

SBI3C Circulatory System Formative Test**Modified True/False**

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

1. **F** In humans, the heart, blood vessels, and blood make up the cardiovascular system. circulatory
2. **F** Human hearts have a five chambered heart. **four chambered**
3. **F** The contraction phase of the heart is known medically as diastole. systole
4. **F** To listen to the sounds of the heart, a doctor uses a(n) electrocardiograph. stethoscope
5. **F** During exercise, the heart rate increases and the blood pressure decreases. **increase**
6. **T** Fitness trainers are interested in recovery after exercise because this is an indication of the body's ability to maintain stasis. _____
7. **F** The process by which fluid moves from the glomerulus into the Bowman's capsule is known as reabsorption. filtration
8. **F** High blood pressure is serious because it can weaken the veins, which might result in its rupture. arteries
9. **F** The aorta leads directly from the right ventricle and branches into many arteries that carry blood around the body. left ventricle
10. **T** Each kidney is made up of approximately one million microscopic tubules called capillaries.

Multiple Choice

Identify the choice that best completes the statement or answers the question.

11. What is a typical blood pressure value for a young adult?
(A) 170/110 (C) **120/80**
(B) 140/80 (D) 80/120
12. The impulses that stimulate the heartbeat originate in the
(A) **sinoatrial node** (C) systole
(B) atrioventricular node (D) diastole
13. Acts as a pacemaker and sets a rhythm of about 72 beats per minute.
(A) **sinoatrial node** (C) systole
(B) atrioventricular node (D) diastole

14. Chose the correct order of blood vessels used as blood leaves the heart for a systemic circuit.
- (A) veins, venules, capillaries, arterioles, arteries
 - (B) arterioles, arteries, capillaries, venules, veins
 - (C) **arteries, arterioles, capillaries, venules, veins**
 - (D) arteries, arterioles, capillaries, veins, venules
15. What treatment would a doctor use to treat a blocked coronary artery to prevent a heart attack or to repair the blockage after a heart attack?
- (A) electrocardiograph
 - (B) angioplasty
 - (C) coronary bypass surgery
 - (D) **b and c**
16. Which of the following is not a risk factor for heart disease?
- (A) smoking
 - (B) physical inactivity
 - (C) family history of heart disease
 - (D) **all of these are risk factors for heart disease**
17. What does the body do with amino acids that are not needed?
- (A) deaminates them
 - (B) uses them for energy
 - (C) eliminates them through the large intestine
 - (D) **both a and b**
18. In the liver, toxic ammonia is combined with CO₂ to form urea. This is
- (A) eliminated through the lungs
 - (B) eliminated through the large intestine
 - (C) **excreted in the urine**
 - (D) none of these methods can be used to eliminate urea
19. The medical or scientific term for, or applied to, kidneys is
- (A) cardiac
 - (B) adrenal
 - (C) **renal**
 - (D) patella
20. The blood vessels carrying blood into the kidneys are the
- (A) **renal arteries**
 - (B) renal veins
 - (C) aortas
 - (D) ureters
21. Urine is carried out of the kidney by the
- (A) renal artery
 - (B) renal vein
 - (C) **ureter**
 - (D) urethra
22. After urine has been formed, it is stored in the
- (A) kidneys
 - (B) ureter
 - (C) **bladder**
 - (D) urethra
23. During kidney filtration, which of these materials remains in the plasma and does not enter the nephron?
- (A) glucose
 - (B) amino acids
 - (C) **plasma protein**
 - (D) all of these are filtered

There are four main categories of heart disease. Match the category with the best description.

- | | |
|-----------------------------|-----------------------------|
| (A) atherosclerosis | (D) cardiac catheterization |
| (B) heart muscle disease | (E) arrhythmias |
| (C) coronary artery disease | (F) valve disorders |

33. **C** blockage of the arteries that supply blood to the heart muscle
34. **E** malfunctions of the electrical system controlling heartbeat
35. **B** inflammation or infection of the heart muscle
36. **F** dysfunction of one or more of the heart valves

Match each of the nephron's parts with the best description of its structure.

- | | |
|--------------------------------|-------------------------------|
| (A) glomerulus | (E) loop of Henle (ascending) |
| (B) Bowman's capsule | (F) distal tubule |
| (C) proximal tubule | (G) collecting tubule |
| (D) loop of Henle (descending) | |

37. **G** system of urine-collecting ducts that widen as they near pelvis
38. **B** hollow, cup-shaped end of nephron with double walls, one cell thick
39. **A** cluster of capillaries accepting blood from renal artery
40. **E** straight part of loop leading to distal tubule
41. **F** hollow, winding, large-diameter tube leading to collecting tubule

Match each kidney disease with its description.

- | |
|---|
| (A) high blood sugar levels due to insulin deficiency |
| (B) increase in urine output due to lack of hormones controlling water reabsorption |
| (C) inflammation of nephrons allowing proteins to enter nephron |
| (D) precipitation of dissolved minerals causing extreme pain in urethra |

42. **B** diabetes insipidus
43. **C** Bright's disease, also known as nephritis
44. **D** kidney stones
45. **A** diabetes mellitus

Short Answer

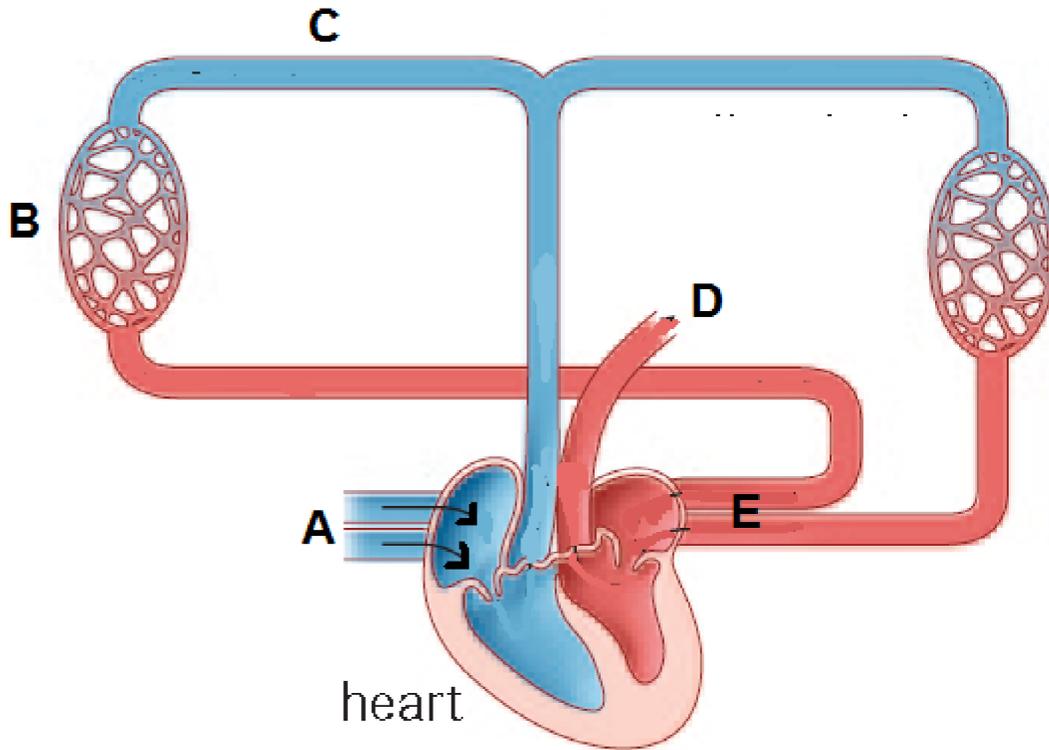
Answer in the space provided. If you need further space please use full space provided. Grading will be based upon the quality, not quantity, of your answer and how clearly you present the information within your answers. You are expected to incorporate key terms, definitions and concepts you have learned to fully develop your answer. For math questions proper format and a concluding statement are required. **Each answer will be out of 4 level marks.**

46. Describe the three general components of the circulatory system in humans.
HINT - a fluid, some pipes (AKA vessels) and a pump

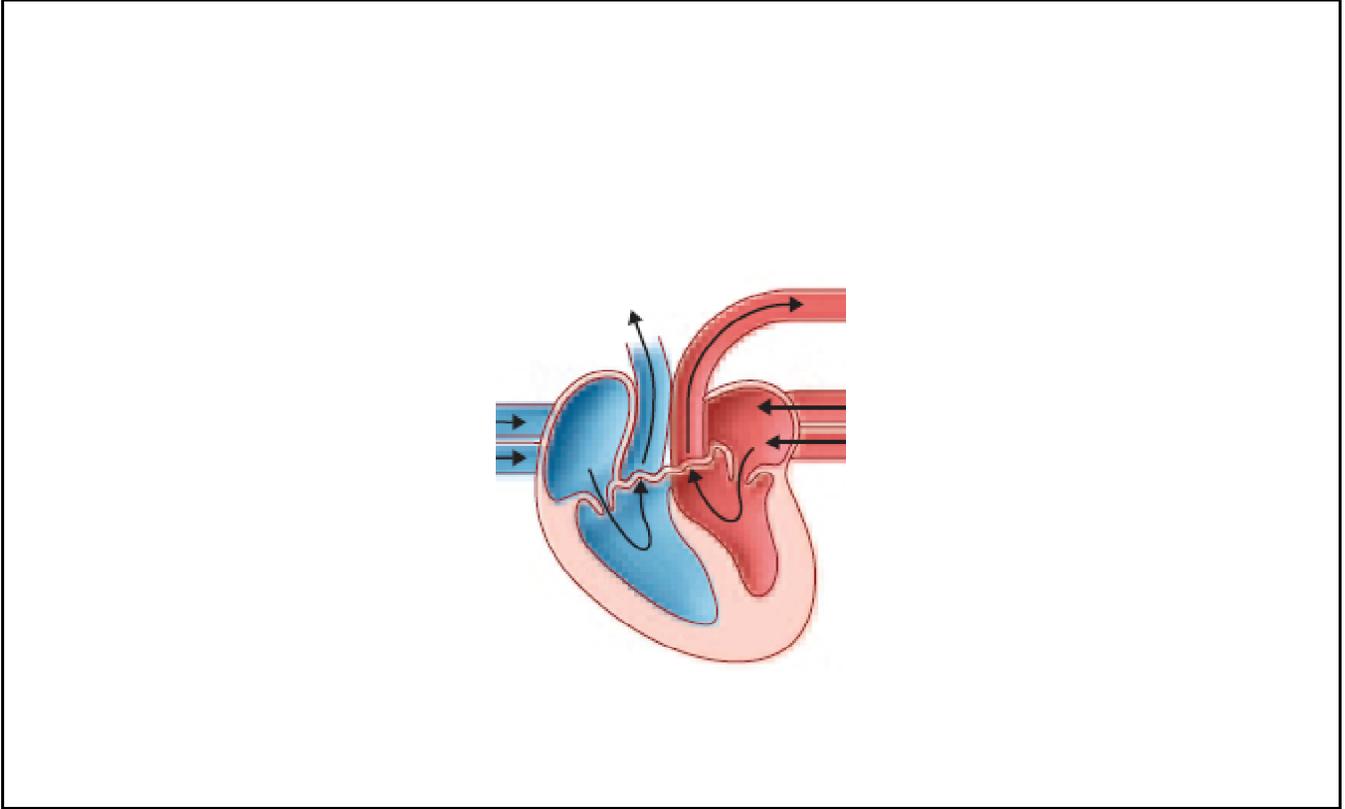
Name: _____

ID: A

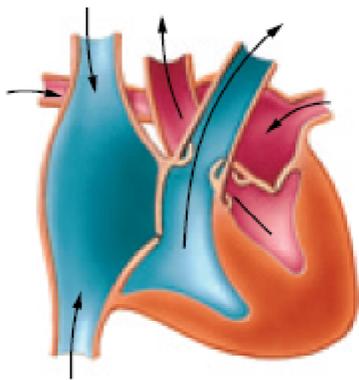
47. On the diagram below show the direction of blood flow starting at A. Label B, C and E. Indicate where the blood at D is going. HINT - see diagram page 197



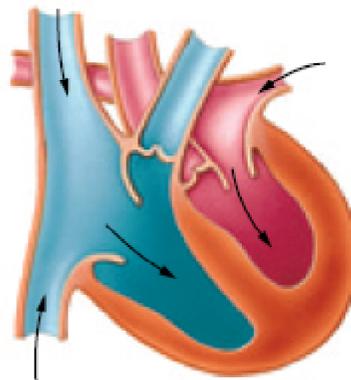
48. Using the diagram below finish to the systemic circuit. Lable all appropriate structures. **HINT - see diagram page 197**



49. Explain the statement, "Mammals keep oxygen-rich and oxygen-poor blood flowing separately through what is known as a *double circulatory system*." **HINT - think of the two seperate circuits**
50. The diagram below show the two contractions of the heart. Use this to explain the lub dub sound heard when the heart beats.



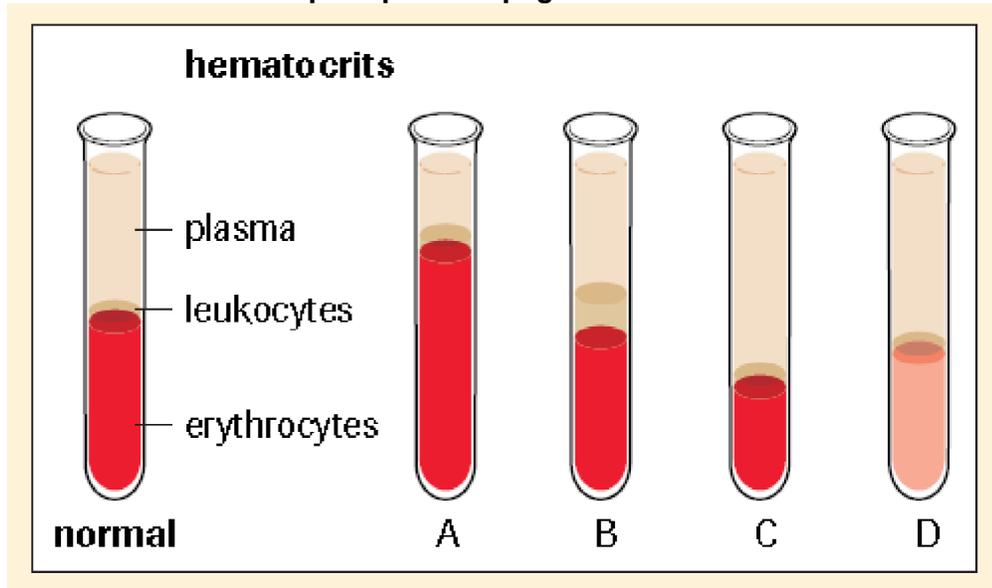
atria relaxed, ventricles contracted



atria contracted, ventricles relaxed

HINT - see page 198

51. The pressure exerted by the pumping of the heart is not enough to push the blood back to the heart, especially from the lower limbs. Explain how the structure of the vein overcomes this problem. **HINT - see page 199**
52. Cancer of the white blood cells is called leukemia. Like other cancers, leukemia is associated with rapid and uncontrolled cell division. Examine the figure below and predict which subject might be suffering from leukemia. Explain your reasoning.
HINT - See end of chapter question page 202



53. In the early morning, John Smith, a 47-year-old male, enters the emergency ward of St. Michael's Hospital in Toronto complaining of chest pains. He had been shovelling snow and suddenly experienced sharp pain in his chest, shortness of breath, and nausea. As the emergency ward staff prepares to diagnose and treat the problem, they note that this is the sixth patient with similar symptoms since the heavy snowfall the previous evening. Based only on Mr. Smith's description of his symptoms, the obvious suspicion is that the patient is having or has had a heart attack, and the priority is to stabilize his condition and prevent further damage.

a) Within 10 minutes, a blood sample is taken and sent for analysis, and the patient is connected to an electrocardiograph. Explain what these two tests are testing for.

The tests confirm that Mr. Smith has indeed had a heart attack.

b) What immediate supplemental treatment will Mr. Smith most likely receive.

HINT - see page 203-204

54. Describe the three main processes of urine formation. **HINT - see page end of chapter questions page 214**
55. What are kidney stones? Why are they a problem? **HINT - see page end of chapter questions page 214**