

STUDY GUIDE AND REVIEW MANUAL  
OF HISTOLOGY AND EMBRYOLOGY

Department of Histology and Embryology

Shanghai First Medical College

1983.7.

Type A Questions (1-220)

(Five-Choice Completion Questions)

Directions: Each of the following questions or incomplete statements is followed by five suggested answers or completions. Select the one best answer in each case and then mark it with "O".

- 1 Tissue is composed of
  - A a lot of cells
  - B cells and fibers
  - C cells and intercellular substances
  - D cells and ground substances
  - E fibers and ground substances
- 2 The thickness of tissue slides used for observation by light and electron microscopes are respectively
  - A 3-8  $\mu\text{m}$  and 50-100 nm
  - B 100  $\mu\text{m}$  and 1  $\mu\text{m}$
  - C 1  $\mu\text{m}$  and 1 nm
  - D 50-100 nm and 3-8  $\mu\text{m}$
  - E 0.1 mm and 0.01 mm
- 3 Scanning electron microscope is used to observe the
  - A internal structures of cells and tissues
  - B surface structures of cells and tissues
  - C internal structures of cell membrane
  - D structures of intercellular substances
  - E structures of intercellular junctions
- 4 In the HE staining method, hematoxylin and eosin are respectively used to stain the
  - A nucleolus and nucleus
  - B nucleolus and cytoplasm
  - C cytoplasm and nucleolus
  - D cytoplasm and nucleus
  - E cell membrane and cytoplasm
- 5 The method of immunocytochemistry is the reaction between \_\_\_\_\_ on the tissue slides
  - A the antigens of tissues and dyes
  - B the antigens of tissues and labeled dyes
  - C the labeled antigens of tissues and antibodies

- D the labeled antibodies of tissues and antigens
- E the antigens of tissues and labeled antibodies
- 6 To keep cells alive in vitro (tissue culture), the following suitable conditions must be necessary except
  - A tissue is fresh
  - B tissue is fixed with fixatives
  - C appropriate temperature, humidity, osmotic pressure and pH
  - D necessary nutrients
  - E sterilized procedures
- 7 To prepare tissue slides, the purpose of embedding is
  - A to be able to obtain thin sections with the microtome
  - B to fix the tissue
  - C to sterilize
  - D to be able to stain
  - E to maintain the tissue in fresh condition
- 8 Which type of junctional structures between cells has the channels?
  - A desmosome
  - B tight junction (zonula occludens)
  - C intermediate junction (zonula adherens)
  - D gap junction
  - E hemidesmosome
- 9 What is the main characteristic of the gap junction?
  - A the most firm one of the intercellular junctions
  - B the intercellular communication, permitting the free interchange of ions and small molecules.
  - C the largest one of the intercellular junctions

- D the smallest one of the intercellular junctions  
E intercellular space is wide
- 10 The junctional complex is  
A the largest one of the junctions  
B the most firm one of the junctions  
C composed of several desmosomes  
D composed of different kinds of junctions  
E incorrect of the above
- 11 The hemidesmosomes are  
A located among the cells  
B located on the apical surface of cells  
C located between the basal surface of cells and basement membrane  
D a part of a desmosome  
E the most firm one of the junctions
- 12 The goblet cells are located in the epithelia of the following organs except the  
A trachea  
B conjunctiva  
C small intestine  
D large intestine  
E stomach
- 13 Which type of organells is contained in the cilia?  
A microfilaments  
B microtubules  
C microbodies  
D lysosomes  
E none of the above
- 14 Which type of organells is contained in the microvilli?  
A microfilaments

- B microtubules
  - C microbodies
  - D lysosomes
  - E none of the above
- 15 The macrophages are derived from the
- A reticular cells
  - B monocytes
  - C endothelial cells
  - D mesenchymal cells
  - E lymphocytes
- 16 Which of the special receptors are located on the surface of the mast cells?
- A antigen
  - B sex hormone
  - C adrenalin
  - D IgA
  - E IgE
- 17 The yellow ligaments of vertebral column is mainly composed of the
- A collagen fibers
  - B reticular fibers
  - C elastic fibers
  - D collagen fibers and reticular fibers
  - E collagen fibers and elastic fibers
- 18 The tendon consists mainly of the
- A collagen fibers
  - B reticular fibers
  - C elastic fibers
  - D collagen fibers and reticular fibers
  - E collagen fibers and elastic fibers
- 19 Which type of fibers is called argyrophil fiber

also?

- A collagen fibers
  - B reticular fibers
  - C elastic fibers
  - D collagen fibers and reticular fibers
  - E collagen fibers and elastic fibers
- 20 Which type of fibers shows cross-banding under the electron microscope?
- A collagen fibers
  - B reticular fibers
  - C elastic fibers
  - D collagen fibers and reticular fibers
  - E collagen fibers and elastic fibers
- 21 Some bacteria and cancer cells produce a kind of enzyme which can dissolve the
- A hyaluronic acid
  - B chondroitin
  - C collagen fibers
  - D reticular fibers
  - E elastic fibers
- 22 Reticular tissue is mainly distributed in the
- A brain
  - B digestive glands
  - C endocrine glands
  - D hemopoietic organs
  - E bone
- 23 The isogenous group appears a group of the
- A osteocytes
  - B osteoblasts
  - C chondrocytes
  - D chondroblasts

- E osteoclasts
- 24 In the bone canaliculi, it contains
  - A blood vessels
  - B nerve fibers
  - C osteoblasts
  - D osteocytes
  - E processes of osteocytes
- 25 The adhesion structure among the osteocytes is the
  - A tight junction
  - B desmosome
  - C intermediate junction
  - D gap junction
  - E none of the above
- 26 Haversian system (osteon) consists of
  - A Haversian canal and outer circumferential system
  - B Haversian canal and inner circumferential system
  - C Haversian canal and intermediate system
  - D Haversian canal and periosteum
  - E incorrect of the above
- 27 Volkman's canals are located in the
  - A periosteum
  - B outer circumferential system
  - C intermediate system
  - D Haversian system
  - E incorrect of the above
- 28 The osteoid is composed of the
  - A osteoblasts and bone matrix
  - B osteoblasts and inorganic matters
  - C osteoblasts and organic matters
  - D osteoblasts and bone fibers
  - E osteoblasts and osteocytes



- 29 In the development of long bone, the formation of the bone collar is by means of the
- A endochondral ossification and located in the epiphysis
  - B endochondral ossification and located in the center of the diaphysis
  - C intramembranous ossification and located in the epiphysis
  - D intramembranous ossification and located in the center of the diaphysis
  - E intramembranous ossification and located at the surface of the diaphysis
- 30 The main function of epiphyseal plate cartilage is
- A protection
  - B nutrition
  - C able to increase the length of long bone
  - D able to increase the width of long bone
  - E able to connect epiphysis to the diaphysis
- 31 In regard to the main feature of muscle cell, it is
- A an elongate cell with a centrally located nucleus
  - B an elongate cell with cross-striations
  - C an elongate cell with myofilaments
  - D an elongate cell with peripherally located nucleus
  - E an elongate cell with one nucleus
- 32 The muscle tissue is of the
- A ectodermal origin
  - B mesodermal origin
  - C endodermal origin

- D ectodermal and mesodermal origin
  - E endodermal and mesodermal origin
- 33 The sarcomere of the skeletal muscle is referred to as the
- A portion between two adjacent H lines
  - B portion between two adjacent Z lines
  - C portion between two adjacent intercalated disks
  - D portion between two adjacent I bands
  - E portion between two adjacent A bands
- 34 The sarcomere of the skeletal muscle is composed of
- A one A band and two  $\frac{1}{2}$  I bands
  - B two  $\frac{1}{2}$  A bands and one I band
  - C one A band and one I band
  - D  $\frac{1}{2}$  I band and one A band
  - E  $\frac{1}{2}$  A band and one I band
- 35 Cohnheim's field in the skeletal muscle is separated by the
- A sarcoplasm
  - B plasmic membrane
  - C endomysium
  - D sarcolemma
  - E basement membrane
- 36 The myofilamental composition of I band and A band of skeletal muscular fiber is that
- A I band contains thick and thin filaments; A band contains thin filaments
  - B I band contains thin filaments; A band contains thick and thin filaments
  - C I band contains thick filaments; A band contains thin filaments
  - D I band contains thin filaments; A band contains

thick filaments

E both I and A band contain thick and thin filaments

37 The junctional structure between smooth muscles is the

A gap junction

B desmosome

C intermediate junction

D tight junction

E junctional complex

38 The longitudinal and transverse tubules in the skeletal muscle are, respectively,

A cisternae of rough endoplasmic reticulum (RER) and sarcoplasmic reticulum formed by smooth endoplasmic reticulum (SER)

B sarcoplasmic reticulum formed by SER and invagination of muscular membrane

C cisternae of RER and invagination of muscular membrane

D invagination of muscular membrane and sarcoplasmic reticulum formed by SER

E incorrect of the above

39 The main receptors for perception of pain and pressure are, respectively,

A free endings and Meissner's corpuscles

B pacinian corpuscles and Meissner's corpuscles

C free endings and pacinian corpuscles

D Meissner's corpuscles and muscle spindles

E free endings and muscle spindles

40 In the HE stained slides, to identify the neurons is mainly dependant on

- A large volume of cell body
  - B presence of Nissl bodies in the cells
  - C presence of cellular processes
  - D presence of the neurofibrils in the cells
  - E a large spherical nucleus stained weakly and with a prominent nucleolus
- 41 The myelin sheath in the central nervous system is formed by the
- A astrocytes
  - B oligodendrocytes
  - C microglia
  - D Schwann cells
  - E satellite cells
- 42 The myelin sheath in the peripheral nervous system is formed by the
- A astrocytes
  - B oligodendrocytes
  - C microglia
  - D Schwann cells
  - E satellite cells
- 43 The Schmidt-Lanterman clefts of the myelinated nerve fibers are
- A the artificial product
  - B the cytoplasmic tunnel of Schwann cells
  - C the boundary of the Schwann cells
  - D formed by involvement of cell membrane
  - E incorrect of the above
- 44 The main structures associated with transmitting information in the chemical synapse are the
- A mitochondria
  - B microtubules and microfilaments

- C neurofibrils
  - D matrix
  - E synaptic vesicles
- 45 The spines of neuron exist on the surface of
- A the dendrites and their branches
  - B the axon and their branches
  - C both dendrites and axon
  - D the perikaryon and axon
  - E whole neuron
- 46 The structures related to axon transportation are the
- A Golgi complexes
  - B microfilaments and microtubules
  - C neurofilaments and microtubules
  - D synaptic vesicles
  - E lysosomes
- 47 The touch corpuscles within the skin are located in the
- A epidermis
  - B dermis
  - C reticular layer of the dermis
  - D papillae of the dermis
  - E hypodermis
- 48 Which portion of the neuron can be activated and transmits the impulse?
- A neurofibrils
  - B matrix
  - C Nissl body
  - D endoplasmic reticulum
  - E plasmic membrane
- 49 The velocity of impulse transmission is faster in

- myelinated nerve fibers, it is mainly because of
- A thicker axon
  - B presence of myelin sheath
  - C presence of Ranvier's nodes
  - D great number of neurofibrils
  - E larger cell body
- 50 The erythrocyte number of a normal adult in the circulating blood is generally not lower than
- A 5 million/mm<sup>3</sup>
  - B 5 milion/ml
  - C 3 million/ml
  - D 3 million/mm<sup>3</sup>
  - E 1 million/ml
- 51 The lymphocytes account for \_\_\_\_\_ of circulating leukocytes in the normal adults.
- A 25%
  - B 50%
  - C 10%
  - D 5%
  - E incorrect of the above
- 52 The diameter of red cells of normal adult is
- A 10 - 15  $\mu$  m
  - B 10 - 15 nm
  - C 7 - 8  $\mu$  m
  - D 4 - 5  $\mu$  m
  - E 7 - 8 nm
- 53 The blood stem cells originate from the
- A liver
  - B spleen
  - C bone marrow
  - D thymus

- E yolk sac
- 54 The stem cells that can differentiate to form various blood cells are the
- A reticulocytes
  - B endothelial cells
  - C mesenchymal cells
  - D promyelocytes
  - E incorrect of the above
- 55 Which blood cells of the following increase in the allergic diseases or in the parasitic diseases?
- A lymphocytes
  - B eosinophilic granulocytes
  - C basophilic granulocytes
  - D monocytes
  - E neutrophilic granulocytes
- 56 Which cell of the following produces anti-histamine substance (histaminase)?
- A lymphocyte
  - B eosinophilic granulocyte
  - C basophilic granulocyte
  - D monocyte
  - E neutrophilic granulocyte
- 57 Which cell of the following produces histamine?
- A neutrophilic granulocyte
  - B eosinophilic granulocyte
  - C basophilic granulocyte
  - D monocyte
  - E incorrect of the above
- 58 The continuous capillaries are found mainly in the following organs or tissues except the
- A renal corpuscle

- B brain
  - C cardiac muscle
  - D thymus
  - E villi of placenta
- 59 The sinusoids can be found in
- A liver, spleen and lymph nodes
  - B spleen, lymph nodes and thymus
  - C liver, spleen and bone marrow
  - D bone marrow, spleen and lymph nodes
  - E lymph nodes, pancreas and thyroid
- 60 What is the most important characteristic of the large artery?
- A The intima is thick
  - B The media is thick and abundant in smooth muscle
  - C The media is thick and consists of a series of elastic membranes
  - D The internal and external elastic membranes are obvious
  - E The adventitia contains longitudinal smooth muscle
- 61 What is the main characteristic of the medium sized arteries?
- A The media contains a few scattered smooth muscle cells
  - B The internal and external elastic membranes are not obvious
  - C The intima is thick
  - D The adventitia contains abundant longitudinal smooth muscle cells
  - E Incorrect of the above
- 62 The heparin exists in the



- A eosinophilic granulocytes
  - B mast cells
  - C neutrophilic granulocytes
  - D lymphocytes
  - E monocytes
- 63 The epithelium lined the internal surface of the circulatory system is the
- A simple cuboidal endothelium
  - B simple squamous mesothelium
  - C simple squamous endothelium
  - D simple cuboidal mesothelium
  - E simple columnar epithelium
- 64 The arteriovenous anastomosis exists between the
- A small artery and venule
  - B small artery and small vein
  - C medium-sized artery and medium vein
  - D arteriole and venule
  - E incorrect of the above
- 65 The general gate of microcirculation is the
- A metarteriole
  - B precapillary sphincter
  - C arteriole
  - D arteriovenous anastomosis
  - E thoroughfare channel
- 66 The constituent components of lymphatic tissue are as follows except the
- A reticular cells and reticular fibers
  - B mast cells
  - C plasma cells
  - D lymphocytes
  - E macrophages