

Part I

1. Parallel muscles contract a greater distance than pennate muscles because parallel muscles
  - A. have more ATP
  - B. have longer muscle fibers
  - C. have shorter muscle fibers
  - D. have more muscle fibers
  - E. have more motor units
  
2. The epimysium is most similar in structure to the
  - A. hypodermis
  - B. tunica media of blood vessels
  - C. ligaments
  - D. synovial membranes
  - E. endomysium
  
3. When skeletal muscle contracts, calcium is released from the
  - A. actin
  - B. myosin
  - C. sarcoplasmic reticulum
  - D. T tubules
  - E. sarcomeres
  
4. An antagonist is a muscle which
  - A. does the opposite action of an agonist
  - B. is a fixator
  - C. is only used when the origin of a muscle is being moved
  - D. is usually stronger than the agonist
  - E. all of the above are true

For questions 5 - 8, match the muscle tissue with the correct statement (the same answer may be used more than once.)

KEY: A. skeletal muscle                      B. cardiac muscle                      C. smooth muscle  
D. both A and B                      E. all of the above

5. has gap junctions between cells
6. uses actin and myosin for contraction
7. has striations that are visible with a microscope
8. can contract due to changes in the environment
  
9. The most common constituent of plasma is
  - A. water
  - B. protein
  - C. gasses
  - D. nutrients
  - E. electrolytes
  
10. Reticulocytes are normally found in the
  - A. lymphatic system
  - B. blood
  - C. red marrow
  - D. fibrous connective tissues
  - E. all of the above
  
11. The first sound of a heartbeat is caused by the
  - A. contraction of the atria
  - B. contraction of the ventricles
  - C. opening of the atrio-ventricular valves
  - D. closing of the atrio-ventricular valves
  - E. closing of the semilunar valves

For questions 12 through 14, match the structure with the appropriate tissue (the same answer may be used more than once.)

Key:   A. simple squamous epithelium                    B. simple cuboidal epithelium  
          C. simple columnar epithelium                 D. pseudostratified epithelium  
          E. stratified cuboidal epithelium

12. lining of visceral pericardium

13. lining of alveoli

14. lining of nasal cavity

15. Pulmonary embolism is often caused by

- A. lack of blood flow in the lungs
- B. lack of blood flow in the veins
- C. increased heart rate
- D. increased blood pressure
- E. not enough oxygen in the blood

16. The function of the conduction myofibers is

- A. to make sure both ventricles contract at the same time
- B. to carry the action potential to all parts of the ventricles
- C. to transmit the action potential from the atrio-ventricular node to the ventricles
- D. both A and B
- E. all of the above

17. Atherosclerosis is dangerous because

- A. it damages the endothelium of arteries
- B. it can result in a narrowing of arteries
- C. it can result in the formation of a blood clot
- D. both B and C
- E. all of the above

18. Which of the following is true of lymph nodes?

- A. they are found throughout the body
- B. they filter wastes from blood
- C. they filter wastes from tissue fluid
- D. they pump lymphatic fluid
- E. they serve no function

19. If a baby is born with a patent foramen ovale, what would be the course of treatment?

- A. surgery on the heart
- B. surgery on the blood vessels leading out of the heart
- C. surgery on the blood vessels leading to the heart
- D. a heart transplant
- E. defibrillating the heart

20. The most common type of blood vessel in the body is

- A. muscular arteries                                    B. veins
- C. continuous capillaries                            D. arterioles
- E. discontinuous capillaries

21. The thickest part of the heart wall is the  
 A. endocardium                      B. myocardium  
 C. visceral pericardium              D. pericardial cavity  
 E. they are all about equally thick
22. The heart is structurally fully developed by about how many days after fertilization?  
 A. 10                      B. 20                      C. 35                      D. 80                      E. 120
23. Which of the following is a function of the thymus?  
 A. remove wastes from blood              B. remove old erythrocytes from blood  
 C. make lymphocytes                      D. both A and B  
 E. both B and C
24. The function of hemoglobin is to  
 A. carry oxygen                      B. carry carbon dioxide  
 C. allow blood to clot                      D. prevent blood from clotting  
 E. make erythrocytes
25. What is the function of lymphocytes?  
 A. make antibodies                      B. make macrophages  
 C. make clotting factors                      D. make histamine  
 E. all of the above
26. Leukocytes are found in  
 A. fibrous connective tissues                      B. blood  
 C. red marrow                      D. all of the above  
 E. none of the above
27. A heart murmur is usually due to  
 A. the atria not contracting properly                      B. an infection in the pericardium  
 C. a damaged heart valve                      D. a myocardial infarction  
 E. a damaged SA node
28. When taking a blood test, you have your finger poked. Which type of vessel is not severed?  
 A. arteriole                      B. venule                      C. lymphatic capillary  
 D. continuous capillary                      E. fenestrated capillary
29. What is the function of the arytenoid cartilages?  
 A. prevent food from going into the trachea                      B. protect the larynx  
 C. open the vocal cords                      D. both A and B  
 E. all of the above
30. The nasopharynx is separated from the oropharynx by the  
 A. uvula                      B. soft palate                      C. sinuses  
 D. laryngopharynx                      E. both A and B
31. Which of the following is not a function of mucus in the respiratory system?  
 A. prevent the epithelium from drying out                      B. humidify the air  
 C. clean the air                      D. nourish the cilia  
 E. none of the above are functions of mucus

32. The visceral pleura
- A. line the thoracic cavity
  - B. reduce pressure within the thoracic cavity
  - C. prevent infection of the lungs
  - D. secrete fluid to lubricate the movement of the lungs
  - E. all of the above
33. A collapsed lung is due to
- A. pulmonary embolism
  - B. pneumonia
  - C. emphysema
  - D. food getting stuck in the bronchi
  - E. air in the pleural cavity
34. Rheumatoid arthritis is
- A. most common in older people
  - B. due to a lack of synovial fluid
  - C. an autoimmune disease
  - D. caused by overuse of joints
  - E. painful, but otherwise harmless
35. The function of synovial fluid is to
- A. nourish the articular cartilage
  - B. lubricate the joint
  - C. prevent the bones from touching
  - D. both A and B
  - E. all of the above
36. A torn or badly stretched ligament is called
- A. strain
  - B. sprain
  - C. tendinitis
  - D. bursitis
  - E. periodontitis
37. Which type of joint allows for the least amount of movement?
- A. symphysis
  - B. suture
  - C. syndesmosis
  - D. synovial
  - E. they all allow for easy movement

**Part II.** (10 points each).

1. The gracilis muscle adducts the thigh. It inserts on the tibia 60 cm. from the hip. The center of weight of the lower limb is 30 cm. from the hip.

A. If the lower limb weighs 20 kg., how much force will the muscle need to move it?

B. The knee is 45 cm from the hip. If the muscle contracts 6 cm, how far will the knee move?

C. What type of lever system is this? What are the advantages and disadvantages of this lever system?

2. Describe the route blood would take in going from the small intestine to the knee. Don't forget to mention all of the parts of the heart the blood goes through including the appropriate valves.

**Part III.**

1. Draw a cross section of a muscular artery and an arteriole. Label each layer and the tissue that makes up each layer. Explain the function of each layer.

2. Draw a cross section of a trachea and a bronchiole. Label each layer and the tissue that makes up each layer. Explain the function of each layer.

**Part IV**

1. Describe the two pumps other than the heart that move blood through the body and briefly explain how they work.

2. What is neonatal respiratory distress syndrome?

3. What is a herniated intervertebral disc?

4. What is a myocardial infarction and what are its causes?

5. What is edema and what are its causes?