

BODY FLUIDS AND CIRCULATION-Test paper

1. In which one of the following pairs the two items mean one and the same thing?

1. Malleus – anvil
2. SA node – Pacemaker
3. Leucocytes – lymphocytes
4. Haemophilia – blood cancer

2. Which one of the following has an open circulatory system?

1. Octopu 2. Pheretima
3. Periplaneta 4. Hirudinaria

3. Rh factor is present in

1. All vertebrates 2. All mammals
3. All reptiles 4. Man and rhesus monkey

4. In which of the following disorders, blood has a defective haemoglobin?

1. Hemophilia 2. haematuria
3. haematom 4. sickle cell anaemia

5. How many double circulations are normally completed by the human heart, in one minute?

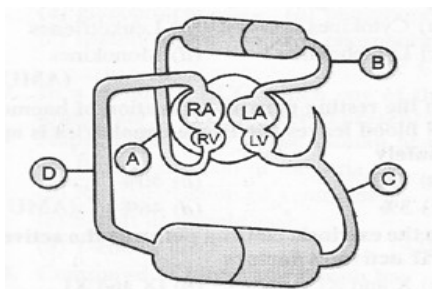
1. Eight 2. Sixteen 3. Seventy two 4. Thirty six

6. In ABO blood groups, how many phenotypes are found?

1. 6 2. 8 3. 1 4. 4

7. In the given diagram which blood vessel represents vena cava?

- RA – Right auricle
 RV – Right ventricle
 LA – Left auricle
 LV – Left ventricle



1. C 2. D 3. A 4. B

8. Coronary heart disease is due to

1. Streptococci bacteria
2. Inflammation of pericardium
3. Weakening of the heart valves
4. Insufficient blood supply to the heart muscles

9. The second heart sound (dub) is associated with the closure of

1. Tricuspid valve 2. Semilunar valves
3. Bicuspid valve 4. Tricuspid and bicuspid valves

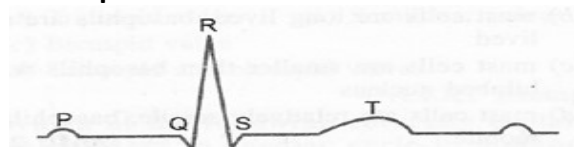
10. Which of the following statements is incorrect?

1. A person of 'O' blood group has anti 'A' and 'B' antibodies in his blood plasma
2. A person of 'B' blood group can't donate blood to a person of 'A' blood group
3. Blood group is designated on the basis of the presence of antibodies in the blood plasma
4. A person of AB blood group is universal recipient

11. If the systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg, the pulse pressure is

1. $120 - 80 = 40$ mm Hg 2. $120/80 = 1.5$ mm Hg
3. $120 \times 80 = 9600$ mm Hg
4. $120 + 80 = 200$ mm Hg

12. Given is the ECG of a normal human. Which one of its components is correctly interpreted below?



1. Complex QRS – one complete pulse
2. Peak T – initiation of total cardiac contraction
3. Peak P and peak R together – systolic and diastolic blood pressures
4. Peak P – initiation of left atrial contraction, only

13. Given these valves:

1. aortic semilunar valve 2. bicuspid (mitral) valve
3. pulmonary semilunar valve 4. tricuspid valve.

Arrange them in the order in which an erythrocyte would pass through them after returning to the heart from the left arm.

1. 1,2,3,4
2. 2,3,1,4
3. 3,1,2,4
4. 4,3,2,1

14. Read the following statements:

- A) Prothrombin is essential for blood clotting.
- B) Prothrombin is synthesized in the liver in the presence of Ca^{++} .

1. Both the statements are true
2. Both the statements are false
3. A is true but B is false
4. A is false but B is true.

15. Read the following statements

- A) Person suffering from haemophilia fails to produce blood clotting factor VIII.
B) Prothrombin producing platelets in such person are found in very low concentration.

1. Both the statements are true
2. Both the statements are false
3. A is true but B is false
4. A is false but B is true.

16. Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body.

- (1) Neutrophils (2) Thrombocytes
(3) Erythrocytes (4) Leucocytes

17. Which statement is correct concerning pulmonary circulation?

1. Oxygen rich blood returns from the lungs to the heart through the pulmonary arteries.
2. Oxygen poor blood leaves the heart and goes to the lungs through the pulmonary veins.
3. Oxygen poor blood returns from the body to the heart through the vena cavae.
4. Oxygen rich blood leaves the heart and goes to the body through the vena cavae.

18. In which choice would the person on the left be most likely to have a lower body water content (by percent of body weight) than the person on the right?

1. Person with 15% body fat / person with 5% body fat
2. Male / female
3. Baby / elderly person
4. Normal / dehydrated

19. A loss of body water would do which of the following?

1. Inhibit the thirst center
2. Cause stomach distention
3. Stimulate osmoreceptors in the hypothalamus
4. Inhibit ADH secretion

20. All of these factors help to cause ADH secretion EXCEPT

1. Ingesting more water than is needed to balance water loss
2. Stimulation of hypothalamic osmoreceptors
3. Dehydration
4. increased ECF osmotic pressure

21. A diuretic is which of the following?

1. A substance that causes water retention
2. A substance that causes increased urine production
3. A drug that may be administered in order to prevent water excretion in the urine

4. A drug that may be administered in order to reduce water loss through sweating

22. Reduction in pH of blood will:-

- (1) Reduce the rate of heart beat.
- (2) Reduce the blood supply to the brain.
- (3) Decrease the affinity of hemoglobin with oxygen.
- (4) Release bicarbonate ions by the liver.

23. Blood pressure in the pulmonary artery is :-

- (1) Same as that in the aorta.
- (2) More than that in the carotid.
- (3) More than that in the pulmonary vein.
- (4) less than that in the venae cavae.

24. Which of these events will occur when a normal person is given isotonic fluids intravenously?

1. There is a net shift of fluid from plasma into interstitial fluid.
2. There is a net shift of fluid from interstitial fluid into plasma.
3. There is a net shift of fluid from the ECF into the cells.
4. There is a net shift of fluid from the ICF out of the cells.

25. Which item is correctly matched with the area where it is located or secreted?

1. Thirst center: hypothalamus
2. Osmoreceptors: medulla oblongata
3. ADH secretion: anterior pituitary
4. Aldosterone: adrenal medulla

26. Fluid is driven through the lymphatic system by:

1. Contraction of the walls of the lymphatic vessels
2. Pressure created by the pumping of the heart
3. Contractions of the lymph nodes
4. Squeezing of the lymphatic vessels by the body's muscles

27. The second heart sound, described as "dupp" is actually the sound of the

1. Atria contracting.
2. Ventricles contracting.
3. atrioventricular valves closing.
4. semilunar valves closing.

28. The coronary sinus is a(n) _____ located in the _____.

1. Vein; posterior atrioventricular sulcus
2. Vein; posterior interventricular sulcus
3. Artery; anterior atrioventricular sulcus
4. Artery; interatrial septum

29. The artery that supplies blood to the pericardium is

1. Brachial artery
2. Coronary artery
3. Vertebral artery
4. Pericardial artery

30. The difference between systolic and diastolic pressure in humans is

1. 120mmHg
2. 80 mmHg
3. 40 mm Hg
4. 200mmHg

31. The wall of the heart is made up of

- 1) One layer
- 2) two layers
- 3) Three layers
- 4) four layers

32. Match the items given in column I with the items given in column II

Column I		Column II	
A	P wave	p.	Depolarisation of ventricles
B	QRS complex	q.	Repolarisation of Purkinje fibres/papillary muscles
C	T wave	r.	Ventricular repolarisation
D	U wave	s.	Excitation of atria

- 1) A = p, B = q, C = s, D = r
- 2) A = s, B = p, C = r, D = q
- 3) A = q, B = s, C = p, D = r
- 4) A = s, B = q, C = r, D = p

33. Which one of the following statements is correct with regard to blood pressure?

- 100/55 mmHg is considered as a n ideal blood pressure
- 2.105/50mmHg makes one very active
3. 190/110 mmHg may harm vital organs like brain and kidney
4. 130/90 mmHg is considered high and requires treatment

34. Atreries are best defined as the vessels which

1. Carry blood away from the heart to different organs
2. Break up into capillaries which reunite to form a vein
3. Carry blood from one visceral organs to another visceral organs
4. Supply oxygenated blood to the different organs

35. If due to some injury the chordae tendinae of the tricuspid valve of the human heart is partially non-functional, what will be the immediate effect?

1. The flow of blood into the aorta will be slowed down
2. The pace maker will stop working

3. The blood will tend to flow back into the left atrium
4. The flow of blood into the pulmonay artery will be reduced

36. Compare to blood our lymph has

1. No plasma
2. Plasma without proteins
3. More WBCs and no RBCs
4. More RBCs and less WBCs

37. G-6-P dehydrogenase deficiency is associated with haemolysis of

1. Lymphocytes
2. RBCs
3. Platelets
4. Leucocytes

38. In humans, blood passes from the post caval to the diastolic right atrium of heart due to

1. Pushing open of the venous valves
2. Suction pull
3. Stimulation of th esino-auricular node
4. Pressure difference between the caval and atrium

39. Read the following statements:

- A. Smaller the organism higher is the rate of metabolism per gram weight
- B. The heart rate of six month's baby is much higher than that of an old person

Of these,

1. Both the statements are true
2. Both the statements are false
3. A is true but B is false
4. A is false but B is true.

40. An artificial pacemaker is implanted subcutaneously and connected to the heart in patients

1. Having 90% of blockage of the three main coronary arteries
2. Having a very high blood pressure
3. with irregularity in the heart rhythm
4. Suffering from arteriosclerosis

41. People living around sea level have around 5 million RBCs per cubic millimeter of their blood, whereas those living at an altitude of 5400 metres have around 8 million. This is because at high altitude,

1. People get pollution free air to breathe and more oxygen is available
2. Atmospheric oxygen level is less and hence more RBCs are needed to absorb the required amount of oxygen
3. There is more UV radiation which enhances RBC production
4. People eat more nutritive food, therefore more RBCs are formed

42. Mast cells of connective tissue contain,

1. Vasopressin and relaxin
2. Heparin and histamine
3. Heparin and calcitonin
4. Serotonin and melanin

43. Which of the following factors has little effect on blood flow in arteries?

1. Heart beat
2. Blood pressure
3. Skeletal muscle contraction
4. Total cross sectional area of vessels

44. In which of these compartments is Na⁺ concentration the lowest?

1. Interstitial fluid
2. Plasma
3. Intracellular fluid
4. Lymph

45. Which statement concerning body fluid composition is correct?

1. Intracellular fluid contains a lower concentration of proteins than interstitial fluid.
2. Interstitial fluid contains a higher concentration of proteins than plasma.
3. Extracellular fluid contains a higher concentration of potassium than intracellular fluid.
4. Extracellular fluid contains a higher concentration of sodium than intracellular fluid.

46. About what percent of a young adult's body weight is due to water?

1. 4 to 5%
2. 10 to 12%
3. 50 to 60%
4. 98 to 99%

47. Various tissues in the body have different levels of water content. Which of these has the lowest water content by volume?

1. Skin
2. Cardiac muscle tissue
3. Skeletal muscle tissue
4. Adipose tissue

48. Which mechanism is the main regulator of water intake?

1. Amount of saliva being produced
2. Thirst
3. Small changes in ECF volume
4. Changes in ECF pH

49. Which of the following is not true for ventricular systole?

1. The ventricles contract.
2. The atrioventricular valves close.
3. The semilunar valves open.
4. The ventricles relax

50. Which of the following is not true for ventricular systole?

1. The ventricles contract.
2. The atrioventricular valves close
3. The semi lunar valves open.

4. The ventricles relax.

51. Read the following statements:

- A. atrial contraction accounts for most of the ventricular filling.
- B. The ventricles begin to fill during ventricular diastole.

1. Both the statements are correct
2. Both the statements are wrong
3. Statement A is correct but B is wrong
4. Statement A is wrong but B is correct

52. Read the following statements:

- A. The audible heart sounds are caused by the contraction of the atria and ventricles.
- B. The P wave of the ECG coincides with ventricular filling.

1. Both the statements are correct
2. Both the statements are wrong
3. Statement A is correct but B is wrong
4. Statement A is wrong but B is correct

53. In the heart, an action potential originates in the...

1. Purkinje fibers.
2. sinoatrial node.
3. atrioventricular bundle.
4. atrioventricular node.

54. The sequence of travel by an action potential through the heart is...

1. sinoatrial node, atrioventricular node, atrioventricular bundle, bundle branches, Purkinje fibers.
2. atrioventricular node, sinoatrial node, atrioventricular bundle, bundle branches, Purkinje fibers.
3. atrioventricular bundle, atrioventricular node, sinoatrial node, bundle branches, Purkinje fibers.
4. Purkinje fibers, atrioventricular bundle, atrioventricular node, sinoatrial node, bundle branches.

55. Which of the following is true concerning the heart conduction system?

1. Action potentials pass slowly through the atrioventricular node.
2. Action potentials pass slowly through the atrioventricular bundle.
3. Action potentials pass slowly through the Purkinje fibers.
4. Action potentials pass slowly through the ventricle wall.

56. Read the following statements:

- A. In the ventricles, the action potential travel along the inter-ventricular septum to the apex of the heart, where it then spreads superiorly along the ventricle walls.

B. Action potentials are carried by the Purkinje fibers from the bundle branches to the ventricular walls

1. Both the statements are correct
2. Both the statements are wrong
3. Statement A is correct but B is wrong
4. Statement A is wrong but B is correct

57. Which of the following is the most muscular chamber in a bird's heart or a mammal's heart?

1. The right atrium
2. The left atrium
3. The left ventricle
4. The right ventricle

58. Which of the following statements about circulatory systems is true?

1. Hormones are transported in the blood.
2. All invertebrates have an open circulatory system.
3. Capillaries have thicker walls than veins do.
4. The systemic circulation carries blood to and from the lungs.

59. Which one of the following series represents the correct path of blood circulation?

1. Left atrium, left ventricle, lungs, right atrium, right ventricle, body
2. Right atrium, right ventricle, lungs, left atrium, left ventricle, body
3. Left atrium, left ventricle, right atrium, right ventricle, lungs, body
4. Right atrium, lungs, right ventricle, left atrium, body, left ventricle

60. Read the following statements:

- A. Hemoglobin, contained in leukocytes, transports oxygen throughout the body.
- B. Pulmonary veins carry blood that is rich in oxygen.
- C. The brain regulates the rate at which you breathe by monitoring the amount of oxygen in the blood.
- D. Blood serum contains red but not white blood cells.

1. Statements A, C, D are false and B is true
2. Statements A is false and B,C, D is true
3. Statements A and B are false and C and D are true
4. Statements A and D are false and B and C are true

Answers

1	2. SA node – Pacemaker	31	2) two layers
2	3. Periplaneta	32	2) A = s, B = p, C = r, D = q
3	4. Man and rhesus monkey	33	3. 190/110 mmHg may harm vital organs like brain and kidney
4	4. sickle cell anaemia	34	1. Carry blood away from the heart to different organs
5	3. Seventy two	35	4. The flow of blood into the pulmonay artery will be reduced
6	4. 4	36	3. More WBCs and no RBCs
7	2. D	37	2. RBCs
8	4. Insufficient blood supply to the heart muscles	38	4. Pressure difference between the caval and atrium
9	2. Semilunar valves	39	1. Both the statements are true
10	3. Blood group is designated on the basis of the presence of antibodies in the blood plasma	40	3. With irregularity in the heart rhythm
11	1. $120 - 80 = 40$ mm Hg	41	2. Atmospheric oxygen level is less and hence more RBCs are needed to absorb the required amount of oxygen
12	1. Complex QRS – one complete pulse	42	2. Heparin and histamine
13	4. 4,3,2,1	43	4. Total cross sectional area of vessels
14	3. A is true but B is false	44	3. Intracellular fluid
15	3. A is true but B is false	45	4. Extracellular fluid contains a higher concentration of sodium than intracellular fluid.
16	(2) Thrombocytes	46	3. 50 to 60%
17	3. Oxygen poor blood returns from the body to the heart through the vena cavae.	47	4. Adipose tissue
18	1. Person with 15% body fat / person with 5% body fat	48	2. Thirst
19	3. Stimulate osmoreceptors in the hypothalamus	49	4. The ventricles relax
20	21. A diuretic is which of the following?	50	4. the ventricles relax.
21	2. A substance that causes increased urine production	51	4. Statement A is wrong but B is correct
22	(3) Decrease the affinity of hemoglobin with oxygen.	52	4. Statement A is wrong but B is correct
23	(3) More than that in the pulmonary vein.	53	2. sinoatrial node
24	1. There is a net shift of fluid from plasma into interstitial fluid	54	1. sinoatrial node, atrioventricular node, atrioventricular bundle, bundle branches, Purkinje fibers
25	1. Thirst center: hypothalamus	55	1. Action potentials pass slowly through the atrioventricular node.
26	4. Squeezing of the lymphatic vessels by the body's muscles	56	1. Both the statements are correct
27	4. semilunar valves closing.	57	3. The left ventricle
28	1. Vein; posterior atrioventricular sulcus	58	1. Hormones are transported in the blood.
29	2. Coronary artery	59	1. Left atrium, left ventricle, lungs, right atrium, right ventricle, body
30	3. 40 mm Hg	60	1. Statements A, C, D are false and B is true