

BODY FLUID & CIRCULATION

1. In rabbit, the four chambered heart promotes
(A) Double circulation (B) Single circulation
(C) Systematic circulation (D) Venous circulation

2. An open circulatory system occurs in
(A) Man (B) Reptiles
(C) Animals (D) Insects

3. 3. Which of the following forms capillaries?
(A) Veins (B) Arteries (C) Venules (D) Arterioles

4. Which type of blood cells have 5-7 lobed nucleus?
(A) Erythrocytes (B) Neutrophils
(C) Eosinophils (D) Basophils

5. Blood vessels that contain valves are called
(A) Arteries (B) Veins
(C) Capillaries (D) All the above

6. Match the blood vessels of human heart listed under Column-I with the functions given under Column-II; Choose the answer which gives the correct combination of the alphabets of the two columns

	Column-I (Blood vessel)		Column-II (Function)
A	Superior vena cava	<i>p</i>	Carries deoxygenated blood to lungs
B	Inferior vena cava	<i>q</i>	Carries oxygenated blood to lungs
C	Pulmonary artery	<i>r</i>	Brings deoxygenated blood from lower parts of the body to the right atrium
D	Pulmonary vein	<i>s</i>	Brings oxygenated blood to the left atrium
		<i>t</i>	Brings deoxygenated blood from upper parts of the body into the right atrium

- (A) $A = t, B = p, C = r, D = q$
 (B) $A = t, B = r, C = p, D = s$
 (C) $A = s, B = t, C = r, D = p$
 (D) $A = t, B = p, C = q, D = r$

7. Bundle of HIS is found in

- (A) Muscles (B) Brain

(C) Heart

(D) Liver

8. Tricuspid valve is present in

(A) Right auricle

(B) Right ventricle

(C) Left ventricle

(D) Left auricle

9. Which of the following is responsible for initiating and maintaining the rhythmic contractile activity of the heart?

(A) S.A. node

(B) A.V. node

(C) A.V. septum

(D) A.V. valve

10. Heart is enclosed in a double walled sac called

(A) Pericardium

(B) Peritoneum

(C) AV- septum

(D) Pleura

11. Chordae tendinae are found in

(A) Ventricle of heart

(B) Atria of heart

(C) Joints

(D) Ventricle of brain

12. The middle layer of heart is known as

(A) Endocardium

(B) Pericardium

(C) Epicardium

(D) Myocardium

13. Which one of the following doctors performed the first heart transplant

- (A) Hargovind Khorana (B) Christian Bernard
(C) Watson (D) William Harvey

14. Neurogenic heart is characteristic of

- (A) Lower vertebrates (B) Humans
(C) Rat (D) Rabbit

15. Bicuspid valve is also called as

- (A) Mitral valve (B) Eustachean valve
(C) Pulmonary valve (D) Ventricular valve

16. An adult human with average health has systolic and diastolic pressures as

- (A) 80mmHg and 88mmHg (B) 70mmHg and 120mmHg
(C) 120mmHg and 80mmHg (D) 50mmHg and 80mmHg

17. A four chambered heart is not found in

- (A) Mammals (B) Birds
(C) Snake (D) Crocodile

18. Myogenic heart is found in

- (A) Man (B) Fishes
(C) Earthworm (D) Cockroach

19. Arteries are

- (A) Thin-walled and blood flows under diminished pressure.
- (B) Thick-walled and blood flows under high pressure.
- (C) Thin-walled and blood flows under high pressure.
- (D) Thick-walled and blood flows under diminished pressure.

20. If blood cells are eliminated from the blood, the liquid left is

- (A) Serum
- (B) Plasma
- (C) Lymph
- (D) Synovial fluid

21. In resting stage normal activity of heart is regulated by

- A. Nodal tissue of heart
 - B. Medulla oblongata
 - C. Purkinje fibres
 - D. Branches of sympathetic and parasympathetic nervous system
- (A) A, B, C, D
 - (B) A, B only
 - (C) A, C only
 - (D) B, D only

22. Mark the wrong match:

Blood Cells	Amount / Number	Property

(A) Leucocytes	6000 – 8000 mm ³ of the total blood cells	Generally short lived cells.
(B) Neutrophils	2 – 3% of total	Phagocytic cells
(C) Eosinophils	WBC 0.5 – 1% of total	Resist infection Involved in
(D) Basophils	WBC	inflammatory reaction

23. Mark the wrong match?

- (A) B and T Lymphocyte – Responsible for immune response of the body.
- (B) Platelets – Formed by the fragmentation of megakaryocyte.
- (C) Basophil – Secrete histamine and involved in anti-inflammatory reactions.
- (D) Eosinophil – Resist infections and are associated with allergic reactions.

24. Mark the correct statement for human blood?

- (1) All the WBCs are nucleated in blood vessels
- (2) All the RBCs are enucleated in blood vessels
- (3) Rh-antigen is present on the surface of every RBC
- (4) Antibodies are present in the blood plasma

- (A) 1, 2, 3, 4
- (C) 1, 2, 4

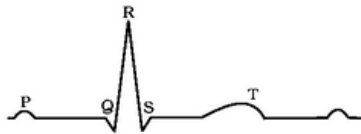
- (B) 2, 4 only
- (D) 1, 2 only

25. Prothrombin _____x_____ thrombin.

During the process of blood coagulation in the given reaction, X is

- (A) Fibrin
- (B) Thrombokinase
- (C) Ca⁺⁺
- (D) both (A) and (B)

26. In the given diagram of ECG, T-wave represents



- (A) Electrical excitation of atria and systole of ventricle.
- (B) Depolarisation of ventricle and repolarisation of atria.
- (C) Return of the ventricles from excited to normal state and end of ventricular systole.
- (D) The beginning of ventricular systole.

27. Which of the following correctly explains the cardiac output?

- (i) Volume of blood pumped out by each ventricle per minute.
- (ii) Stroke volume multiplied by the heart rate.
- (iii) Volume of blood pumped by both the ventricles in one minute.
- (iv) Volume of blood pumped by both the ventricles in 0.8 sec.

- (A) i, ii, iii, iv
- (B) iii only
- (C) i, ii only
- (D) ii, iv only

28. Pulse pressure is

- (A) 40 mm Hg
- (B) 25 mm Hg
- (C) 120 mm Hg
- (D) 80 mm Hg

29. Time interval between closing of semilunar valves and closure of atrio-ventricular valves is

- (A) 0.3s
- (B) 0.5s
- (C) 0.1s
- (D) 0.4s

30. Which statement about the mammalian circulatory system is correct?

- (A) The average diameter of arteries is greater than that of veins.
- (B) The order of decreasing velocity of blood flow is arteries > capillaries > veins.

(C) The total surface area of the capillaries is considerably greater than that of all of the arteries, arterioles, venules and veins combined.

(D) The electrical activity that coordinates the beating of the heart originates in the atrio-ventricular node.

31. Which statement is false?

(A) Capillaries in muscle are usually empty of blood.

(B) The mammalian heart will continue to beat when its nerve supply is cut.

(C) In vertebrates, veins can be distinguished from arteries because veins carry oxygenated blood.

(D) Water and small molecules can easily pass through the walls of most capillaries.

32. In mammals, lymphatic vessels possess:

(A) a series of valves that facilitate flow in one direction.

(B) a pumping organ known as the lymphobursae.

(C) immature red blood cells, which enter the blood stream after maturation.

(D) connective tissue, smooth muscles and endothelium like that in veins.

33. In mammals, which of the following contains blood with the highest oxygen content?

- (A) Right atrium
- (B) Jugular vein
- (C) Pulmonary artery
- (D) Left ventricle

34. In the cardiac cycle, blood pressure is maximum during:

- (A) atrial systole
- (B) atrial diastole
- (C) ventricular systole
- (D) ventricular diastole.

35. If there is a blockage between the AV node and AV bundle, how will this affect the appearance on the ECG.

- (A) PR interval would be shorter.
- (B) QRS interval would be longer.
- (C) There will be more P waves than QRS complexes.
- (D) There would be more QRS complexes than P wave.

36. Regarding eosinophils

I. They are granulocytes

II. They have bilobed nucleus

III. They are increased in parasitic infestations

- (A) I and II are correct
- (B) Only I is correct
- (C) I, II, III are correct
- (D) All are incorrect

37. Consider the following statements regarding hemophilia A:

I. It is caused by a reduction in the amount or activity of factor VIII.

II. Hemophilia A is inherited as an autosomal recessive trait and thus, is more common in males.

III. Fibrin deficient clots are formed which makes coagulation much more prolonged, and the clot more unstable.

The correct statements are

(A) I only

(B) I and II

(C) I and III

(D) I, II and III

38. Consider the following statements:

I. Closed systems rely exclusively on simple diffusion for transport, whereas open system rely on pumping mechanisms.

II. Transport within closed systems is more rapid than in open systems

III. Blood can easily be directed to specific areas in closed systems, but not in open systems.

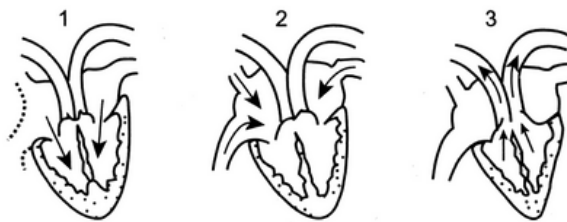
IV. Closed systems operate better under higher pressure than do open systems.

The correct statements include

(A) I, II, III, IV (B) I, II, III (C) II, III, IV (D) I, II, IV

39. The correct sequence of events leading to heart attack are
1. Blood clot breaks loose and passes along blood vessel
 2. Region of heart muscle suffers a myocardial infarction
 3. Narrow branch of coronary artery becomes blocked by thrombus
 4. Thrombus forms on inner surface of coronary artery
- (A) 1, 4, 2, 3 (B) 1, 4, 3, 2
 (C) 4, 1, 2, 3 (D) 4, 1, 3, 2

40. Consider the following diagrams depicting a cardiac cycle



The correct sequence in which these events occur would be
 (A) 2, 3, 1 (B) 1, 2, 3 (C) 2, 1, 3 (D) 3, 1, 2

41. Consider the following structures

- | | |
|-----------------------------|-----------------|
| I. Muscular pump | II. Blood |
| III. Large-diameter vessels | IV. Capillaries |

Which of these would be found only in animals having a closed circulatory system?

- (A) I (B) I and II
 (C) II, III, IV (D) IV

42. Consider the following statements

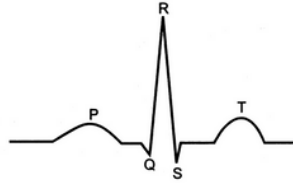
- I. Sympathetic nerve input to skeletal muscle causes the blood vessels in the muscle to dilate
- II. Blood flow can be regulated by autonomic nerve signals emanating from of the brain.
- III. Carotid artery, Chemosensors detect low O₂ levels in the blood and promote increased blood pressure.
- IV. Hormones such as angiotensin and vasopressin cause venules to constrict.

The correct statements include

- (A) I, II, III, IV
- (B) I, II, III
- (C) II, III, IV
- (D) I, II, IV

43. Identify the correct sequence of parts through which cardiac action potentials pass
- (A) Purkinje fibers, AV nodes, SA node, bundle of His, Purkinje fibers.
 - (B) AV node, atrial fibers, SA node, bundle of His, Purkinje fibers.
 - (C) SA node, bundle of His, atrial fibers, AV node, Purkinje fibers.
 - (D) SA node, atrial fibers, AV node, bundle of His Purkinje fibers.

44. Given below is the recording of a cardiac cycle on an ECG



The ventricular repolarization is shown by

- (A) P wave
- (B) QRS complex
- (C) ST segment
- (D) T wave

45. Identify the given blood cell



- (A) Lymphocyte
- (B) Neutrophil
- (B) Basophil
- (D) Eoisnophil

ANSWERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
A	D	D	B	B	B	C	A	A	A	A	D	D	A	A	
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
C	C	A	B	B	C	B	C	C	B	C	C	A	B	C	
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
C	A	D	C	C	C	C	C	D	C	D	B	D	D	B	

SOLUTIONS

1. Because the pulmonary circuit bringing pure blood remains separated from the systemic blood in the heart.
2. Open circulatory system occurs in invertebrate animals such as arthropods (e.g. insects, spiders, crabs and lobsters) and most molluses (e.g. snails, oysters and clams).
3. The branches of arteries called arterioles further branch into capillaries in the tissues.
4. Neutrophils are leucocytes having 5-7 lobed nucleus.
7. Within the basal part of interatrial septum.
8. In fact tricuspid valve is present at right atrio-ventricular aperture but it is completely located in the right auricular cavity.
9. S.A node generates a maximum of 70-75 action potentials per minute. Since, it is responsible for initiating and

maintaining the rhythmic contractile activity of the heart, it is called as pacemaker of the heart.

10. Heart is enclosed in a double walled sac called the pericardium that consists of an outer fibrous and inextensible layer and an inner serous layer.
11. Chordae tendinae are numerous, strong inelastic thread like tendons present in the ventricles of the mammalian heart.
12. Middle layer of heart is myocardium. It is highly vascular layer, composed of cardiac fibres joined together by intercalated disc.
13. The first human heart transplant was performed on 3rd December, 1967 by a team of 30 doctors headed by Prof. Christian Bernard on 55 years old Louis Washkansky at the Groote Schurr Hospital, Cape Town, South Africa. In spite of the operation by a leading surgeon Washkansky died on 21st December, 1967.
14. Neurogenic heart stops beating on cutting nerve supply.
15. The bicuspid valve between the left atrium and the left ventricle of mammalian heart is known as mitral valve.
16. In a normal human being, the systolic and diastolic blood pressures are respectively 120mmHg and 80mmHg .
17. Four chambered heart is found only in mammals and birds except some reptiles such as crocodiles, gavialis and alligators.
18. Myogenic heart is found in molluscs and vertebrates.

19. Arteries are thick walled, carrying oxygenated blood from heart to various parts of body at high pressure.
20. The blood is composed of a faintly yellow transparent fluid known as the plasma and floating in this fluid are numerous cells or corpuscles of different kinds. Thus
Blood – Blood cells = Plasma