

Body Fluids and Circulation

18.1 Blood

- 1.** Match the following columns and select the correct option.

Column-I				Column - II
(A) Eosinophils	(i)	Immune response		
(B) Basophils	(ii)	Phagocytosis		
(C) Neutrophils	(iii)	Release histaminase, destructive enzymes		
(D) Lymphocytes	(iv)	Release granules containing histamine		
(A)	(B)	(C)	(D)	
(a) (iii)	(iv)	(ii)	(i)	
(b) (iv)	(i)	(ii)	(iii)	
(c) (i)	(ii)	(iv)	(iii)	
(d) (ii)	(i)	(iii)	(iv)	(NEET 2020)

- 2.** Match the items given in column I with those in column II and select the correct option given below.

Column I		Column II
A. Fibrinogen		(i) Osmotic balance
B. Globulin		(ii) Blood clotting
C. Albumin		(iii) Defence mechanism
A	B	C
(a) (iii)	(ii)	(i)
(b) (i)	(ii)	(iii)
(c) (i)	(iii)	(ii)
(d) (ii)	(iii)	(i)
(NEET 2018)		

- 3.** 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) |

- 4.** Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body.
 (a) Erythrocytes (b) Leucocytes
 (c) Neutrophils (d) Thrombocytes

(NEET-II 2016)

- 5.** Serum differs from blood in
 (a) lacking globulins
 (b) lacking albumins
 (c) lacking clotting factors
 (d) lacking antibodies. (NEET-II 2016)

- 6.** Erythropoiesis starts in
 (a) spleen (b) red bone marrow
 (c) kidney (d) liver. (2015 Cancelled)

- 7.** Person with blood group AB is considered as universal recipient because he has
 (a) both A and B antigens on RBC but no antibodies in the plasma
 (b) both A and B antibodies in the plasma
 (c) no antigen on RBC and no antibody in the plasma
 (d) both A and B antigens in the plasma but no antibodies. (2014)

- 8.** The figure shows a human blood cell. Identify it and give its characteristics.



Blood cell

- (a) Basophil
- (b) B-lymphocyte
- (c) Neutrophil
- (d) Monocyte

Characteristics

- Secretes serotonin, inflammatory response
- Forms about 20% of blood cells involved in immune response
- Most abundant blood cells, phagocytic
- Lifespan of 3 days, produces antibodies (Karnataka NEET 2013)

- 9.** A certain road accident patient with unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor?
- (a) Blood group B (b) Blood group AB
 (c) Blood group O (d) Blood group A (2012)
- 10.** 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)
- 11.** Which one of the following plasma proteins is involved in the coagulation of blood?
- (a) Albumin (b) Serum amylase
 (c) Globulin (d) Fibrinogen (2011)
- 12.** A person with unknown blood group under ABO system, has suffered much blood loss in an accident and needs immediate blood transfusion. His friend who has valid certificate of his own blood type, offers for blood donation without delay. What would have been the type of blood group of the donor friend?
- (a) Type B (b) Type AB
 (c) Type O (d) Type A (2011)
- 13.** 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)
- 14.** The haemoglobin content per 100 mL of blood of a normal healthy human adult is
- (a) 5 - 11 gm (b) 25 - 30 gm
 (c) 17 - 20 gm (d) 12 - 16 gm. (Mains 2010)
- 15.** There is no DNA in
- (a) mature RBCs
 (b) a mature spermatozoan
 (c) hair root
 (d) an enucleated ovum (2009)
- 16.** 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)
- 17.** The most popularly known blood grouping is the ABO grouping. It is named ABO and not ABC,
- because “O” in it refers to having
- (a) overdominance of this type on the genes for A and B types
 (b) one antibody only - either anti - A or anti - B on the RBCs
 (c) no antigens A and B on RBCs
 (d) other antigens besides A and B on RBCs. (2009)
- 18.** The most active phagocytic white blood cells are
- (a) eosinophils and lymphocytes
 (b) neutrophils and monocytes
 (c) neutrophils and eosinophils
 (d) lymphocytes and macrophages. (2008)
- 19.** 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)
- 20.** A drop of each of the following, is placed separately on four slides. Which of them will not coagulate?
- (a) Blood serum
 (b) Sample from the thoracic duct of lymphatic system
 (c) Whole blood from pulmonary vein
 (d) Blood plasma (2007)
- 21.** You are required to draw blood from a patient and to keep it in a test tube for analysis of blood corpuscles and plasma. You are also provided with the following four types of test tubes. Which of these you will not use for the purpose?
- (a) Test tube containing calcium bicarbonate
 (b) Chilled test tube
 (c) Test tube containing heparin
 (d) Test tube containing sodium oxalate (2004)
- 22.** 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)
- 23.** What is correct for blood group O?
- (a) No antigens but both a and b antibodies are present.
 (b) A antigen and b antibody present.
 (c) Antigen and antibody both absent.
 (d) A and B antigens and a, b antibodies present. (2001)
- 24.** Erythroblastosis fetalis is caused when fertilisation takes place between gametes of
- (a) Rh⁻ female and Rh⁺ male
 (b) Rh⁺ female and Rh⁻ male
 (c) Rh⁺ female and Rh⁺ male
 (d) Rh⁻ female and Rh⁻ male. (2000)

- 25.** Which statement is true for WBC?
 (a) Non-nucleated
 (b) In deficiency, cancer is caused
 (c) Manufactured in thymus
 (d) Can squeeze through blood capillaries (2000)
- 26.** Which is the principal cation in the plasma of the blood?
 (a) Potassium (b) Magnesium
 (c) Calcium (d) Sodium (1999)
- 27.** The blood group, with antibody-A and antibody-B is
 (a) O (b) B
 (c) A (d) AB. (1999)
- 28.** The problem, due to Rh⁻ factor arises when the blood of two (Rh⁺ and Rh⁻) mix up
 (a) during pregnancy (b) in a test tube
 (c) through transfusion (d) both (a) and (c). (1999)
- 29.** Which of the following is agranulocyte?
 (a) Basophil (b) Neutrophil
 (c) Lymphocyte (d) Eosinophil (1997)
- 30.** The life span of human WBC is approximately
 (a) between 2 to 3 months
 (b) more than 4 months
 (c) less than 10 days
 (d) between 20 to 30 days. (1997)
- 31.** Vitamin K is required for
 (a) change of prothrombin into thrombin
 (b) synthesis of prothrombin
 (c) change of fibrinogen to fibrin
 (d) formation of thromboplastin. (1993)
- 32.** Cells formed in bone marrow include
 (a) RBCs (b) RBCs and leucocytes
 (c) leucocytes (d) lymphocytes. (1992)
- 33.** Component of blood responsible for producing antibodies is
 (a) thrombocytes (b) monocytes
 (c) erythrocytes (d) lymphocytes. (1992)
- 34.** Blood group AB has
 (a) no antigen
 (b) no antibody
 (c) neither antigen nor antibody
 (d) both antigen and antibody. (1991)
- 35.** Carbonic anhydrase occurs in
 (a) lymphocytes (b) blood plasma
 (c) RBCs (d) leucocytes. (1991)
- 36.** Removal of calcium from freshly collected blood would
 (a) cause delayed clotting
 (b) prevent clotting
 (c) cause immediate clotting
 (d) prevent destruction of haemoglobin (1989)
- 37.** A person with blood group A requires blood. The blood group which can be given is
 (a) A and B (b) A and AB
 (c) A and O (d) A, B, AB and O. (1989)
- 38.** Which one engulfs pathogens rapidly?
 (a) Acidophils (b) Monocytes
 (c) Basophils (d) Neutrophils (1989)
- 39.** Child death may occur in the marriage of
 (a) Rh⁺ man and Rh⁺ woman
 (b) Rh⁺ man and Rh⁻ woman
 (c) Rh⁻ man and Rh⁻ woman
 (d) Rh⁻ man and Rh⁺ woman. (1988)
- 40.** Breakdown product of haemoglobin is
 (a) bilirubin (b) iron
 (c) biliverdin (d) calcium. (1988)
- 41.** RBCs do not occur in
 (a) frog (b) cow
 (c) camel (d) cockroach. (1988)

18.2 Lymph (Tissue Fluid)

- 42.** Which one of the following is correct?
 (a) Lymph = Plasma + RBC + WBC
 (b) Blood = Plasma + RBC + WBC + Platelets
 (c) Plasma = Blood - Lymphocytes
 (d) Serum = Blood + Fibrinogen (2015 Cancelled)
- 43.** Compared to blood our lymph has
 (a) plasma without proteins
 (b) more WBCs and no RBCs
 (c) more RBCs and less WBCs
 (d) no plasma. (2009)
- 44.** Which of the following statements is true for lymph?
 (a) WBC + serum
 (b) Blood - RBCs and some proteins
 (c) RBCs + WBCs + plasma
 (d) RBCs + proteins + platelets (2002)
- 45.** Which of the following is not the main function of lymph glands?
 (a) Forming RBCs (b) Destroying bacteria
 (c) Forming WBCs (d) Forming antibodies (1998)
- 46.** The lymph serves to
 (a) return the interstitial fluid to the blood
 (b) return the WBCs and RBCs to the lymph nodes
 (c) transport CO₂ to the lungs
 (d) transport O₂ to the brain. (1995)
- 47.** Lymph differs from blood in possessing
 (a) only WBC
 (b) more RBC and WBC
 (c) more RBC and few WBC
 (d) more WBC and few RBC. (1989)

18.3 Circulatory Pathways

48. The QRS complex in a standard ECG represents
 (a) repolarisation of auricles
 (b) depolarisation of auricles
 (c) depolarisation of ventricles
 (d) repolarisation of ventricles. (NEET 2020)

49. Match the column - I with column - II.

Column-I	Column-II
(A) P-wave	(i) Depolarisation of ventricles
(B) QRS complex	(ii) Repolarisation of ventricles
(C) T-wave	(iii) Coronary ischaemia
(D) Reduction in the size of T- wave	(iv) Depolarisation of atria (v) Repolarisation of atria

Select the correct option.

- | | | | |
|----------|-------|------|-------|
| (A) | (B) | (C) | (D) |
| (a) (ii) | (iii) | (v) | (iv) |
| (b) (iv) | (i) | (ii) | (iii) |
| (c) (iv) | (i) | (ii) | (v) |
| (d) (ii) | (i) | (v) | (iii) |
- (NEET 2019)

50. What would be the heart rate of a person if the cardiac output is 5 L, blood volume in the ventricles at the end of diastole is 100 mL and at the end of ventricular systole is 50 mL ?
 (a) 125 beats per minute
 (b) 50 beats per minute
 (c) 75 beats per minute
 (d) 100 beats per minute (NEET 2019)

51. Match the items given in column I with those in column II and select the correct option given below.

Column I	Column II
A. Tricuspid valve	(i) Between left atrium and left ventricle
B. Bicuspid valve	(ii) Between right ventricle and pulmonary artery
C. Semilunar valve	(iii) Between right atrium and right ventricle

- | | | |
|-----------|-------|-------|
| A | B | C |
| (a) (iii) | (i) | (ii) |
| (b) (i) | (iii) | (ii) |
| (c) (i) | (ii) | (iii) |
| (d) (ii) | (i) | (iii) |
- (NEET 2018)

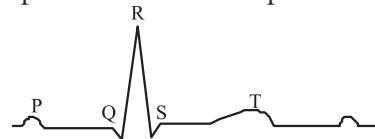
52. Doctors use stethoscope to hear the sounds produced during each cardiac cycle. The second sound is heard when

- (a) AV node receives signal from SA node
- (b) AV valves open up
- (c) Ventricular walls vibrate due to gushing in of blood from atria
- (d) Semilunar valves close down after the blood flows into vessels from ventricles. (2015)

53. Blood pressure in the mammalian aorta is maximum during

- (a) systole of the left ventricle
- (b) diastole of the right atrium
- (c) systole of the left atrium
- (d) diastole of the right ventricle. (2015 Cancelled)

54. The diagram given here is the standard ECG of a normal person. The P-wave represents the



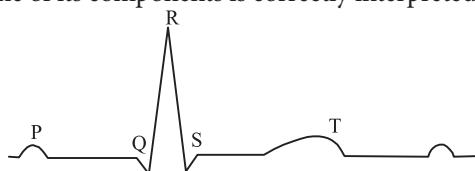
- (a) beginning of the systole
- (b) end of systole
- (c) contraction of both the atria
- (d) initiation of the ventricular contraction.

(NEET 2013)

55. 'Bundle of His' is a part of which one of the following organs in humans?

- (a) Brain
- (b) Heart
- (c) Kidney
- (d) Pancreas (2011)

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



- (a) Complex QRS - one complete pulse
- (b) Peak T - initiation of total cardiac contraction
- (c) Peak P and peak R together - systolic and diastolic blood pressures
- (d) Peak P- initiation of left atrial contraction only (Mains 2011)

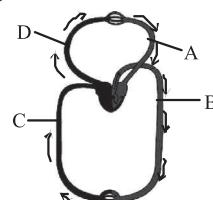
57. If due to some injury the chordae tendinae of the tricuspid valve of the human heart is partially non-functional, what will be the immediate effect?

- (a) The flow of blood into the aorta will be slowed down.
- (b) The 'pacemaker' will stop working.
- (c) The blood will tend to flow back into the left atrium.
- (d) The flow of blood into the pulmonary artery will be reduced. (2010)

- 58.** In a standard ECG which one of the following alphabets is the correct representation of the respective activity of the human heart?
- S - start of systole
 - T - end of diastole
 - P - depolarisation of the atria
 - R - repolarisation of ventricles
- (2009)
- 59.** In humans, blood passes from the post caval to the diastolic right atrium of heart due to
- stimulation of the sino auricular node
 - pressure difference between the post caval and atrium
 - pushing open of the venous valves
 - suction pull.
- (2008)
- 60.** Which one of the following has an open circulatory system?
- Octopus*
 - Pheretima*
 - Periplaneta*
 - Hirudinaria*
- (2006)
- 61.** The cardiac pacemaker in a patient fails to function normally. The doctors find that an artificial pacemaker is to be grafted in him. It is likely that it will be grafted at the site of
- atrioventricular bundle
 - Purkinje system
 - sinoatrial node
 - atrioventricular node.
- (2003)
- 62.** Bundle of His is a network of
- muscle fibres distributed throughout the heart walls
 - muscle fibres found only in the ventricle wall
 - nerve fibres distributed in ventricles
 - nerve fibres found throughout the heart.
- (2003)
- 63.** Systemic heart refers to
- the heart that contracts under stimulation from nervous system
 - left auricle and left ventricle in higher vertebrates
 - entire heart in lower vertebrates
 - the two ventricles together in humans.
- (2003)
- 64.** Impulse of heart beat originates from
- SA node
 - AV node
 - vagus nerve
 - cardiac nerve.
- (2002)
- 65.** Rate of heart beat is determined by
- Purkinje fibres
 - papillary muscles
 - AV node
 - SA node.
- (1999)
- 66.** The correct route through which pulse-making impulse travels in the heart is
- SA node → Purkinje fibres → bundle of His → AV node → heart muscles
 - SA node → AV node → bundle of His → Purkinje fibres → heart muscles
- (1995)
- 67.** The neurogenic heart is the characteristic feature of
- humans
 - arthropods
 - rabbits
 - rats.
- (1995)
- 68.** The heart sound 'dup' is produced when
- mitral valve is closed
 - semi-lunar valves at the base of aorta get closed
 - tricuspid valve is opened
 - mitral valve is opened.
- (1994)
- 69.** The pacesetter in the heart is called
- sino-atrial node (SAN)
 - atrio-ventricular node (AVN)
 - Purkinje fibres
 - papillary muscle.
- (1994)
- 70.** Tricuspid valve is found in between
- sinus venosus and right auricle
 - right auricle and right ventricle
 - left ventricle and left auricle
 - ventricle and aorta.
- (1989)

18.4 Double Circulation

- 71.** The hepatic portal vein drains blood to liver from
- stomach
 - kidneys
 - intestine
 - heart.
- (NEET 2017)
- 72.** Blood pressure in the pulmonary artery is
- more than that in the pulmonary vein
 - less than that in the venaee cavae
 - same as that in the aorta
 - more than that in the carotid.
- (NEET-I 2016)
- 73.** In mammals, which blood vessel would normally carry largest amount of urea?
- Hepatic vein
 - Hepatic portal vein
 - Renal vein
 - Dorsal aorta
- (NEET-I 2016)
- 74.** Which one of the following animals has two separate circulatory pathways?
- Whale
 - Shark
 - Frog
 - Lizard
- (2015)
- 75.** The given figure shows schematic plan of blood circulation in humans with labels A to D. Identify the label and give its functions.



- (a) C - Vena cava - Takes blood from body parts to right auricle, $pCO_2 = 45$ mm Hg
 (b) D - Dorsal aorta - Takes blood from heart to body parts, $pO_2 = 95$ mm Hg
 (c) A - Pulmonary vein - Takes impure blood from body parts, $pO_2 = 60$ mm Hg
 (d) B - Pulmonary artery - Takes blood from heart to lungs, $pO_2 = 90$ mm Hg (NEET 2013)
- 76.** The figure shows blood circulation in humans with labels A to D. Select the option which gives correct identification of label and functions of the part.
-
- (a) B - Capillary-Thin without muscle layer and wall two cell layers thick
 (b) C - Vein-Thin walled and blood flows in jerks/spurts
 (c) D - Pulmonary vein-Takes oxygenated blood to heart, $pO_2 = 95$ mmHg
 (d) A - Artery-Thick walled and blood flows evenly (Karnataka NEET 2013)
- 77.** Arteries are best defined as the vessels which
- (a) supply oxygenated blood to the different organs
 (b) carry blood away from the heart to different organs
 (c) break up into capillaries which reunite to form a vein
 (d) carry blood from one visceral organ to another visceral organ. (2011)
- 78.** Fastest distribution of some injectable material/medicine and with no risk of any kind can be achieved by injecting it into the
- (a) muscles
 (b) arteries
 (c) veins
 (d) lymph vessels. (Mains 2010)
- 79.** Difference between pulmonary artery and pulmonary vein is that, the pulmonary artery has
- (a) no endothelium
 (b) valves
 (c) thicker walls
 (d) oxygenated blood. (2000)
- 80.** In which point, pulmonary artery is different from pulmonary vein?
- (a) Its lumen is broad.
 (b) Its wall is thick.
 (c) It has valves.
 (d) It does not possess endothelium. (2000)
- 81.** Which vertebrate organ receives only oxygenated blood?
- (a) Spleen (b) Liver
 (c) Gill (d) Lung (1996)
- 82.** In veins, valves are present to check backward flow of blood flowing at
- (a) atmospheric pressure
 (b) high pressure
 (c) low pressure
 (d) all of these. (1995)
- 83.** Blood capillaries are made of
- (a) endothelium, connective tissue and muscle fibres
 (b) endothelium and muscle fibres
 (c) endothelium and connective tissue
 (d) endothelium only. (1993)
- 84.** Wall of blood capillary is formed of
- (a) haemocytes
 (b) parietal cells
 (c) endothelial cells
 (d) oxyntic cells. (1991)
- 85.** Splenic artery arises from
- (a) anterior mesenteric artery
 (b) coeliac artery
 (c) posterior mesenteric artery
 (d) intestinal artery. (1991)
- 86.** A vein possesses a large lumen because
- (a) tunica media and tunica externa form a single coat
 (b) tunica interna and tunica media form a single coat
 (c) tunica interna, tunica media and tunica externa are thin
 (d) tunica media is a thin coat. (1990)
- 87.** Arteries carry oxygenated blood except
- (a) pulmonary
 (b) cardiac
 (c) hepatic
 (d) systemic. (1989)
- ### 18.5 Regulation of Cardiac Activity
- 88.** How do parasympathetic neural signals affect the working of the heart?
- (a) Reduce both heart rate and cardiac output.
 (b) Heart rate is increased without affecting the cardiac output.
 (c) Both heart rate and cardiac output increase.
 (d) Heart rate decreases but cardiac output increases. (2014)

18.6 Disorders of Circulatory System

89. Which one of the following statements is correct regarding blood pressure?
- (a) 130/90 mm Hg is considered high and requires treatment.
 - (b) 100/55 mm Hg is considered an ideal blood pressure.
 - (c) 105/50 mm Hg makes one very active.
 - (d) 190/110 mm Hg may harm vital organs like brain and kidney. (2011)
90. Given below are four statements (i-iv) regarding human blood circulatory system.
- (i) Arteries are thick-walled and have narrow lumen as compared to veins.
 - (ii) Angina is acute chest pain when the blood circulation to the brain is reduced.
 - (iii) Persons with blood group AB can donate blood to any person with any blood group under ABO system.
- (iv) Calcium ions play a very important role in blood clotting.
- Which two of the above statements are correct?
- (a) (i) and (iv)
 - (b) (i) and (ii)
 - (c) (ii) and (iii)
 - (d) (iii) and (iv)
- (Mains 2010)
91. The thickening of walls of arteries is called
- (a) arteriosclerosis
 - (b) arthritis
 - (c) aneurysm
 - (d) both (b) and (c).
- (1999)
92. An adult human with average health has systolic and diastolic pressures as
- (a) 120 mm Hg and 80 mm Hg
 - (b) 50 mm Hg and 80 mm Hg
 - (c) 80 mm Hg and 80 mm Hg
 - (d) 70 mm Hg and 120 mm Hg.
- (1998)

ANSWER KEY

- | | | | | | | | | | |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|
| 1. (a) | 2. (d) | 3. (d) | 4. (d) | 5. (c) | 6. (b) | 7. (a) | 8. (a) | 9. (c) | 10. (c) |
| 11. (d) | 12. (c) | 13. (a) | 14. (d) | 15. (a) | 16. (d) | 17. (c) | 18. (b) | 19. (d) | 20. (a) |
| 21. (a) | 22. (c) | 23. (a) | 24. (a) | 25. (d) | 26. (d) | 27. (a) | 28. (d) | 29. (c) | 30. (c) |
| 31. (b) | 32. (b) | 33. (d) | 34. (b) | 35. (c) | 36. (b) | 37. (c) | 38. (d) | 39. (b) | 40. (a,b) |
| 41. (d) | 42. (b) | 43. (b) | 44. (b) | 45. (a) | 46. (a) | 47. (a) | 48. (c) | 49. (b) | 50. (d) |
| 51. (a) | 52. (d) | 53. (a) | 54. (c) | 55. (b) | 56. (a) | 57. (d) | 58. (c) | 59. (b) | 60. (c) |
| 61. (*) | 62. (b) | 63. (b) | 64. (a) | 65. (d) | 66. (b) | 67. (b) | 68. (b) | 69. (b) | 70. (b) |
| 71. (a,c) | 72. (a) | 73. (a) | 74. (a) | 75. (a) | 76. (c) | 77. (b) | 78. (c) | 79. (c) | 80. (b) |
| 81. (a) | 82. (c) | 83. (d) | 84. (c) | 85. (b) | 86. (d) | 87. (a) | 88. (a) | 89. (d) | 90. (a) |
| 91. (a) | 92. (a) | | | | | | | | |

*None of the options is correct.