

CT Test Bank

1. The most abundant protein in the human body, representing 30% of its dry weight, is:

- A) Collagen
- B) Elastin
- C) Reticulin
- D) Proteoglycan
- E) Glycosaminoglycan

2. Which of the following is NOT a function of connective tissue?

- A) Structural framework
- B) Transportation of fluids
- C) Protection of organs
- D) Energy storage
- E) All of the above are functions of CT

3. Which connective tissue cell type causes the swelling and redness when stung by a mosquito?

- A) Fibroblast
- B) Macrophage
- C) Mast cell
- D) Neutrophilic Leukocytes
- E) Eosinophilic Leukocytes

4. Which Monocyte undergoes a career shift (not immune related)?

- A) Microglial cells
- B) Kupffer cells
- C) Plasma cells
- D) Osteoclasts
- E) Multinuclear giant cells

5. Mast cells secrete all of the following EXCEPT:

- A) Heparin
- B) Histamine
- C) Eosinophil chemotactic factor
- D) Antibodies
- E) Serine proteases

6. What is the smallest possible collagen arrangement that can be seen using an electron microscope?

- A) Triple helix collagen molecules
- B) Collagen Fibrils
- C) Collagen Fibers
- D) Collagen Bundles
- E) Procollagen

7. Which GAG forms a viscous hydrated network that gives the umbilical cord its gelatinous like structure due to high amount present in it?

- A) Hyaluronic acid
- B) Chondroitin sulfate
- C) Dermatan sulfate
- D) Heparan sulfate
- E) Keratan sulfate

8. Which Fiber type forms aggregated collagen bundles linked by other collagens?

- A) Type I
- B) Type II
- C) Type III
- D) Type IV
- E) Type V

9. Which of the following cells has highly folded DNA on histones and no/minimum mRNA production?

- A) Microglial cells
- B) Macrophages
- C) Fibrocytes
- D) Adipocytes
- E) Plasma cells

10. Elastic fibers in connective tissue are stained more darkly than collagen by which stains?

- A) Hematoxylin and eosin
- B) Orcein and aldehyde fuchsin
- C) Periodic Acid-Schiff (PAS)
- D) Silver salts
- E) All of the above

11. Which of the following is NOT a function of the ground substance in connective tissue?

- A) Providing a medium for diffusion
- B) Sequestering cations
- C) Cushioning and lubricating
- D) Forming a structural framework
- E) All of the following are functions

12. Which connective tissue cell type is specialized for the storage of triglycerides cytosolically?

- A) Fibroblast
- B) Macrophage
- C) Mast cell
- D) Adipocyte
- E) Plasma cell

13. Collagen is assembled into larger structures through which process?

- A) Self-assembly of procollagen subunits
- B) Cross-linking
- C) Aggregation of fibrils
- D) Aggregation of fibers forming larger collagen bundles
- E) All of the above

14. Proteoglycans in the ground substance are composed of which two main macromolecular components?

- A) Glycosaminoglycans and proteins
- B) Glycosaminoglycans and lipids
- C) Proteins and lipids
- D) Glycosaminoglycans and elastin
- E) Glycoproteins and lipids

15. What type of connective tissue is found in the dermis of the skin?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Reticular connective tissue

16. Which connective tissue cell type is present in the composition of mucoïd connective tissue?

- A) Reticular cell
- B) Fibroblast
- C) Plasma cell
- D) Macrophage
- E) Adipocyte

17. Which anatomical structure is sheet-forming collagen a major structural component of?

- A) Tendons
- B) Nerve fibers
- C) External laminae
- D) Elastic lamellae
- E) Reticular networks

18. Which GAG is prominently present in the vertebral disk?

- A) Hyaluronic acid
- B) Chondroitin sulfate
- C) Dermatan sulfate
- D) Heparan sulfate
- E) Keratan sulfate

19. What type of connective tissue are tendons and ligaments classified as?

- A) Dense regular connective tissue
- B) Dense irregular connective tissue
- C) Elastic connective tissue
- D) Reticular connective tissue
- E) All of the above

20. The ground substance of connective tissue is composed of a complex mixture of which three macromolecular components?

- A) Glycosaminoglycans, proteins, and lipids
- B) Glycosaminoglycans, proteoglycans, and multiadhesive glycoproteins
- C) Proteoglycans, collagen, and elastin
- D) Multiadhesive glycoproteins, collagen, and lipids
- E) Glycosaminoglycans, collagen, and elastin

21. Which connective tissue cell type primarily produces and secretes GAGs?

- A) Fibroblast
- B) Macrophage
- C) Mast cell
- D) Plasma cell
- E) Adipocyte

22. How are reticular fibers stained after impregnation with certain stains?

- A) Hematoxylin and eosin stain them intensely
- B) Periodic Acid-Schiff (PAS) provides a negative result with a magenta hue
- C) Orcein stains them Blackish brownish
- D) Silver salts stain them black
- E) Aldehyde fuchsin stains maroon red

23. Which of the following structures are described as not strongly acidophilic and stains poorly with H&E?

- A) Reticular fibers
- B) Fibrocytes
- C) Plasma cells
- D) GAGs
- E) Elastic Lamella

24. What property of the ground substance is primarily due to the presence of glycosaminoglycans?

- A) Viscosity and lubricating
- B) Structural support
- C) Nutrient transport
- D) Energy storage
- E) None of the above

25. Reticular connective tissue is found in all these structures EXCEPT?

- A) Adrenal glands
- B) Pancreas
- C) Thymus
- D) Hemopoietic tissue
- E) Lymph nodes

26. Which connective tissue cell type has a large Golgi apparatus near nucleus that may appear pale in routine histological preparations?

- A) Fibroblast
- B) Macrophage
- C) Mast cell
- D) Plasma cell
- E) Adipocyte

27. How are elastic fibers and lamellae in connective tissue stained compared to collagen?

- A) More darkly by hematoxylin and eosin
- B) More darkly by Periodic Acid-Schiff (PAS)
- C) More darkly by orcein and aldehyde fuchsin
- D) More darkly by silver salts
- E) All of the above

28. What type of connective is composed of randomly arranged collagen fibers and a few fibroblasts?

- A) Reticular connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Loose (areolar) connective tissue

29. Which connective tissue cell type is responsible for the local release of bioactive substances assisted by Basophilic leukocytes?

- A) Fibroblast
- B) Macrophage
- C) Mast cell
- D) Plasma cell
- E) Adipocyte

30. What type of connective tissue is found in the subcutaneous layer and mucous membranes?

- A) Dense regular connective tissue
- B) Loose (areolar) connective tissue
- C) Dense irregular connective tissue
- D) Mucoïd connective tissue
- E) Reticular connective tissue

31. What components of the connective tissue ground substance like laminin and fibronectin are called?

- A) Cells
- B) Proteoglycans
- C) Ground substance
- D) Glycoproteins
- E) None of the above

32. Which feature is NOT a characteristic of mesenchymal cells, the embryonic precursors of connective tissue?

- A) Undifferentiated
- B) Large nuclei with prominent nucleoli
- C) Fine chromatin
- D) Cuboidal shaped
- E) Thin cytoplasmic processes

33. Which type of connective tissue is found around immune tissue/cells?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Reticular connective tissue

34. Which type of connective tissue supports blood forming cells?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Reticular connective tissue

35. What type of connective tissue is present surrounding blood vessels?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Reticular connective tissue

36. What is the primary function of reticular fibers in the spleen and lymph nodes?

- A) Provide structural support
- B) Form an extensive network
- C) Form protective stroma
- D) Protection of the delicate tissue of these organs
- E) All of the above

37. How are elastic fibers stained after impregnation with certain stains?

- A) Hematoxylin and eosin stain them intensely
- B) Periodic Acid-Schiff (PAS) gives a positive result
- C) Orcein stains them brick red
- D) Silver salts stain them black
- E) Aldehyde fuchsin stains them maroon red

38. What type of connective tissue forms fenestrated sheets in arteries to withstand pressure?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Reticular connective tissue

39. What types of collagens are easily stained with H&E/trichrome?

- A) Type I, II, and III
- B) Type IV and V
- C) Linking/anchoring collagens
- D) Type VI
- E) Type I and II

40. Which connective tissue cell type is recognized histologically by empty white spaces?

- A) Fibroblast
- B) Macrophage
- C) Mast cell
- D) Adipocyte
- E) Plasma cell

41. All of the following are functions of GAGs EXCEPT?

- A) Space-filling
- B) Cushioning
- C) Epithelial cells anchoring
- D) Waste products diffusion through connective tissue
- E) Lubricant

42. Which type of connective tissue fibers are primarily composed of collagen type III?

- A) Collagen fibers
- B) Reticular fibers
- C) Elastic fibers
- D) Basement membrane fibers
- E) None of the above

43. Which connective tissue cell type has an eccentrically located, oval or kidney-shaped nucleus?

- A) Fibroblast
- B) Macrophage
- C) Mast cell
- D) Plasma cell
- E) Adipocyte

44. What types of GAGs are examples bound to proteoglycans in the ground substance?

- A) Chondroitin 4-sulfate and Hyaluronan
- B) Hyaluronic acid and Keratan sulfate
- C) Heparan sulfate and Heparin
- D) Chondroitin 6-sulfate and Hyaluronic acid
- E) None of the above

45. What GAG acts as a backbone for other smaller structures via linking proteins?

- A) Hyaluronic acid
- B) Chondroitin sulfate
- C) Dermatan sulfate
- D) Heparan sulfate
- E) Heparin

46. What type of connective tissue is in joint capsules?

- A) Dense regular connective tissue
- B) Dense irregular connective tissue
- C) Elastic connective tissue
- D) Reticular connective tissue
- E) All of the above

47. What type of connective tissue is composed of all 3 types of fibers, and a semi-fluid ground substance?

- A) Dense regular connective tissue
- B) Dense irregular connective tissue
- C) Elastic connective tissue
- D) Reticular connective tissue
- E) Loose (areolar) connective tissue

48. What primary function do elastic fibers and lamellae provide in connective tissue?

- A) Structural support
- B) Cushioning and lubrication
- C) Stretchability to a certain limit
- D) Diffusion of nutrients
- E) None of the above

49. Reticular fibers surrounds cells and acts as a supportive stroma for the all the following cells/structures EXCEPT:

- A) Adipocytes
- B) Endocrine glands
- C) Bone marrow
- D) Alveoli
- E) Liver

50. Which of the following is NOT a function of the ground substance in connective tissue?

- A) Providing a barrier to invaders
- B) Allowing diffusion of small molecules
- C) Sequestering cations
- D) Storing energy
- E) All of the above are functions of the ground substance

51. Which type of connective tissue contains some mesenchymal stem cells that can be harvested and stored to treat diseases?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Mucoïd connective tissue
- E) Mesenchymal connective tissue

52. Which type of connective tissue organized as random fibroblasts and collagen fibers in viscous matrix?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Mucoïd connective tissue
- E) Mesenchymal connective tissue

53. Which connective tissue resists tearing forces?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Mucoïd connective tissue
- E) Mesenchymal connective tissue

54. Which GAG is present in aorta adventitia?

- A) Chondroitin 6-sulfate
- B) Chondroitin 4-sulfate
- C) Dermatan sulfate
- D) Heparan sulfate
- E) Keratan sulfate

55. What type of connective tissue forms strong musculoskeletal connections?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Reticular connective tissue

56. Which GAG is present in basal laminae?

- A) Chondroitin 6-sulfate
- B) Chondroitin 4-sulfate
- C) Dermatan sulfate
- D) Heparan sulfate
- E) Keratan sulfate

57. What type of connective tissue binds together smooth muscle tissue cells?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Dense irregular connective tissue
- D) Elastic connective tissue
- E) Reticular connective tissue

58. Which statement about Scurvy is false?

- A) Occurs due to lack of Vitamin C
- B) Vitamin C is a required cofactor for prolyl carboxylase
- C) Hemorrhages is considered a symptom of scurvy
- D) Causes Ulceration of gums
- E) None of the above are false

59. In osteogenesis imperfecta, which collagen type does change of nucleotide occurs in:

- A) Type I
- B) Type II
- C) Type IX
- D) Type IV
- E) Type V

60. What type of connective tissue is present in the submucosa layer of digestive tract?

- A) Loose (areolar) connective tissue
- B) Dense regular connective tissue
- C) Reticular connective tissue
- D) Elastic connective tissue
- E) Dense irregular connective tissue

ANSWER KEY

1) A	2) E	3) C	4) D	5) D	6) B	7) A	8) A	9) C	10) B
11) E	12) D	13) E	14) A	15) C	16) B	17) C	18) E	19) A	20) B
21) A	22) D	23) E	24) A	25) C	26) D	27) C	28) E	29) C	30) B
31) D	32) D	33) A	34) E	35) A	36) E	37) E	38) D	39) E	40) D
41) C	42) B	43) B	44) C	45) A	46) B	47) E	48) C	49) D	50) E
51) D	52) D	53) C	54) C	55) B	56) D	57) E	58) B	59) A	60) E