

1. The opening and closing of semilunar valves depend upon
  - (a) increased and decreased pressure in ventricles
  - (b) atrial systole
  - (c) duration of nerve impulse to travel through atria and ventricles
  - (d) amount of blood presents in left ventricle
2. In ECG, P-R interval corresponds to
  - (a) time delay in AV node
  - (b) SA nodal conduction time
  - (c) increased ventricular contraction
  - (d) time interval between onset of ventricular contraction
3. Left atrium receives blood from lungs through
  - (a) pulmonary veins
  - (b) aorta
  - (c) pulmonary artery
  - (d) vena cava
4. Coronary blood vessels circulate blood
  - (a) to body tissue from heart
  - (b) to heart from body tissues
  - (c) to heart muscles from heart
  - (d) to lungs from heart muscles
5. Systolic or Pumping pressure in a normal human is
  - (a) 70 mm of Hg
  - (b) 80 mm of Hg
  - (c) 90 mm of Hg
  - (d) 120 mm of Hg
6. Name the major site where RBCs are formed.
  - (a) Sternum
  - (b) Bone marrow
  - (c) Cranial bone
  - (d) Humerus
7. Which of the following cells does not exhibit phagocytic activity?
  - (a) Monocytes
  - (b) Neutrophil
  - (c) Basophil
  - (d) Macrophage
8. Mark the pair of substances among the following which is essential for coagulation of blood.
  - (a) heparin and calcium ions
  - (b) calcium ions and platelet factors
  - (c) oxalates and citrates
  - (d) platelet factors and heparin
9. The cardiac impulse is initiated and conducted further upto ventricle. The correct sequence of conduction of impulse is
  - (a) SA node AV node Purkinje fibre AV bundle
  - (b) SA node Purkinje fibre AV node AV bundle
  - (c) SA node AV node AV bundle Purkinje fibre
  - (d) SA node Purkinje fibre AV bundle AV node
10. Which one of the following statements is incorrect?
  - (a) A person of O blood group has anti-A and anti-B antibodies in his blood plasma
  - (b) A person of B blood group cannot donate blood to a person of A blood group
  - (c) Blood group is designated on the basis of the presence of antibodies in the blood plasma
  - (d) A person of AB blood group is universal recipient.
11. Read the following statements and choose the correct option.
  - I. Atria receive blood from all parts of the body which subsequently flows to ventricles.
  - II. Action potential generated at sino-atrial node passes from atria to ventricles.
  - (a) Action mentioned in statement I is dependent on action mentioned in statement II
  - (b) Action mentioned in statement II is dependent on action mentioned in statement I
  - (c) Action mentioned in statement I and II are independent of each other
  - (d) Action mentioned in statement I and II are synchronous
12.  $pH$  of blood in artery and vein is
  - (a) Same
  - (b) More in artery and less in vein
  - (c) More in vein and less in artery
  - (d) Not definite
13. Choose the correct proportion with respect to the distribution of blood in the body of man.
  - (a) 5% to heart muscles, 15% to brain, 25% to liver, 25% kidney, 15% to bones, 15% to other organs
  - (b) 20% to heart muscles, 10% to brain, 10% to liver, 25% to kidney, 10% to bones, 25% to other organs

- (c) 10% to heart muscles, 10% to brain, 10% to liver, 40% to kidney, 15% to bones, 15% to other organs
- (d) 5% to heart muscles, 20% to brain, 20% to liver, 15% to kidney, 5% to bones, 35% to other organs
- (e) 1% to heart muscles, 20% to brain, 30% to liver, 40% to kidney, 5% to bones, 40% to other organs

14. Heart beats are controlled by a nodal tissue which is composed of

- (a) Purkinje fibres            (b) Myonemes
- (c) Collagen fibres            (d) Telodendrites

15. Trilobed valve present between right atrium and ventricle in mammalian heart is

- (a) Triac                            (b) Triad
- (c) Tricuspid or besian        (b) Trigeminal

16. Eustachian valve which is of no significance in the adult mammal, is a vestigial organ, a vestige of

- (a) Spiral valve                (b) Sinus venosus
- (c) Sino-auricular valve       (d) Semilunar valve

17. Blood is

- (a) Endodermal in origin       (b) Exodermal in origin
- (c) Mesodermal in origin       (d) Ectodermal in origin

18. The process of formation of the various types of blood cells is known as

- (a) Haemagglutination        (b) Haemolysis
- (c) Haemophilia                (d) Haemopoiesis

19. Venous system of frog differs from that of rabbit in presence of

- (a) Hepatic portal system       (b) Renal portal system
- (c) 3 vena cavae                (d) Hepatic vein

20. Valves are found in veins to check the backflow of blood flowing under

- (a) Low pressure                (b) High pressure
- (c) No pressure                 (d) Very high pressure

21. The heart beat increases at the time of interview due to

- (a) Corticotrophic hormone
- (b) Hyper secretion of renin
- (c) Secretion of adrenaline
- (d) Antidiuretic hormone secretion

22. Systole refers to the contraction of

- (a) SA node                        (b) AV node
- (c) Major arteries                (d) Atria and ventricles

23. Adult human RBCs are enucleate. Which of the following statement(s) is/are most appropriate explanation for this feature? (1) They do not need to reproduce. (2) They are somatic cells. (3)

They do not metabolise. (4) All their internal space is available for oxygen transport.

- (a) Only (1)
- (b) (1), (3) and (4)
- (c) (2) and (3)
- (d) Only (4)

(NEET 2017)

24. Serum differs from blood in

- (a) lacking globulins
- (b) lacking albumins
- (c) lacking clotting factors
- (d) lacking antibodies. (NEET-II 2016)

25. Which one of the following human organs is often called the “graveyard” of RBCs?

- (a) Gall bladder
- (b) Kidney
- (c) Spleen
- (d) Liver (Mains 2012)

26. Which two of the following changes (i –iv) usually tend to occur in the plain dwellers when they move to high altitudes (3,500 m or more)? (i) Increase in red blood cell size (ii) Increase in red blood cell production (iii) Increased breathing rate (iv) Increase in thrombocyte count Changes occurring are

- (a) (ii) and (iii)
- (b) (iii) and (iv)
- (c) (i) and (iv)
- (d) (i) and (ii). (2010)

27. Globulins contained in human blood plasma are primarily involved in

- (a) osmotic balance of body fluids
- (b) oxygen transport in the blood
- (c) clotting of blood
- (d) defence mechanisms of body. (2009)

28. Which type of white blood cells are concerned with the release of histamine and the natural anticoagulant heparin?

- (a) Eosinophils
- (b) Monocytes
- (c) Neutrophils
- (d) Basophils (2008)

29. In the ABO system of blood groups, if both antigens are present but no antibody, the blood group of the individual would be

- (a) B
- (b) O
- (c) AB
- (d) A. (2003)

30. The lymph serves to

- (a) return the interstitial fluid to the blood
- (b) return the WBCs and RBCs to the lymph nodes
- (c) transport CO<sub>2</sub> to the lungs

(d) transport O<sub>2</sub> to the brain. (1995)

1. (a)
2. (b) P-R interval in ECG indicates the time from the onset of P-wave (atrial depolarisation) to the beginning of QRS complex (ventricular depolarisation). It corresponds to the time taken by an electrical impulse generated in SA node to travel through the atria, across the AV node to the ventricles, i.e. SA nodal conduction time.
3. (a)
4. (c) A special coronary system of blood vessels is present in our body exclusively for the circulation of blood to and from the cardiac musculature.
5. (d) Normal blood pressure is 120/80 mm Hg. In this measurement, 120 mm of Hg (millimetres of mercury pressure) is systolic or pumping pressure and 80 mm of Hg is diastolic or resting pressure.
6. (b)
7. (c) Basophils are least common granulocyte and they form only 0.01-0.3% of the circulating white blood cells. These are involved in specific kinds of inflammatory reactions, particularly those which cause allergic reactions and do not exhibit phagocytic activity.
8. (b) Certain factors released by the tissues at the site of injury can initiate coagulation process. Calcium ions and platelet are factors which are essential for blood coagulation.
9. (c)
10. (c) Statement in option (c) is incorrect. It can be corrected as Blood grouping in human is based on the presence or absence of antigens on the surface of RBCs namely, A and B-antigens. For example, If a person has blood group-A then he has antigen-A in his blood and if a person has blood group -B then he has antigen- B in his blood.
11. (d) Option (d) is correct for statements I and II. The superior vena cava pours venous blood into right atria and left atria receive blood from lungs. This then flows into ventricles. The contraction of muscles of atria arises from SA nodes and then it passes to AV node and then to the Purkinje fibres. Therefore, action mentioned in statements I and II are synchronous.
12. (b) Because in vein presence of  $CO_2$  decreases the  $pH$  .
13. D
14. (a) Initiation of heart beat is under special bundles of cardiac muscles called nodal tissue or autorhythmic cells. Nodal tissue consists of S.A. node, A.V. node, bundle of his and purkinje fibres.
15. C
16. A
17. C
18. (d) The process by which blood cells are formed is called haemopoiesis or haematopoiesis.
19. (b) Renal portal system is well developed in fishes and amphibians (frog), it is reduced in reptiles and birds and is absent in mammals (rabbit).
20. A
21. (c) Adrenaline increases the heart beat normally during active and stress conditions.

22. (d) Systole refers to contraction of atria (atrial systole) which propels blood into ventricles and contraction of ventricles (ventricular systole) expels blood into aorta and pulmonary artery.
23. (d) : Red blood cells of adult humans do not have cell organelles including nucleus, Golgi bodies, mitochondria, ribosomes, etc. It increases the surface area of RBCs and enables them to contain more haemoglobin (the oxygen carrying pigment).
24. (c) : Serum is the fluid that separates from blood plasma on centrifugation. Serum is essentially similar in composition to plasma but lacks fibrinogen and other substances that are used in the coagulation process.
25. (c) : Spleen is a vertebrate organ, lying behind the stomach, that is basically a collection of lymphoid tissue. Its functions include producing lymphocytes and destroying foreign particles. It acts as a reservoir for RBCs and can regulate the number in circulation. It is also the site for the breakdown of worn out RBCs and thus is known as “graveyard” of RBCs.
26. (a) : The body undergoes numerous changes at higher elevation in order to increase oxygen delivery to cells and improve efficiency of oxygen use. The early changes include increased breathing rate, increased heart rate and fluid shifts. The later changes includes increased red blood cell production, increased 2, 3 DPG production and increased number of capillaries.
27. (d) : Globulins in human blood plasma are primarily involved in defence mechanisms of body. Globulins like immunoglobulins act as antibodies that destroy bacteria, viruses and toxic substances that may enter into the blood from outside.
28. (d) : Basophils have nucleus which is three-lobed and have less number of coarse granules. Their granules take basic stain and release heparin, histamine and serotonin.
29. (c) : Individuals with AB blood group have both antigen A and B on their RBCs, and no antibodies for either of the antigen in their plasma. Type O individuals are without A and B antigens on their RBCs, but have antibodies for both these antigens in their plasma. Individuals with blood group AB can receive blood of A, B or O group, while those with blood group O can donate blood to anyone.
30. (a) : Lymph (also called tissue fluid in the intercellular spaces) is the colourless liquid found within the lymphatic system. An important function of lymph is to return interstitial fluid back to the blood. The interstitial fluid is the filtered form of the blood without the cellular components and plasma proteins. It consists of water containing dissolved materials. It receives  $\text{CO}_2$ , nitrogenous waste products, hormones and other synthetic substances from the tissue cells and enters the lymph capillaries to discharge them into blood.