**Chapter: Blood and Cardiovascular System**

**Dr. Pooja Devi**

**Q. No. 1. Choose the most appropriate answer from the options given below.**

1. Smallest sized RBCs are found in
2. Buffalo
3. **Goat**
4. Horse
5. Dog
6. Heart rate can be calculated from
7. PR interval
8. **RR interval**
9. QT interval
10. ST interval
11. Atria are filled with blood during
12. Atrial systole
13. **Atrial diastole**
14. Ventricular systole
15. Ventricular diastole
16. Semilunar valves are opened when
17. Intraventricular pressure is lesser than pressure in aorta
18. **Intraventricular pressure is greater than pressure in aorta**
19. Pressure is same in ventricles and aorta
20. None of the above
21. Amount of blood pumped out with each beat is called
22. Cardiac output
23. Minute volume
24. **Stroke volume**
25. None of the above
26. Blood clot in blood vessels is dissolved by
27. Protease
28. Elastase
29. Trypsin
30. **Plasmin**
31. In which part of the heart the conduction velocity of electrical impulses is the fastest?
32. SA Node
33. AV Bundle
34. **Purkinje Fibres**
35. Ventricular muscles
36. Venous blood is
	1. More alkaline than arterial blood
	2. **Less alkaline than arterial blood**
	3. More acidic than arterial blood
	4. Less acidic than arterial blood
37. Erythrocyte sedimentation rate is
	1. **More in buffaloes than cattle**
	2. Less in buffaloes than cattle
	3. Same in buffaloes and cattle
	4. None of the above
38. Which of the following is longest interval in ECG?
	1. PR Interval
	2. PQ Interval
	3. ST Interval
	4. **QT Interval**
39. Heme group of Hemoglobin is synthesized in
	1. **Mitochondria and cytoplasm**
	2. Mitochondria and RER
	3. RER and cytoplasm
	4. RER and Golgi complex
40. The specialized excitatory and conductive system of the heart that controls cardiac contractions include
	1. SA node and Inter-nodal pathways
	2. AV node and AV Bundle
	3. Left and Right bundles of Purkinje Fibres
	4. **All of the above**
41. Eosinophils can be identified by
	1. A large and round nucleus
	2. A scarce amount of cytoplasm
	3. Blue granules in the cytoplasm
	4. **Pink granules in the cytoplasm**
42. Which of the following is not involved in the process of clotting
	1. Vitamin K
	2. Prothrombin
	3. **Heparin**
	4. Calcium
43. Heart rate can be calculated from
	1. PR interval
	2. **RR interval**
	3. QT interval
	4. ST interval
44. Compared with the systemic circulation, the pulmonary circulation:
	1. Carries more blood flow per minute
	2. **Has a lower perfusion pressure**
	3. Carries blood that has a lower hematocrit
	4. Contains a higher blood volume
45. A transfusion of normal plasma into a normal dog would:
	1. **Decrease the hematocrit of the recipient’s blood**
	2. Increase the viscosity of recipient blood
	3. Decrease the mean corpuscular hemoglobin concentration (MCHC) in recipient’s plasma
	4. Increase the number of cells in the recipient’s blood
46. Name the condition when blood flow to a tissue is inadequate to meet the metabolic needs of the tissue:
	1. Anemia
	2. Edema
	3. Necrosis
	4. **Ischemia**
	5. Infarction
47. The volume of blood pumped by the left ventricle in one minute would equal:
	1. The volume of blood that flowed through the coronary circulation (in the same minute)
	2. The volume of blood that flowed through all organs of the systemic circulation, except for coronary blood flow
	3. **The volume of blood that flowed through the lungs**
	4. One half of the cardiac output
48. An increase in heart rate could result from:
	1. An increase in sympathetic nerve activity to the heart
	2. A decrease in parasympathetic nerve activity to the heart
	3. An abnormally rapid increase in permeability of SA node cells to Na+ during diastole
	4. **All the above are correct**
49. During which phase of a normal ventricular action potential, fast Na+ channels are in an inactivated state, slow Ca channels are open, and most potassium channels are closed?
	1. Phase 0 (rapid depolarization)
	2. Phase 1 (partial repolarization)
	3. **Phase 2 (plateau)**
	4. Phase 3 (repolarization)
50. At the moment when an action potential begins propagating slowly through AV node in a normal resting dog, the ventricular muscle cells are:
	1. **At their resting membrane potential**
	2. Depolarizing slowly toward threshold for formation of an action potential
	3. Undergoing rapid depolarization at the beginning of an action potential
	4. At the plateau of an action potential
51. Which of the following is true for both cardiac muscle and skeletal muscle?
	1. The muscle forms a functional syncytium
	2. **An action potential in muscle cell membrane is required to initiate contraction**
	3. Pacemaker cells spontaneously depolarize to threshold and initiate action potentials
	4. Frequent action potential in motor neurons can cause a sustained (tetanic) muscle contraction
52. The normal pathway followed by a cardiac action potential is to begin in the SA node then propagate:
	1. Across the atria in the bundle of His
	2. Through the connective tissue layers that separate the atria and ventricles
	3. **Across the atria and into the AV node**
	4. From left atrium to left ventricle and from the right atrium to the right ventricle
53. In the normal cardiac cycle:
	1. The P wave in the electrocardiogram coincides with the beginning of ventricular ejection
	2. **The second heart sound coincides with the beginning of isovolumetric relaxation**
	3. Left ventricular pressure reaches its highest level just as the aortic valve closes
	4. The mitral valve is open throughout the ventricular diastole
54. An abnormality that causes a sustained decrease in left ventricular compliance is most likely to result in an increased:
	1. Left ventricular stroke volume
	2. **Left atrial volume and pressure**
	3. Left ventricular afterload
	4. Left ventricular end diastolic volume
55. Which of the following cause and effect statement is true for a normal heart?
	1. Sympathetic activation causes end-systolic ventricular volume to increase
	2. An increase in ventricular preload causes end-diastolic ventricular volume to decrease
	3. **Pacing the heart at a high rate causes stroke volume to decrease**
	4. An increase in ventricular contractility causes systolic duration to increase
56. Increase in coronary blood flow during exercise is:
	1. Called starling’s law of heart
	2. **Closely matched to the increased metabolic requirements of heart muscle**
	3. Caused by activation of parasympathetic nerves to heart
	4. Caused by compression of coronary blood flow during systole
57. In response to increase in perfusion pressure, the arterioles of an autoregulating

organ , and vascular resistance of the organ .

* 1. **Constrict; increases**
	2. Constrict; decreases
	3. Dilate; increases
	4. Dilate; decreases
1. Intrinsic control of blood flow is most likely to predominate over extrinsic control of blood flow in:
	1. The splanchnic circulation
	2. The kidneys
	3. Resting skeletal muscle
	4. **Exercising skeletal muscle**
2. Which of the following characteristically act as paracrine to cause vasoconstriction in systemic arterioles?
	1. Carbon dioxide
	2. Nitric oxide
	3. **Endothelin-1**
	4. Prostacyclin
	5. Bradykinin
3. During a defense-alarm reaction (fight or flight response), heart rate increases because of :
	1. Increased circulating acetylcholine released from adrenal glands
	2. Increased activation of arterial baroreceptors
	3. Increased arterial blood pressure
	4. **Increased sympathetic nerve activity**
	5. Increased parasympathetic activity
4. The magnitude of pulsations in blood pressure is greatest in the
	1. **Arteries**
	2. Arterioles
	3. Capillaries
	4. Veins
5. Which of the following is a correct comparison between segments of systemic circulation?
	1. The aorta and large arteries have a high resistance to blood flow than the capillaries
	2. **The Arterioles have a high resistance to blood flow than the capillaries**
	3. The Veins have a high resistance to blood flow than the capillaries
	4. The aorta and large arteries have a higher compliance than veins
6. The blood flow through the brain of a resting dog would be decreased most by a 20% decrease in the:
	1. Mean arterial pressure
	2. Heart rate
	3. **Radius of arterioles in the brain**
	4. Radius of arteries in the brain
7. The normal reflex response to a sudden increase in arterial blood pressure include an increase in:
	1. Heart rate
	2. Renin release from the kidney
	3. **Parasympathetic activity directed to the heart**
	4. Sympathetic activity directed to blood vessels in kidneys, resting skeletal muscles and splanchnic organs.
8. During a fight or flight response, the heart rate increases because of:
	1. Increased circulating acetylcholine released from the adrenal glands
	2. Increased activation of the arterial baroreceptors
	3. Increased Parasympathetic activity
	4. **Increased sympathetic nerve activity**

**Q.2. Fill in the blanks with appropriate word.**

1. Delay to the transmission of impulse occurs at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in heart. **AV node**
2. True oxide of hemoglobin is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **Methemoglobin**
3. Macrophages are modified\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **Monocytes**
4. First heart sound is produced due to closure of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_valves. **AV Valves**
5. The difference between Systolic and Diastolic pressure is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **Pulse Pressure**
6. Neutrophils destroy the bacteria by the process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **Phagocytosis**
7. Hemoglobin synthesis in red blood cells starts at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stage. **Rubricyte**
8. Plasma protein \_\_\_\_\_\_\_\_\_\_\_\_\_ helps in coagulation of blood. **Fibrinogen**
9. Neutrophils increase in number during \_\_\_\_\_\_\_\_\_\_\_\_\_\_ infections. **Bacterial infections**
10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells helps in sealing the ruptured blood vessels. **Platelets**
11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ions are necessary for blood coagulation. **Ca2+**
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_type of shock occurs due to immunological reactions. **Anaphylactic Shock**
13. Amount of blood pumped out from each ventricle during one minute is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **Cardiac output**
14. Opening between left and right atrium during fetal stage is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **Foramen ovale**
15. Maximum pressure in arteries during relaxation of heart is called \_\_\_\_\_\_\_\_\_\_\_ pressure. **Diastolic Pressure**
16. Cardiac muscles mainly depend upon for their energy requirements. **Fatty acids**
17. Average total erythrocyte number in buffalo is \_\_\_\_\_\_\_\_\_\_\_. **6-8 millions/μl of blood.**
18. Number of eosinophils increases during infection. **Parasitic**
19. Macrophages are modified cells. **Monocytes**
20. Erythrocyte indices are used to diagnose in animals. **Anemia**
21. is a predominant site of extravascular hemolysis in domestic animals. **Red Bone Marrow**
22. The process of erythropoiesis in adults occurs in bones. **Membranous**
23. Life span of RBCs in Poultry is days. **28-30 days**
24. Immunity provided to body through the production of antibodies is called immunity. **Humoral Immunity**
25. Maturation arrest of erythrocytes occurs at \_\_\_\_\_\_\_\_\_\_ stage in iron deficiency anaemia. **Rubricyte stage**
26. Maximum pressure in arteries during contraction of heart is called \_\_\_\_\_\_\_\_\_\_ pressure. **Systolic Pressure**

**Q.3. State True or False**

1. Plasma protein albumin is responsible for maintaining the osmotic pressure in the body. **True**
2. Blood coagulation in a test tube takes place through the extrinsic pathway. **False**
3. SA node is known as pace setter of heart. **False**
4. Increase in heart rate is called tachycardia. **True**
5. Electrical activities of heart recorded on paper is known as electrocardiogram. **True**
6. Plasma cells synthesize antibodies to provide humoral immunity. **True**
7. Break down of hemoglobin is known as hemostasis. **False**
8. 90% of blood enters into ventricles from auricles during atrial systole. **False**
9. “Dubb” is produced due to closure of semilunar valves. **True**
10. Longer refractory period of cardiac muscles prevents tetanus in the heart. **True**
11. CO has more affinity to bind with hemoglobin than CO2. **True**
12. In the ECG, the ventricular repolarisation appears as P wave. **False**
13. Age and nutritional factors affects the blood pressure in animals. **True**
14. The enzyme prothrombin converts soluble fibrinogen to insoluble fibrin.
15. The cytoplasmic granules in Monocytes are acidophilic in nature.
16. Four heme molecules unite with four globins to form the hemoglobin molecule. **True**
17. In nitrite poisoning dark chocolate brown colour of blood is due to formation of methemoglobin. **True**
18. Serum and plasma are same except presence of albumin in the plasma. **False**
19. The right side of heart pumps blood through the lungs. **True**
20. Blood always flows with turbulence in larger blood vessels. **True**

 **Q.4. Match the columns**

|  |  |
| --- | --- |
| **Column A** | **Column B** |
| **4** | Sodium citrate  | 1 | Veins |
| **1** | Capacitance vessels  | 2 | T Lymphocyte |
| **7** | Pulse  | 3 | Endotoxins |
| **6** | Monocyte  | 4 | Anticoagulant |
| **2** | Cell mediated immunity  | 5 | Reticulocytes |
| **3** | Septic shock  | 6 | Macrophage |
| **5** | Nucleated RBCs  | 7 | Pressure wave |
| **10** | Blood flow  | 8 | Left side |
| **8** | Ventricular hypertrophy  | 9 | Right side |
| **9** | Tricuspid valves  | 10 | Reynold’s number |
| **13** |  RBC destruction | 11 | Evan’s blue dye |
| **15** | Bile pigments | 12 | Phagocytosis |
| **11** | Blood volume | 13 | Mononuclear phagocytic system |
| **12** | Neutrophils | 14 | Mast cells |
| **14** | Basophils | 15 | Hemoglobin metabolites |