



Multiple choice questions (HAP)

Introduction & Cell, Tissue

- 1 : Which field, when compared to the others, tends to rely more on experimentation to find new answers?
- anatomy
 - physiology**
 - medical terminology
 - history of science
- 2 : Select the correct statement about the science of anatomy.
- Our knowledge of human anatomy has remained the same since the time of the ancient Greeks and Romans.**
 - Anatomy is concerned with the function of body parts.
 - Anatomy is concerned with the structure of body parts.
 - The functional role of a body part has little to do with how the part is constructed.
- 3 : Which one of the following traits is not a characteristic of life shared by all organisms?
- circulation
 - digestion
 - growth
 - photosynthesis**
- 4 : All organisms share a set of basic requirements. These include all of the following, with the exception of _____, which is not required by all organisms, even if it is present in many.
- carbon dioxide**
 - oxygen
 - pressure
 - food and water
- 5 : Most of the body's homeostatic mechanisms operate by negative feedback, although a few function through positive feedback. Choose the example from the list below that operates by positive feedback.
- Blood pressure that has dropped too low is caused to increase.
 - A baby suckling at the breast stimulates greater milk production.**
 - Maintenance of a constant body temperature is accomplished through sweating or shivering.
 - Regulation of glucose levels in the blood requires the actions of two pancreatic hormones, insulin and glucagon.
- 6 : Which of the following is the most complex level of organization?
- organ system**
 - macromolecule
 - organ



- d. organelle
- 7 : Skin or bone is an example of what level of organization?
- tissue
 - cell
 - macromolecule
 - organ**
- 8 : The _____ of the body includes the head, neck, and trunk.
- dorsal cavity
 - appendicular portion
 - ventral cavity
 - axial portion**
- 9 : The _____ cavity is the portion enclosed by the pelvic bones.
- abdominopelvic
 - pelvic**
 - abdominal
 - thoracic
- 10 : The lungs are covered by a membrane called the _____.
- parietal pleura
 - visceral pleura**
 - parietal pericardium
 - peritoneum
- 11 : The _____ system is responsible for transporting fluid and also houses the body's disease-fighting cells.
- integumentary
 - cardiovascular
 - lymphatic**
 - digestive
- 12 : The _____ system includes all the glands that secrete hormones.
- muscular
 - lymphatic
 - nervous
 - endocrine**
- 13 : The lower arm is _____ to the stomach area, while the head is _____ to the stomach.
- medial; peripheral
 - proximal; anterior
 - lateral; superior**
 - inferior; superficial



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- 14 : A _____ section divides the body into right and left portions.
- coronal
 - transverse
 - sagittal**
 - oblique
- 15 : The human liver is primarily located in the _____.
- right upper quadrant of the abdominal area**
 - left lower quadrant of the abdominal area
 - right iliac region
 - left hypochondriac region
- 16 : Anatomy is a term which means the study of _____.
- physiology
 - morphology**
 - cell functions
 - human functions
- 17 : A study dealing with the explanations of how an organ works would be an example of _____.
- anatomy
 - cytology
 - teleology
 - physiology**
- 18 : What is the smallest level of organization considered to be living?
- cell**
 - organelle
 - tissue
 - system
- 19 : Which of the following includes the other terms?
- cell
 - tissue
 - system**
 - organ
- 20 : Which of the following terms means the same as ventral in humans?
- dorsal
 - posterior
 - medial
 - anterior**
- 21 : A tumor on the side of the abdomen can be described as being on the _____ surface of the body.
- anterior



- b. lateral**
c. medial
d. posterior
- 22 : The chin can be described as being on the _____ surface of the skull.
a. inferior
b. lateral
c. superior
d. ventral
- 23 : Which of the following means the same as frontal?
a. transverse
b. coronal
c. sagittal
d. occipital
- 24 : Which of the following terms cannot be properly paired?
a. cranial, skull
b. frontal, forehead
c. nasal, buccal
d. orbital, eyes
- 25 : Which of the following pairs of terms is not correct?
a. ophthalmic, eyes
b. pectoral, chest
c. axillary, armpit
d. costal, abdomen
- 26 : Which of the following means the same as lower back?
a. lumbar
b. pelvic
c. inguinal
d. gluteal
- 27 : Which term refers to the back of the knee?
a. perineal
b. popliteal
c. pelvic
d. pedal
- 28 : Branched nerve fibers that convey impulses toward the cell body of a neuron are called _____.
a. axons
b. dendrites
c. axon collaterals
d. axon terminals



- 29 : Myelin sheaths on the outsides of many axons are contributed by _____.
- a. the axon itself**
 - b. secretory vesicles
 - c. Schwann cells
 - d. the cell bodies of the neuron
- 30 : A neuron with many nerve fibers arising from its cell body and that carries impulses away from the brain would be classified as _____.
- a. multipolar
 - b. bipolar
 - c. unipolar and sensory
 - d. multipolar and motor**
- 31 : Which types of neurons are likely to increase muscular activities?
- a. accelerator neurons**
 - b. inhibitory neurons
 - c. bipolar neurons
 - d. sensory neurons
- 32 : At resting potential, the ion distribution inside and outside of a neuron is such that _____ ions are most abundant on the outside of the cell, while _____ ions are most abundant on the inside of the cell.
- a. potassium; sodium
 - b. sodium; potassium**
 - c. calcium; phosphate
 - d. sulfate; potassium
- 33 : In response to a stimulus, if the membrane potential becomes more negative than the resting potential, we say the membrane is _____.
- a. hyperpolarized**
 - b. depolarized
 - c. unpolarized
 - d. polarized
- 34 : When a neuron reaches action potential, it depolarizes and repolarizes in an amount of time on the order of _____.
- a. seconds
 - b. milliseconds**
 - c. microseconds
 - d. nanoseconds
- 35 : Select the incorrect statement about nerve impulse conduction.
- a. Saltatory conduction involves Schwann cells and occurs at greater speed than on unmyelinated fibers.
 - b. Nerve impulses occur in an all-or-none manner.
 - c. The neuron cannot be stimulated during the absolute refractory period.



d. The strength of impulses carried along a single nerve fiber can vary with the strength of their stimulus.

36 : Excessive sleeping is most likely due to the presence of too much of which neurotransmitter?

- a. GABA
- b. norepinephrine
- c. serotonin**
- d. dopamine

37. Which structure within the cell produces ATP (adenosine triphosphate)?

- A. the mitochondria**
- B. the nucleus
- C. peripheral proteins
- D. the endoplasmic reticulum

38. Which of the following is **NOT** a component of the cell plasma membrane?

- A. cholesterol
- B. proteins
- C. microfilaments**
- D. phospholipids

39. Which list below contains the four types of tissue?

- A. extracellular fluid, skeletal tissue, glandular tissue, connective tissue.
- B. extracellular fluid, muscle tissue, glandular tissue, cartilaginous tissue.
- C. neural tissue, skeletal tissue, epithelial tissue, cartilaginous tissue.
- D. Neural tissue, muscle tissue, epithelial tissue, connective tissue.**

40. Except for one, the following are types of cells. Which one is **NOT** a type of cell?

- A. platelets**
- B. leucocytes
- C. macrophages
- D. osteoblasts

41. In which part of a cell does the process of making ATP from oxygen and glucose take place?

- A. lysosomes
- B. ribosomes
- C. mitochondria**
- D. golgi apparatus

42. Which of the following is a function of membrane proteins?

- A. to process lipids and proteins for secretion through the plasma membrane
- B. to act as receptors for hormones**
- C. to synthesise proteins from amino acids
- D. to act as a cytoskeleton to support and shape the cell



43. What is the difference between simple squamous cells and simple columnar cells?
- A. squamous cells are flattened while columnar cells are taller than they are wide.**
 - B. simple squamous cells are one layer thick while simple columnar cells are several layers thick.
 - C. simple squamous cells are epithelial tissue while simple columnar cells are connective tissue.
 - D. squamous cells are flattened while columnar cells are cuboidal.
44. Which of the following is **NOT** an example of a cell?
- A. macrophages
 - B. lysosomes**
 - C. plasmocytes
 - D. chondroblasts
45. Which cell organelles contain an acidic environment capable of digesting a wide variety of molecules?
- A. Lysosomes**
 - B. Ribosomes
 - C. Centrosomes
 - D. Golgi complex
46. Which form of transport through the plasma membrane requires the expenditure of energy by the cell?
- A. Facilitated diffusion
 - B. Osmosis
 - C. Active transport**
 - D. Diffusion
47. Which of the tissue types below consists of a single layer of cells?
- A. stratified squamous epithelial tissue
 - B. glandular epithelium
 - C. areolar connective tissue
 - D. simple columnar epithelial tissue**
48. One of the following is **NOT** a serous membrane. Which one?
- A. pleura
 - B. peritoneum
 - C. mucosa**
 - D. pericardium
49. Which of the following is **NOT** made predominantly from epithelial tissue?
- A. In the dermis**
 - B. In exocrine glands
 - C. In endocrine glands



D. In the endothelium of blood vessels

50. What are tendons and ligaments composed of?

- A. Dense connective tissue**
- B. Liquid connective tissue
- C. Muscular tissue
- D. Epithelial tissue

51. What is the composition of the intercellular matrix in connective tissue?

- A. Cells and fibres
- B. Serous and mucus membranes and lamina propria
- C. Protein fibres and ground substance**
- D. Interstitial fluid

52. Which statement about the plasma membrane is **INCORRECT** ?

- A. It is selectively permeable.
- B. It is composed of two layers of glycoprotein molecules.**
- C. It contains receptors for specific signalling molecules.
- D. The plasma membranes of adjacent cells are held together by desmosomes.

53. Which of the following is **NOT** epithelial tissue?

- A. the epidermis
- B. glandular tissue
- C. the internal lining of blood vessels
- D. the dermis**

54. Which of the following is **NOT** a cell found in connective tissue?

- A. adipocytes
- B. chondroblasts
- C. keratinocytes**
- D. osteoblasts

55. What tissue has cells that are closely packed and that have one surface attached to a basement membrane and the other free to a space?

- A. epithelial tissue**
- B. muscle tissue
- C. connective tissue
- D. nervous tissue

56. What is the name of the mechanism that ensures that there is a higher concentration of sodium ions in the extracellular fluid than in the intracellular fluid?

- A. Facilitated diffusion
- B. The sodium-potassium pump**
- C. Secondary active transport
- D. Osmosis

57. What are lysosomes, centrosomes and ribosomes example of?



- A. stem cells
B. organelles within a cell
C. sensory receptors in the dermis
D. exocrine glands
58. What does simple columnar epithelial tissue refer to? Tissue with
A. a single layer of cells longer than they are wide.
B. a single layer of cells whose length, breadth and depth are about the same size.
C. several layers of cells, all of the same type.
D. several layers of cells but without a basement membrane.
59. Which of the following is **NOT** an example of connective tissue?
A. blood
B. bone
C. tendon
D. epidermis
60. What is the function of phospholipids in the plasma membrane?
A. to maintain the intracellular fluid at a similar composition to that of the interstitial fluid.
B. to form channels to selectively allow passage of small molecules.
C. to act as receptors for signalling chemicals.
D. to present a barrier to the passage of water-soluble molecules.
61. Which one of the following cell types is found in epithelial tissue?
A. plasma cells
B. leucocytes
C. keratinocytes
D. chondroblasts
62. Which of the following is **NOT** part of the plasma membrane of a cell?
A. integral proteins
B. glycoproteins
C. plasma proteins
D. peripheral proteins
63. A major role for mitochondria is to
A. transcribe the information in DNA (deoxyribonucleic acid)
B. produces ATP (adenosine triphosphate)
C. synthesize proteins from amino acids
D. use enzymes to lyse molecules
64. Choose the tissue below that is one of the four primary types of body tissue.
A. epidermal tissue
B. epithelial tissue
C. interstitial tissue
D. osseous tissue



65. What are the primary types of tissue in the body?
A. Muscle, nervous, connective and epithelial
B. Muscle, nervous, connective, osseous and epithelial
C. Muscle, nervous, connective, osseous, blood and epithelial
D. Muscle, nervous, connective, glandular and epithelial
66. What is the name of the membrane that surrounds the lungs?
A. visceral peritoneum
B. parietal peritoneum
C. visceral pleura
D. dura mater
67. What is a role performed by mitochondria?
A. contain enzymes capable of digesting molecules
B. produce ATP
C. synthesise proteins
D. synthesise fatty acids, phospholipids & cholesterol
68. Which of the following is **NOT** found in the plasma membrane?
A. proteins
B. cholesterol
C. endoplasmic reticulum
D. phospholipids
69. Which one of the following cell types is found in epithelial tissue?
A. mast cells
B. adipocytes
C. chondroblasts
D. keratinocytes
70. Which of the following is **NOT** part of the plasma membrane of a cell?
A. phospholipid
B. glycoprotein
C. chromatin
D. cholesterol
71. A major role for mitochondria is to
A. synthesise fatty acids, phospholipids & steroids
B. deliver lipids and proteins to plasma membrane for secretion
C. synthesise proteins from amino acids
D. produce ATP (adenosine triphosphate)
72. Choose the tissue below that is **NOT** one of the four primary types of body tissue.
A. connective tissue



- B. muscular tissue
- C. nervous tissue
- D. osseous tissue**

73. What is the purpose of mitochondria?

- A. to store the nucleolus and chromatin
- B. to produce adenosine triphosphate**
- C. to support and shape the cell.
- D. they produce enzymes to break down molecules

74. The plasma membrane of a cell contains molecules that have a hydrophobic end and a hydrophilic end. What are they called?

- A. phospholipids**
- B. cholesterol
- C. integral proteins
- D. glycoproteins

75. Adipocytes are found in which type of tissue?

- A. muscle tissue
- B. epithelial tissue
- C. nervous tissue
- D. connective tissue**

76. What is the role of mitochondria? To:

- A. function in cell division
- B. synthesise proteins
- C. form part of the plasma membrane**
- D. synthesise fatty acids, phospholipids and steroids.

77. Which one of the following cell types is found in epithelial tissue?

- A. mast cells
- B. adipocytes
- C. chondroblasts
- D. melanocytes**

78. What is the difference between “loose” connective tissue (CT) and “dense” connective tissue?

- A. Fibres occupy most of the volume in dense CT**
- B. Dense CT includes cartilage, loose CT does not.
- C. Loose CT has a good blood supply while dense CT does not.
- D. Loose CT has no fibres (and dense CT does).

79. Facilitated diffusion refers to the process of

- A. movement along a concentration gradient assisted by protein carrier molecules.**
- B. movement of ions and molecules along a concentration gradient.
- C. transport of molecules and ions against their concentration gradient.
- D. water movement through a semi-permeable membrane



80. What do fibroblasts, chondroblasts, osteoblasts and haemocyto blasts have in common?

- A. they are all types of white blood cell.
- B. they are all macrophages.
- C. they are all immature cells.**
- D. they are all types of epithelial cell.

81. Which is **NOT** true of connective tissue (CT)?

- A. the cells are closely packed**
- B. the tissue contains protein fibres and ground substance.
- C. types include loose CT, dense CT and liquid CT.
- D. CT contains white blood cells.

82. Active transport across the plasma membrane may be described by which statement?

- A. active transport requires energy from ATP.**
- B. active transport is also known as endocytosis.
- C. active transport moves molecules along their concentration gradient.
- D. active transport is the movement of lipid-soluble molecules through the plasma membrane.

83. Which of the following cell types denotes an immature cell?

- A. macrophages
- B. monocytes
- C. osteoblasts**
- D. ribosomes

84. Choose the membrane that is **NOT** a serous membrane.

- A. pleura
- B. peritoneum
- C. pericardium
- D. lamina propria**

85. Which organelle is the site of ATP production?

- A. the nucleus
- B. endoplasmic reticulum
- C. mitochondria**
- D. golgi apparatus

86. Which of the following is **ONE** major function of epithelial cells?

- A. movement
- B. secretion**
- C. support of other cell types
- D. transmit electrical signals

87. What are the major types of tissue in the body?

- A. nervous, muscle, epithelial, connective.**



- B. squamous, cuboidal, columnar, transitional.
C. osteocytes, chondrocytes, leucocytes, adipocytes.
D. protein, adipose, cartilage, osseous.
88. Which of the following is **NOT** one of the organelles within a cell?
A. desmosome
B. endoplasmic reticulum
C. mitochondrion
D. golgi apparatus
89. Which list contains the main body tissue types?
A. glandular, connective, osseous, nervous
B. epithelial, nervous, connective, muscle.
C. endothelial, connective, muscle, cartilaginous
D. epithelial, cartilaginous, muscle, glandular
90. The process of “diffusion” through a membrane may be described by which of the following?
A. the movement of ions and molecules away from regions where they are in high concentration towards regions where they are in lower concentration.
B. the use of energy from ATP to move ions and small molecules into regions where they are in lower concentration.
C. the plasma membrane engulfs the substance and moves it through the membrane.
D. the use of energy from ATP to move water molecules against their concentration gradient.
91. The process of “active transport” through a membrane may be described by which of the following?
A. the movement of ions and small molecules away from regions where they are in high concentration.
B. the use of energy from ATP to move ions and small molecules into regions where they are in lower concentration.
C. the plasma membrane engulfs the substance and moves it through the membrane.
D. the use of energy from ATP to move ions and small molecules against their concentration gradient.
92. Which of the following is the smallest living structural unit of the body?
A. atom
B. molecule
C. organelle
D cell
93. Which of the following enables ions such as sodium to cross a plasma membrane?
A. phospholipid bilayer
B. peripheral proteins
C. integral proteins
D. desmosomes



94. Cell membranes can maintain a difference in electrical charge between the interior of the cell and the extracellular fluid. What is this charge difference called?
- A. excitability
 - B. the membrane potential**
 - C. the action potential
 - D. the sodium-potassium pump
95. The resting membrane potential of a cell is the consequence of which of the following concentrations of ions?
- A. High K^+ and Cl^- outside the cell and high Na^+ and large anions inside the cell.
 - B. High K^+ and Na^+ outside the cell and high Cl^- and large anions inside the cell.
 - C. High Cl^- and Na^+ outside the cell and high K^+ and large cations inside the cell.**
 - D. High Ca^{2+} and Na^+ outside the cell and high K^+ and large cations inside the cell.
96. What is one function of mitochondria? To
- A. produce enzymes to break down molecules
 - B. produce molecules of ATP**
 - C. hold adjacent cells together
 - D. allow passage of molecules through the plasma membrane
97. Membrane proteins perform the following functions **EXCEPT** one. Which One?
- A. form the glycocalyx**
 - B. act as receptor proteins
 - C. form pores to allow the passage of small solutes
 - D. behave as enzymes.
98. Facilitated diffusion differs from active transport because facilitated diffusion:
- A. requires energy from ATP
 - B. moves molecules from where they are in lower concentration to higher concentration
 - C. moves molecules from where they are in higher concentration to lower concentration.**
 - D. involves ions & molecules that pass through membrane channels.
99. Which of the following is **NOT** a connective tissue?
- A. blood
 - B. mesothelium**
 - C. fat
 - D. tendon
100. The cells that are found in tendons are called:
- A. osteocytes
 - B. adipocytes
 - C. haemocyto blasts
 - D. fibroblasts**
101. Which one of the following terms best describes the structure of the cell membrane:
- A. fluid mosaic model**



- B. static mosaic model
- C. quaternary structure
- D. multilayered structure

102. Which one of the following terms best describes a phospholipid. It consists of a:

- A. polar head and polar tail
- B. non-polar head and a polar tail
- C. polar head and non-polar tail**
- D. non-polar head and a non-polar tail

103. One of the functions of integral proteins in cell membranes is to:

- A. maintain the rigid structure of the cell
- B. support mechanically the phospholipids
- C. interact with the cytoplasm
- D. form channels for transport functions**

104. Which one of the following best describes what a cell membrane consists of?

- A. lipids, proteins, ribosomes
- B. lipids, cholesterol, proteins**
- C. cholesterol, proteins, cytoplasm
- D. lipids, proteins, cytoplasm

Skeletal system & Joints

1. Which of the following is **NOT** a bone of the axial skeleton?

- A. deltoid**
- B. ethmoid
- C. sphenoid
- D. hyoid

2. Which of the following is a function of the skeletal system?

- A. haemopoiesis**
- B. haemostasis
- C. peristalsis
- D. glycogenolysis

3. In which of the following bone structures do osteocytes live?

- A. osteons
- B. canaliculi
- C. lacunae**
- D. lamellae

4. Which bone is most superior?

- A. manubrium
- B. occipital bone**
- C. cervical vertebra



D. patella

5. What is a “trochanter”?

- A. **part of a femur**
- B. a feature of the pelvis
- C. a projection that forms part of an articulation
- D. a groove in which lies a tendon

6. One of the functions of bones is to make red blood cells. What is this process known as?

- A. Haemolysis
- B. **Haemopoiesis**
- C. Haematuria
- D. Haemostasis

7. Where do osteocytes reside?

- A. In lamellae
- B. In endosteum
- C. In trabeculae
- D. **In lacunae**

8. Which of the following describes the movements known as pronation and supination?

- A. The flexing of the arm with respect to the forearm around the elbow.
- B. The swivelling of the foot to the medial and lateral directions.
- C. **The twisting of the wrist while the elbow is held motionless.**
- D. The rotation at the shoulder that causes the arm to describe a cone shape.

9. Which of the following is **NOT** a “long” bone?

- A. the humerus
- B. the tibia
- C. **a carpal**
- D. a metacarpal

10. Which one of the following is a bone that is embedded within a tendon?

- A. sphenoid
- B. hyoid
- C. ethmoid
- D. **sesamoid**

11. In which one of the following structures do osteocytes reside? In the

- A. haversian canals
- B. **lacunae**
- C. trabeculae
- D. endosteum

12. Which bone of the head has a synovial joint?

- A. The sphenoid
- B. The maxilla



C. The mandible

D. The hyoid

13. What are the bones of the fingers known as?

A. short bones

B. metacarpals

C. carpals

D. phalanges

14. Which of the following comprise seven bones?

A. Cervical vertebrae

B. Carpals

C. Cranial bones

D. Lumbar vertebrae

15. Which term below refers to a depression in a bone?

A. tuberosity

B. fossa

C. tubercle

D. condyle

16. What body part is able to perform pronation and supination?

A. the forearm

B. the foot

C. the thigh

D. the wrist

17. Where are blood vessels in compact bone found?

A. in the canaliculi

B. in the periosteum

C. in the lacunae

D. in the central canal

18. Which of the following is **NOT** a depression or cavity on a bone?

A. tuberosity

B. facet

C. meatus

D. sinus

19. One of the following lists contains only bones in the appendicular skeleton. Which one?

A. patella, ethmoid, femur, coccyx, tibia

B. clavicle, fibula, metatarsal, phalange, radius

C. humerus, scapula, occipital, metacarpal, sternum

D. ulna, radius, phalange, mandible, coxal

20. A synovial joint is also known as one of the following, which one?



- A. synarthrosis
- B. immovable joint
- C. slightly moveable joint
- D. freely moveable joint**

21. What is contained within the medullary canal of a long bone?

- A. trabeculae
- B. lamellae
- C. marrow**
- D. osteoblasts and osteoclasts

22. Where in the skeleton is the scapula located?

- A. in the axial skeleton
- B. in the appendicular skeleton
- C. in the carpal region
- D. in the shoulder girdle**

23. Which of the following bone markings forms part of an articulation?

- A. the deltoid tuberosity of the humerus
- B. the lateral condyle of the femur**
- C. the greater trochanter of the femur
- D. the greater tubercle of the humerus

24. Where is the epiphyseal plate of a long bone located?

- A. in the diaphysis
- B. between the diaphysis and the epiphysis**
- C. in the epiphysis
- D. in the medullary canal

25. In which structure are osteoclasts and osteoblasts found?

- A. in the periosteum**
- B. in the haversian canals
- C. in the lacunae of osteons
- D. in the trabeculae of osteons

26. Which of the following is a **NOT** a projection from a bone surface?

- A. trochanter
- B. tubercle
- C. trabeculum**
- D. tuberosity

27. Which of the listed bones is superior to the rest?

- A. manubrium**
- B. xiphoid process
- C. coccyx
- D. femur



28. Choose the correct sentence. Compact bone contains
- A. lamellae and osteocytes but no osteons.
 - B. trabeculae, canaliculi and osteons.
 - C. haversian systems and canaliculi but no osteons.
 - D. osteons and lamellae but no trabeculae.**
29. Which of the following bone markings is **NOT** a projection for muscle attachment?
- A. fossa**
 - B. tuberosity
 - C. tubercle
 - D. trochanter
30. Which of the list below is a cell that reabsorbs bone?
- A. osteon
 - B. osteoblast
 - C. osteocyte
 - D. osteoclast**
31. The formula for the inorganic salts in bone is
- A. $\text{NH}_6\text{C}_3\text{COOH}$
 - B. $\text{C}_6\text{H}_{12}\text{O}_6$
 - C. $\text{Ca}_{10}(\text{PO}_4)_6\text{OH}_2$**
 - D. $\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$
32. Freely moveable joints are also known as
- A. fibrous joints
 - B. cartilaginous joints
 - C. amphiarthroses
 - D. synovial joints**
33. Which of the following is a projection from a bone surface?
- A. fossa
 - B. fissure
 - C. foramen
 - D. facet**
34. Which of the listed bones is the most inferior?
- A. ethmoid
 - B. sphenoid
 - C. femoid
 - D. hyoid**
35. Choose the correct sentence. Cancellous bone contains
- A. lamellae and osteocytes but no trabeculae.
 - B. trabeculae, canaliculi and osteons.
 - C. haversian systems and canaliculi but no osteons.
 - D. trabeculae and lamellae but no osteons.**



36. Which of the following bones is part of the cranium?
- A. occipital**
 - B. mandible
 - C. hyoid
 - D. carpal
37. The appendicular skeleton includes all of the following **EXCEPT** one. Which one?
- A. the pectoral girdle
 - B. the thoracic cage**
 - C. the phalanges
 - D. the lower limbs
38. What is the name given to the central tunnel of an osteon that contains blood vessels?
- A. canaliculus
 - B. endosteum
 - C. haversian canal**
 - D. medullary canal
39. Which of the following is an example of a synovial joint? The joint between the:
- A. tibia and fibula
 - B. sternum and rib number 1
 - C. thoracic vertebrae 4 and 5
 - D. proximal ends of the radius and ulna**
40. Which list contains the bones of the pelvic and pectoral girdles?
- A. coxal, scapulae, manubrium, ilium
 - B. clavicles, cervical, coccyx, innominate
 - C. clavicles, scapulae, coxal**
 - D. clavicles, scapulae, sacrum, coxal
41. Synovial joints have all of the following features **EXCEPT** one. Which one?
- A. are surrounded by an articular capsule.
 - B. have synovial fluid filling the space between articulating bones.
 - C. have synovial membrane covering the articulating bone surfaces.**
 - D. are supported by reinforcing ligaments.
42. The manubrium and the xiphoid process are located on which part of the skeleton?
- A. the lower jaw
 - B. the sternum**
 - C. the pelvis
 - D. the hand
43. Carpals refers to
- A. the points of attachment of ribs to vertebrae
 - B. bones of the wrist**
 - C. bones that are embedded within a tendon



D. the thumbs

44. Haemopoiesis refers to

- A. blood cell formation in bone marrow**
- B. the process of blood clotting
- C. the crenation of red blood cells in a hypotonic solution
- D. an excessively large proportion of red blood cells to plasma.

45. Articulating bones are joined by

- A. aponeuroses
- B. tendons
- C. fasciculi
- D. ligaments**

46. On which bone is the greater trochanter found?

- A. pelvic
- B. femur**
- C. radius
- D. humerus

47. What does “articulation” refer to?

- A. the joining of a ligament to a bone.
- B. the contact made between a tendon and a bone
- C. the contact between two bones.**
- D. the connection between a muscle and a bone

48. To which bones does the word phalanges apply? Those in the

- A. fingers and toes**
- B. wrist and ankle
- C. ankle and foot
- D. fingers and hand

49. The axial skeleton groups together which sets of bones?

- A. the arms and hands, the legs and feet, shoulder girdle and pelvic girdle.
- B. the head, shoulder girdle, arms and hands.
- C. the thoracic cage, vertebral column, shoulder girdle, the pelvic girdle, the skull and facial bones.
- D. bones of the skull and face, thoracic cage and vertebral column.**

50. How do synovial joints differ from the other types of bone articulation?

- A. they have a joint cavity.**
- B. the bones are joined by fibrous tissue.
- C. the articulating bones are joined by cartilage.
- D. the articulating bone surfaces are covered by tendons.

51. What are the cells that are found in the lacunae of compact bone called?



A. osteocytes.

B. osteons.

C. osteoblasts.

D. osteoclasts.

52. The appendicular skeleton groups together which sets of bones?

A. the arms and hands, the legs and feet, shoulder girdle and pelvic girdle.

B. the head, shoulder girdle, arms and hands.

C. the thoracic cage, vertebral column, shoulder girdle, the pelvic girdle, the skull and facial bones.

D. bones of the skull and face, thoracic cage and vertebral column.

53. Synovial joints differ from the other types of joint between bones in the body because:

A. they are immovable joints.

B. they are slightly moveable

C. the bones are joined by cartilage.

D. the ends of the articulating bones are covered by hyaline cartilage.

54. What does the term "haversian canal" refer to in bone?

A. the larger examples of foramina.

B. a groove that receives a muscle's tendon.

C. the centre of an osteon that contains blood capillaries.

D. the space within a long bone that contains marrow.

55. What is the structure that attaches one bone to another?

A. ligament

B. cartilage

C. tendon

D. diaphysis

56. Which of the following describes what an "epiphysis" is?

A. The shaft of a long bone.

B. The line that separates the shaft from the end of a long bone.

C. The membrane that surrounds a bone.

D. The end of a long bone.

57. To what does the term "osteon" refer in bone?

A. the bone cells (osteocytes) in lacunae.

B. a small rounded projection on a bone.

C. concentric cylinders of calcified bone matrix.

D. the membrane covering the outside of a bone.



Blood

1. To which of the following would the term “white cell” NOT be applied?
A. erythrocyte
B. leucocyte
C. lymphocyte
D. monocyte
2. In the haemostasis process, what forms as a result of the extrinsic and intrinsic pathways?
A. fibrin
B. thrombin
C. a platelet plug
D. prothrombinase
3. The blood group known as the ABO system is based on the presence of what proteins on blood cells?
A. antibodies
B. antigens
C. agglutinins
D. immunoglobulins
4. What is found in blood serum that is also in blood plasma?
A. blood cells
B. platelets
C. plasma proteins
D. clotting factors
5. What is the term “formed elements” used to mean in a description of blood?
A. white blood cells, red blood cells and platelets
B. blood plasma
C. blood serum
D. the clotting factors in blood
6. What is the SECOND step in the three phases of haemostasis listed below?
A. The vascular phase
B. The intrinsic pathway
C. The extrinsic pathway
D. The platelet phase
7. What type of blood may a patient with blood type “B+” be infused with? Any blood that is
A. positive for rhesus antigen D
B. negative for rhesus antigen D
C. negative for antigen B
D. negative for antigen A
8. What is the first process that occurs after a blood vessel is damaged?
A. coagulation



- B. platelet plug formation
C. vasoconstriction
D. haemolysis
9. Which blood cells are involved in protecting the body from pathogens and foreign cells?
A. erythrocytes
B. leucocytes
C. platelets
D. haemoglobin
10. Which individuals can receive any type of blood and are considered universal recipients?
A. A+
B. O-
C. AB+
D. B-
11. Which is the most abundant plasma protein?
A. alpha- and beta- globulins
B. albumin
C. mitochondria
D. haemoglobin
12. Which characteristic of blood refers to the concentration of solutes?
A. salinity
B. pH
C. osmolality
D. viscosity
13. Which type of white blood cell is responsible for engulfing pathogens during phagocytosis?
A. thrombocyte
B. neutrophil
C. erythrocyte
D. basophil
14. What does "Rhesus positive" refer to?
A. The presence of antigen D on the surface of red blood cells
B. The final factor involved in blood clotting
C. The presence of the rhesus antibody/agglutinin in the blood
D. A deficiency of Factor VIII that results in haemophilia
15. What are red blood cells primarily composed of?
A. alpha- and beta- globulins
B. albumin
C. mitochondria
D. haemoglobin



16. Which is the **LEAST** common type of white blood cell?
- A. lymphocyte
 - B. basophil**
 - C. thrombocyte
 - D. neutrophil
17. In the process of haemostasis, which phase involves the intrinsic and extrinsic pathways?
- A. the platelet phase
 - B. the clot lysis phase
 - C. the vascular phase
 - D. the coagulation phase**
18. In haemostasis, which molecule polymerises to become the insoluble blood clot?
- A. factor X
 - B. thrombin
 - C. fibrin**
 - D. plasmin
19. Which enzyme converts fibrinogen to fibrin?
- A. serotonin
 - B. thrombin**
 - C. renin
 - D. secretin
20. Which of the following is NOT a macrophage?
- A. Kupffer cell
 - B. Monocyte
 - C. Dendrocyte
 - D. Megakaryocyte**
21. What can be said about a person who has the “A” antigen on their red blood cells?
- A. their blood contains anti-B agglutinins**
 - B. their blood contains anti-A agglutinins
 - C. their blood contains anti-A and anti-B agglutinins
 - D. their blood contains neither anti-A nor anti-B agglutinins
22. Which one of the following is NOT a plasma protein?
- A. keratin**
 - B. albumin
 - C. ferritin
 - D. globulin
23. What substance is produced by the first step in the blood clotting (coagulation) process?
- A. thrombin
 - B. prothrombin
 - C. factor X



D. prothrombinase

24. Which statement about neutrophils is correct?

- A. they have no nucleus
- B. they contain haemoglobin

C. they function as a body defence mechanism

- D. eosinophils are one type of neutrophil

25. What are red blood cells also known as?

- A. erythrocytes**
- B. thrombocytes
- C. monocytes
- D. eosinophils

26. In blood clotting, what activates “factor X”

- A. prothrombinase
- B. thrombin
- C. the extrinsic pathway**
- D. tissue plasminogen activator

27. A person’s blood group is determined by:

- A. the agglutinogens circulating in their plasma
- B. the antigens on the surface of their red blood cells**
- C. the antibodies on the surface of their red blood cells
- D. the agglutinins circulating in their plasma

28. If a blood sample is taken for DNA testing, which of the following would be examined?

- A. leucocytes**
- B. erythrocytes
- C. thrombocytes
- D. plasma proteins

29. What is the major task of red blood cells?

- A. to transport carbon dioxide
- B. to ensure haemostasis
- C. to provide immunity

D. to transport oxygen

30. Careful blood matching is performed prior to transfusing blood in order to avoid which scenario?

- A. newborn haemolytic disease
- B. the recipient’s antigens attacking the red blood cells in the transfusion
- C. the recipient’s antibodies attacking the red blood cells in the transfusion**
- D. the antigens on the recipient’s red blood cells reacting with the antibodies in the transfused blood



31. Which cell in the list below is the MOST common white blood cell?
- A. basophils
 - B. lymphocytes
 - C. monocytes
 - D. neutrophils**
32. What substance is the product of the second step in the blood clotting process?
- A. thrombin**
 - B. prothrombin
 - C. prothrombin activator
 - D. fibrin
33. A person whose blood group is “B positive” has which of the following?
- A. the rhesus D antigen and the B antigen on their rbc, and the anti-A agglutinin.**
 - B. the rhesus D antigen and the B antigen on their rbc, and the anti-B agglutinin.
 - C. the rhesus D antigen and the A antigen on their rbc, and the anti-B agglutinin
 - D. no rhesus D antigen and the B antigen on their rbc, and the anti-A agglutinin
34. The role of platelets in blood clotting includes all of the following EXCEPT one. Which one?
- A. to form a plug in the hole of the damaged blood vessel
 - B. to convert prothrombin to thrombin**
 - C. to release chemicals to attract other platelets
 - D. to adhere to exposed collagen fibres in damaged blood vessels
35. If someone’s ABO blood group is “type A”, this means that
- A. they have the type A antigen on their red blood cells**
 - B. their blood contains anti-A agglutinins
 - C. they can receive blood from a type B donor
 - D. they may donate blood to a type B recipient
36. Which statement below about vitamin K is true?
- A. It is water soluble.
 - B. It is essential for prothrombin production by the liver.**
 - C. It is part of the “extrinsic pathway” of formation of prothrombin activator.
 - D. It destroys fibrin so allowing a clot to gradually dissolve.
37. What is the function of the plasma proteins in blood?
- A. to transport oxygen.
 - B. to regulate electrolyte balance
 - C. to exert osmotic pressure and so help maintain blood volume.**
 - D. to function as a non-specific body defence mechanism.
38. The term “formed elements” used in relation to the blood include which of the following?
- A. fibrinogen.
 - B. white blood cells.**
 - C. electrolytes.



D. plasma proteins.

39. Which blood cell fits the following description: multi-lobed nucleus, inconspicuous cytoplasmic granules, most common type of blood cell except for red blood cells?

- A. neutrophil**
- B. eosinophil
- C. basophil
- D. lymphocyte

40. What constitutes blood plasma?

- A. whole blood without the formed elements.**
- B. blood without the red blood cells.
- C. whole blood without blood cells and clotting factors.
- D. blood minus blood cells and proteins.

41. Which of the following statements about a person with blood group "A" is true? They have the:

- A. A antigen on their red blood cells.**
- B. anti-A antibodies in their plasma.
- C. anti-A agglutinin on their red blood cells.
- D. A antibody on their red blood cells.

42. Which of the following statements concerning intracellular and extracellular fluids is **FALSE**?

- A. The concentration of sodium is higher in extracellular fluid than in intracellular fluid.
- B. The concentration of potassium is lower in extracellular fluid than in intracellular fluid.
- C. Blood plasma is an example of intracellular fluid.**
- D. The volume of intracellular fluid is greater than that of extracellular fluid.

43. Which of the following is not a type of white blood cell?

- A. leucocyte
- B. eosinophil
- C. erythrocyte**
- D. neutrophil

44. Which of the following formed elements of the blood is important in the formation of clots?

- A. erythrocytes
- B. lymphocytes
- C. monocytes
- D. thrombocytes**

45. With which blood types can a person with blood type B be safely transfused?

- A. A or AB
- B. B or O**
- C. A or O
- D. B or AB



46. Leucocytes may be correctly described as what?
A. cells with nuclei that do not contain haemoglobin.
B. cells without nuclei, that contain haemoglobin.
C. white blood cells with granules in their cytoplasm.
D. neutrophilic.
47. What are lymphocytes? Blood cells that:
A. mature and proliferate in the bone marrow.
B. contain haemoglobin.
C. are involved in the body's immune response
D. mature into macrophages.
48. Which of the following statements about platelets is **INCORRECT**? They:
A. adhere to collagen fibres of damaged tissue
B. release phospholipids which combine with "clotting factors" to produce prothrombin activator.
C. are cell fragments derived from megakaryoblasts
D. are part of the "extrinsic pathway" for the formation of prothrombin activator.
49. Finish the sentence correctly. Plasma proteins:
A. help maintain blood volume due to colloid osmotic pressure.
B. are regarded as formed elements of the blood.
C. are low molecular weight proteins.
D. are part of the blood serum.
50. The colloid osmotic pressure of blood is due to which of the following?
A. proteins in the blood
B. proteins in the interstitial fluid
C. sodium and chloride ions dissolved in blood
D. the water component of the blood
51. Which one of the following terms refers to an abnormally low number of white blood cells?
A. thrombocytosis
B. haemostasis
C. leukopenia
D. cytokinesis
52. Which of the following three proteins are known as "plasma proteins"?
A. albumin, globulin, haemoglobin
B. insulin, glucagon, haemoglobin
C. fibrin, globulin, albumin
D. albumin, fibrinogen, globulin



53. Which are the two most common types of white blood cells?

- A. neutrophils and lymphocytes**
- B. erythrocytes and neutrophils
- C. neutrophils and eosinophils
- D. monocytes and lymphocytes

54. Blood plasma contains “plasma proteins”. Which of the following lists the plasma proteins?

- A. insulin, kaolin, bilirubin
- B. cholesterol, urea, glucagon
- C. Na⁺, K⁺, Ca²⁺, Mg²⁺
- D. albumins, fibrinogen, globulins**

55. What causes the blood’s osmotic pressure to be greater than the osmotic pressure of the surrounding interstitial fluid that is outside of the capillaries?

- A. there is a higher concentration of sodium and chloride ions in the blood than the interstitial fluid.
- B. there is a higher concentration of water in the blood than in the interstitial fluid.
- C. the plasma proteins in blood.**
- D. the hydrostatic pressure produced by the heart’s contractions.

56. What does the term “neutrophil” refer to?

- A. An affinity for neutrons.
- B. An abnormally low number of cells.
- C. A type of white blood cell.**
- D. An immature cell that will become a neutrocyte.

57. One of the following cells does **NOT** occur in blood. Which one?

- A. erythrocytes
- B. basophils
- C. leucocytes
- D. osteocytes**

58. What would a person with type A blood also have?

- A. antibody A
- B. antigen A**
- C. agglutinin A
- D. agglutinin B

CVS

1. Blood flow through the heart follows which of the sequences listed below?

- A. from left atrium, then mitral valve, right ventricle, aorta, left ventricle
- B. from right atrium, then mitral valve, right ventricle, pulmonary trunk, left ventricle.
- C. from pulmonary trunk, then tricuspid valve, left atrium, aortic valve, aorta
- D. from vena cava, then right ventricle, pulmonary trunk, left ventricle, aorta.**



2. What feature does cardiac muscle possess that is missing in skeletal muscle?
 - A. striations
 - B. multiple nuclei
 - C. voluntary control
 - D. intercalated discs**

3. What is the name of the valve between the left atrium and the left ventricle?
 - A. mitral valve**
 - B. tricuspid valve
 - C. semi-lunar valve
 - D. aortic valve

4. What is meant by a diastolic blood pressure of 100 mm Hg?
 - A. the maximum pressure at the start of the aorta during ventricular contraction.
 - B. the minimum pressure at the start of the aorta before the start of a ventricular contraction.**
 - C. the maximum pressure at the start of the aorta and pulmonary trunk during ventricular contraction.
 - D. The minimum blood pressure measured when resting.

5. What is the main function of mitral valve?
 - A. to increase the pressure inside the left atrium during systole
 - B. to prevent a drop in pressure in the aorta during diastole
 - C. to prevent backflow from left ventricle to left atrium during systole**
 - D. to add additional blood from left atrium to left ventricle during atrial systole

8. What will cause the sinoatrial (SA) node to depolarize more frequently?
 - A. Acetylcholine
 - B. Norepinephrine**
 - C. Parasympathetic stimulation
 - D. Vagus nerve

9. How are cardiac cells mechanically attached to each other? By their:
 - A. mitochondria
 - B. intercalated discs**
 - C. gap junctions
 - D. sarcolemma

10. Starting at the APEX of the heart and moving superiorly, what is the correct order in which you would encounter the four anatomical structures below?
 - A. valves, chordae tendonae, papillary muscle, ventricle
 - B. ventricle, papillary muscle, chordae tendonae, valves**
 - C. papillary muscle, chordae tendonae, ventricle, valves
 - D. chordae tendonae, valves, ventricle, papillary muscle

11. Which period of the heart cycle is completely occupied by the ventricles



relaxing?

- A. atrial systole
- B. atrial diastole
- C. ventricular systole
- D. ventricular diastole**

12. Through which valve does blood flow when it moves from the right atrium into the right ventricle?

- A. the tricuspid valve**
- B. the mitral valve
- C. the pulmonary valve
- D. the bicuspid valve

13. How is the fibrous pericardium attached to the surrounding structures?

- A. laterally to the pleural surfaces of the lungs.**
- B. posteriorly to the sternum.
- C. anteriorly to trachea, main-stem bronchi and oesophagus.
- D. inferiorly to the clavicles.

14. A drug, such as cocaine, which stimulates the heart but does directly inhibit the heart's ability to relax, would be considered a:

- A. Sympatholytic
- B. Sympathomimetic**
- C. Parasympatholytic
- D. Parasympathomimetic

15. Why is the myocardium of the right ventricle (RV) thinner than that of the left ventricle (LV)?

- A. the RV pumps into the pulmonary circuit which has less resistance than the systemic circuit.**
- B. the RV pumps a smaller volume of blood than the LV.
- C. the RV pumps blood out with a slower exit speed than the RV.
- D. the RV chamber has a smaller volume than the LV.

16. Through which valve does blood flow when it moves from the left atrium into the left ventricle?

- A. the semilunar valve
- B. the mitral valve**
- C. the tricuspid valve
- D. the bicuspid valve

17. Which period of the heart cycle is completely occupied by the ventricles contracting?

- A. atrial systole
- B. atrial diastole
- C. ventricular systole**
- D. ventricular diastole



18. Which statement below describes blood flow through the mitral valve?
- A. blood flows from the right atrium into the right ventricle
 - B. blood flows from the right ventricle into the pulmonary artery
 - C. blood flows from the left ventricle into the aorta
 - D. blood flows from the left atrium into the left ventricle**
19. Which structure has the thickest wall?
- A. the aorta
 - B. the inter-atrial septum
 - C. the left ventricle**
 - D. the right ventricle
20. Which tissue is supplied with blood via the coronary arteries?
- A. the lungs
 - B. the myocardium**
 - C. the corona
 - D. the aorta
21. What is the innermost layer of the heart wall known as?
- A. epicardium
 - B. pericardium
 - C. visceral pericardium
 - D. endocardium**
22. Which of the following is a difference between cardiac muscle and skeletal muscle?
- A. cardiac muscle is not striated (and skeletal muscle is).
 - B. cardiac muscle fibres are branched (and skeletal muscle fibres are not).**
 - C. skeletal muscle is involuntary and is uni-nucleate (and cardiac muscle is neither).
 - D. skeletal muscle has intercalated discs (and cardiac muscle doesn't).
23. Where is the mitral valve of the heart located? Between the
- A. left atrium and left ventricle**
 - B. left ventricle and the aorta
 - C. right ventricle and the pulmonary trunk
 - D. right atrium and right ventricle
24. Choose the structure known as the pacemaker of the heart from the following.
- A. atrio-ventricular node
 - B. sino-atrial node**
 - C. atrio-ventricular bundle
 - D. the bundle of His
25. Where is the aortic valve located?
- A. between the right atrium and right ventricle
 - B. between the right ventricle and the pulmonary trunk
 - C. between the left ventricle and the aorta**
 - D. between the left atrium and left ventricle



26. By what name is the heart muscle known?
A. epicardium
B. myocardium
C. pericardium
D. endocardium
27. The heart receives its own oxygenated blood supply via the
A. coronary arteries
B. the pulmonary veins
C. the coronary sinus
D. the foramen ovale
28. Which name is **NOT** applied to the valve between the left ventricle and the left atrium?
A. atrioventricular valve
B. semilunar valve
C. the bicuspid valve
D. the mitral valve
29. Where does the pulmonary trunk deliver its blood to?
A. the left atrium
B. the right ventricle
C. the lungs
D. the left ventricle
30. The heart can be made to beat faster by which of the following?
A. sympathetic stimulation of the SA node
B. sympathetic stimulation of the AV node
C. parasympathetic stimulation of the SA node
D. parasympathetic stimulation of the AV node
31. What is the outermost layer of the heart wall known as?
A. epicardium
B. pericardium
C. parietal membrane
D. endocardium
32. The valve between the atrium and the ventricle that pumps oxygenated blood is called:
A. the right atrioventricular valve
B. the semilunar valve
C. the mitral valve
D. the tricuspid valve
33. What is the name given to the remnant of the opening in the foetal heart that allowed the foetal lungs to be bypassed?
A. coronary sinus
B. foramen ovale



- C. interatrial septum
- D. fossa ovalis**

34. The mitral valve of the heart is located between the
- A. right atrium and right ventricle
 - B. left ventricle and the aorta
 - C. right ventricle and the pulmonary trunk
 - D. left atrium and left ventricle**

35. Complete the sentence correctly. The left ventricle pumps:
- A. more blood than the right ventricle
 - B. blood at a lower pressure than the right ventricle
 - C. less blood than the right ventricle
 - D. blood at a higher pressure than the right ventricle**

36. What is ventricular systole? It
- A. refers to contraction of the ventricles**
 - B. occurs at the same time as contraction of the atria
 - C. occurs while the bicuspid valve is open
 - D. refers to relaxation of the ventricles

37. Which is correct? In its passage through the heart, blood is pumped into the pulmonary trunk:
- A. after leaving the left ventricle
 - B. after leaving the left atrium
 - C. after passing through the right AV valve**
 - D. after passing through the left AV valve

38. Cardiac muscle cells differ from skeletal muscle cells in that:
- A. skeletal muscle cells are voluntary but cardiac muscle cells are not.**
 - B. skeletal muscle cells are branched but cardiac muscle cells are not.
 - C. cardiac muscle cells are multinucleate but skeletal muscle cells are not.
 - D. cardiac muscle cells are a syncytium while skeletal muscle does not.

39. Which chamber of the heart has the thickest myocardium?
- A. left ventricle**
 - B. right ventricle
 - C. left atrium
 - D. right atrium

40. Why is the myocardium of the left ventricle thicker than that of the right ventricle?
- A. The left ventricle has to pump a greater volume of blood than the right ventricle.
 - B. The resistance of the systemic circulation is greater than that of the pulmonary circulation.**
 - C. The left ventricle has to pump blood to the brain against gravity.
 - D. The right ventricle is assisted by the “respiratory pump”.



41. What supplies blood to the myocardium?
A. the coronary circulation.
B. the vena cavae.
C. the vasa recta.
D. the pulmonary circulation.
42. Which of the following heart structures are listed in the correct sequence of blood flow through them?
A. right atrium, bicuspid valve, pulmonary valve, left ventricle.
B. tricuspid valve, right ventricle, left atrium, mitral valve.
C. pulmonary valve, left atrium, tricuspid valve, left ventricle.
D. right ventricle, left atrium, aortic valve, left ventricle.
43. The tricuspid valve separates which two structures?
A. right ventricle and pulmonary trunk
B. right ventricle and right atrium
C. left ventricle and aorta
D. left ventricle and left atrium
44. Why is the myocardium of the right ventricle thinner than that of the left ventricle?
A. the left ventricle has to pump a greater volume of blood than the right ventricle.
B. it results from left ventricular hypertrophy due to increased peripheral resistance.
C. it pumps blood into the low resistance pulmonary circulation.
D. it pumps blood into the high resistance systemic circulation.
45. Which of the following events occur during late ventricular diastole?
A. the atria are relaxed, the ventricles are filling passively, the atrioventricular valves are open
B. the ventricles are starting to contract, the atrioventricular valves are closed, the semilunar valves are open
C. the atria contract, the ventricles are relaxed, the atrioventricular valves are open
D. the atria are relaxed, the ventricles are starting to relax, the atrioventricular valves are closed, the semilunar valves are closed.
46. What feature distinguishes pacemaker cardiac cells from other cardiac cells? Pacemaker cardiac cells:
A. require a stimulus from the vagus nerve in order to reach threshold; other cardiac cells do not.
B. reach threshold with much weaker stimuli than other cardiac cells
C. have gap junctions, while other cardiac cells do not
D. do not require an external stimulus to reach threshold, while other cardiac cells do.
47. In a normal ECG trace, what does a QRS wave indicate?
A. depolarisation of the atria
B. repolarisation of the atria
C. depolarisation of the ventricles
D. repolarisation of the ventricles



48. What would be a possible consequence of the SA node failing to depolarise?
- A. the entire heart would not contract
 - B. the heart rate will decrease**
 - C. the ventricles would not contract
 - D. the heart rate will increase
49. By what means does an electrical signal travel from the atria to the ventricles?
- Via:
- A. gap junctions
 - B. Purkinje fibres
 - C. intercalated discs
 - D. atrioventricular bundle**
50. Which one of the following descriptions or statements about an electrocardiogram (ECG) is **NOT** correct?
- A. It is a record of the voltage changes (as measured at the body surface) due to the depolarisation of the muscle cells of the heart as it beats.
 - B. The potentials measured by the ECG electrodes are combined in various ways to give 12 different ECGs.
 - C. The ECG consists of the electrical events that follow the depolarisation of ventricles (PQR section), the depolarisation of atria (the S section) and the repolarisation of the ventricles (the T section).**
 - D. The value of the potential difference called “limb lead II” varies with time to produce the familiar ECG trace – a graph of voltage vs time.
51. Which of the following does limb lead II of a typical electrocardiogram represent?
- A. A graph of the variation of voltage produced by the heart against time.**
 - B. The voltage at right arm (RA) plus the voltage at left leg (LL).
 - C. The electrical events that precede the contraction of the ventricles.
 - D. The projection of the electric dipole vector of the heart on the line from left arm (LA) to right arm (RA).
52. Which of the following events occur during early ventricular systole?
- A. the atria are relaxed, the ventricles are filling passively, the atrioventricular valves are open
 - B. the ventricles are starting to contract, the atrioventricular valves are closed, the semilunar valves are closed**
 - C. the atria contract, the ventricles are relaxed, the atrioventricular valves are open
 - D. the atria are relaxed, the ventricles are starting to relax, the atrioventricular valves are opening, the semilunar valves are closing.
53. When listening to the “lub-dup” sound of the heart with a stethoscope, what is the cause of the “dup” sound?
- A. The blood flowing through the open semilunar valves
 - B. The blood flowing through the open atrioventricular valves
 - C. The turbulent blood flow through closing atrioventricular valves
 - D. The turbulent blood flow through closing semilunar valves**



54. What feature distinguishes pacemaker cardiac cells from other myocardial cells?

Pacemaker cells:

- A. require a stimulus from the vagus nerve in order to reach threshold, myocardial cells do not.
- B. reach threshold with much weaker stimuli than myocardial cells.
- C. have gap junctions, while myocardial cells do not.
- D. spontaneously generate action potentials, while myocardial cells do not.**

55. What structure in the heart prevents backflow of blood into the right atrium?

- A. The tricuspid valve**
- B. The bicuspid valve
- C. The mitral valve.
- D. The foramen ovale

