60)Choose the correct statement?

A) Electron microscopy of a slow multinucleated striated muscle fiber

b)Electron microscopy of an involuntary muscle fiber with sarcomeres

C)Electron microscopy of a mononucleated striated muscle fiber

d) Electron microscopy of a fast multinucleated striated muscle fibe





Nervous tissue

- Q61) regarding dendrites, choose the correct :
- a) are usually the myelinated
- b) Are tapering processes
- C) are usually longer than the axons
- D)Conduct the impulses away from the perikaryon
- E)are less numerous than axon

Answer: B

Q62) The outermost layer of dense irregular connective tissue surrounding a peripheral nerve is called :

- A)Endoneurium
- B)Fasciele
- C) Epineurum
- D)Septum
- E)Perineurium
- Answer: C

Q63) Ganglia of peripheral nervous system, choose the CORRECT statement:

- A) Cell bodies of motor neurons are located in the ventral root of spinal nerve
- b)Sensory ganglia contain synapse
- c)Autonomic ganglia are located in the dorsal root of spinal nerve
- D)Sensory ganglia contain cell bodies of pseudounipolar neurons
- E) Sympathetic ganglia do not contain synapse

Answer: D

Q64) The myelin forming cells in central nervous system are:

- A) Schwann cells
- b)Oligodendrocytes
- C)Microglia
- D)Astrocytes
- E) Satellite cells
- Answer: B

Q65) Neuroglial cells, choose the CORRECT statement:

- A)Are less numerous than neurons
- b) Are not able to divid
- c) Are found in both peripheral and central nervous systems
- d) Are able to transmit nervous impulses
- E) Are larger in size than neurons
- Answer: C
- Q66) Motor neurons are classified as:
- a)Unipolar OR pseudounipolar
- B)Bipolar
- C)Multipolar
- D)Pseudounipolar
- E)Unipolar After birth
- Answer: B

Q67) Which of the following neuroglial cells participate in the formation of blood brain barrier:
A)Microglia
B)Satellite cells
C)Oligodendrocytes
D)Astrocytes
E)schwann cells

Answer: D

Q68) Nervous tissue, choose the CORRECT statement :

A) Motor and sensory innervations of viscera are mediated by somatic nervous system

B)The ventral ramus of a spinal nerve is typically motor while the dorsal ramus is sensory

c) Bundle of axons within peripheral nervous system is called tract

D)Schwann cells support both myelinated and unmyelinated axons in the peripheral nervous system

E) Basophilic granular structures within the axon are called Nissl bodies

Answer : D

Q69) Structures extending the length of the axon which provide the substrate for axoplasmic transport are the :

a) Nissl bodies

- b)Synaptic vesicles
- c) Schwann cells
- d) Nodes of Ranvier

E)Microtubules

Answer: E

Q70) Nissl bodies consist of?

a) Clusters of synaptic vesicles

b)Golgi bodies

- c) Rough endoplasmic reticulum and ribosomes
- D) Lysosomes and lipofuscin granules
- E) Microtubules and microfilaments

Answer:C

Q71) A typical peripheral mixed nerve includes all of the following EXCEPT:

A) Connective tissue of epineurium, perineurium and endoneurium

B)Sensory axons

C)Interneurons

D) Schwann cells

E) Motor axons

Answer: C

Q72) The cell that produce myelin sheath in CNS:

ANSWER: Oligodendrocyte.