Public Library · FBISE / NBF

Biology Grade 10 — Chapter 2

Circulatory System

by Public Library

Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.

A. Important / Main Topics

1. Which blood vessels carry oxygen-rich blood from the heart to the body?

(A) Arteries
(B) Veins
(C) Capillaries
(D) Venules

Correct Answer: A

Explanation: Arteries are strong, muscular blood vessels that carry oxygen-rich blood from the heart to the body.

2. What is the liquid part of blood called?

(A) Serum
(B) Plasma
(C) Lymph
(D) Platelets

Correct Answer: B

Explanation: Plasma is the liquid part of blood, constituting about 55% by volume.

3. Which blood cells carry oxygen?

(A) White blood cells
(B) Platelets
(C) Red blood cells
(D) Plasma cells

Correct Answer: C

Explanation: Red blood cells contain haemoglobin, which carries oxygen.

4. What is the life span of red blood cells?

(A) 3–4 days
(B) 7–10 days
(C) 1 year
(D) 120 days

Correct Answer: D

Explanation: The life span of red blood cells is 120 days.

5. Which chamber of the heart has the thickest wall?

(A) Left ventricle
(B) Right atrium
(C) Left atrium
(D) Right ventricle

Correct Answer: A

Explanation: The left ventricle has the thickest wall because it pumps blood to the whole body.

6. What is the vertical partition that divides the heart into right and left halves called?

(A) Pericardium
(B) Septum
(C) Myocardium
(D) Endocardium

Correct Answer: B

Explanation: The septum is the vertical partition that divides the heart into right and left halves.

7. Which valve is between the right atrium and right ventricle?

(A) Bicuspid valve
(B) Pulmonary valve
(C) Tricuspid valve
(D) Aortic valve

Correct Answer: C

Explanation: The tricuspid valve is between the right atrium and right ventricle and has three cusps.

8. Which valve is between the left atrium and left ventricle?

(A) Tricuspid valve
(B) Pulmonary valve
(C) Aortic valve
(D) Bicuspid valve

Correct Answer: D

Explanation: The bicuspid (mitral) valve is between the left atrium and left ventricle and has two cusps.

9. What is the largest artery in the human body?

(A) Aorta
(B) Pulmonary artery
(C) Renal artery
(D) Carotid artery

Correct Answer: A

Explanation: The aorta is the largest artery in the human body, carrying oxygenated blood from the left ventricle.

10. Which blood cells help in blood clotting?

(A) Red blood cells
(B) Platelets
(C) White blood cells
(D) Plasma cells

Correct Answer: B

Explanation: Platelets patch damaged blood vessels and release substances essential for blood clotting.

11. What is the normal adult pulse rate?

(A) 30–50 per minute
(B) 100–150 per minute
(C) 60–100 per minute
(D) 150–200 per minute

Correct Answer: C

Explanation: A normal adult pulse rate can vary from 60–100 times per minute.

12. Which blood vessels are the site of exchange of materials between blood and tissues?

(A) Arteries
(B) Veins
(C) Arterioles
(D) Capillaries

Correct Answer: D

Explanation: Capillaries are thin-walled vessels where oxygen and nutrients are exchanged for carbon dioxide and waste.

13. Which scientist discovered the pumping action of the heart?

(A) William Harvey
(B) Ibn al-Nafees
(C) Alexander Fleming
(D) Edward Jenner

Correct Answer: A

Explanation: William Harvey — this correctly answers the question.

14. What is the clear liquid part of blood that remains after blood cells and clotting proteins have been removed called?

(A) Plasma
(B) Serum
(C) Lymph
(D) Platelets

Correct Answer: B

Explanation: Serum is the clear liquid part of blood that remains after blood cells and clotting proteins have been removed.

15. Which vitamin is essential for blood clotting?

(A) Vitamin A
(B) Vitamin C
(C) Vitamin K
(D) Vitamin D

Correct Answer: C

Explanation: Vitamin K is needed for the synthesis of several clotting factors.

16. Which of the following is NOT a function of blood?

(A) Transport of oxygen
(B) Transport of hormones
(C) Distribution of heat
(D) Production of insulin

Correct Answer: D

Explanation: Insulin is produced by the pancreas, not by blood.

17. What is the role of the pericardial fluid?

(A) Reduce friction between heart and pericardium
(B) Transport oxygen
(C) Produce blood cells
(D) Store blood

Correct Answer: A

Explanation: Pericardial fluid is a lubricating fluid that reduces friction between the pericardium and heart.

18. Which of the following is the correct pathway of blood through the heart?

(A) Right atrium → Left atrium → Right ventricle → Left ventricle → Body
(B) Right atrium → Right ventricle → Lungs → Left atrium → Left ventricle → Body
(C) Left atrium → Left ventricle → Lungs → Right atrium → Right ventricle → Body
(D) Left atrium → Right atrium → Left ventricle → Right ventricle → Body

Correct Answer: B

Explanation: Blood flows from the right atrium to the right ventricle, then to the lungs, then to the left atrium, left ventricle, and finally to the body.

19. What is the function of the semilunar valves?

(A) Prevent backflow from ventricles to atria
(B) Prevent backflow from atria to ventricles
(C) Prevent backflow from arteries to ventricles
(D) Prevent backflow from veins to atria

Correct Answer: C

Explanation: Semilunar valves (pulmonary and aortic) prevent backflow from arteries to ventricles.

20. Which of the following is a function of white blood cells?

(A) Oxygen transport

(B) Blood clotting
(C) Transport of hormones
(D) Defence against disease

Correct Answer: D

Explanation: Defence against disease — this correctly answers the question.

21. What is the role of fibrinogen in blood?

(A) Blood clotting
(B) Transport oxygen
(C) Defence against disease
(D) Maintain osmotic pressure

Correct Answer: A

Explanation: Fibrinogen is a plasma protein that takes part in blood clotting.

22. Which of the following is NOT a component of plasma?

(A) Water
(B) Red blood cells
(C) Plasma proteins
(D) Mineral ions

Correct Answer: B

Explanation: Red blood cells are blood cells, not a component of plasma.

23. What is the function of the coronary circuit?

(A) Carry blood to lungs
(B) Carry blood to body
(C) Supply blood to heart muscle
(D) Carry blood to kidneys

Correct Answer: C

Explanation: The coronary circuit provides the heart muscle with oxygenated blood.

24. Which of the following is a symptom of myocardial infarction?

(A) Watery stools
(B) Sneezing
(C) Constipation
(D) Chest pain

Correct Answer: D

Explanation: Chest pain — this correctly answers the question.

25. What is the cause of angina?

(A) Reduced blood flow to heart
(B) Infection of lungs
(C) Lack of fibre in diet
(D) Kidney failure

Correct Answer: A

Explanation: Angina is chest pain that happens when the heart is not receiving enough oxygen-rich blood.

B. Less Important / Secondary Topics

26. Which of the following is a harmful effect of smoking on the heart?

(A) Increases blood pressure
(B) Increases oxygen supply
(C) Decreases heart rate
(D) Improves blood circulation

Correct Answer: A

Explanation: Increases blood pressure — this correctly answers the question.

27. What is the role of albumin in plasma?

(A) Blood clotting
(B) Maintain osmotic pressure
(C) Defence against disease
(D) Transport oxygen

Correct Answer: B

Explanation: Albumin is a plasma protein that maintains osmotic pressure.

28. Which of the following is NOT a type of white blood cell?

(A) Neutrophil
(B) Eosinophil
(C) Erythrocyte
(D) Basophil

Correct Answer: C

Explanation: Erythrocytes are red blood cells. Neutrophils, eosinophils, and basophils are types of white blood cells.

29. What is the function of the pulmonary circuit?

(A) Carry blood to body
(B) Carry blood to heart muscle
(C) Carry blood to kidneys
(D) Carry blood to lungs

Correct Answer: D

Explanation: The pulmonary circuit carries deoxygenated blood from the heart to the lungs and returns oxygenated blood to the heart.

30. Which of the following is the correct sequence of blood clotting?

(A) Injury → Constriction → Platelet plug → Fibrin clot
(B) Injury → Platelet plug → Constriction → Fibrin clot
(C) Injury → Fibrin clot → Platelet plug → Constriction
(D) Constriction → Injury → Fibrin clot → Platelet plug

Correct Answer: A

Explanation: The correct sequence of blood clotting is injury, constriction, platelet plug formation, and fibrin clot formation.

31. Which of the following is a function of the lymphatic system?

(A) Transport of oxygen
(B) Return of tissue fluid to blood
(C) Production of insulin
(D) Digestion of food

Correct Answer: B

Explanation: Return of tissue fluid to blood — this correctly answers the question.

32. What is the role of the sinoatrial (SA) node?

(A) Valve of the heart
(B) Chamber of the heart
(C) Pacemaker of the heart
(D) Blood vessel of the heart

Correct Answer: C

Explanation: The SA node acts as the pacemaker of the heart, generating electrical impulses that initiate the heartbeat.

33. Which of the following is a risk factor for heart disease?

(A) Regular exercise
(B) Healthy diet
(C) Normal blood pressure

(D) Smoking

Correct Answer: D

Explanation: Smoking is a major risk factor for heart disease.

34. What is the function of the hepatic portal vein?

(A) Carry blood from intestine to liver
(B) Carry blood from heart to liver
(C) Carry blood from liver to heart
(D) Carry blood from liver to intestine

Correct Answer: A

Explanation: The hepatic portal vein carries blood from the intestine to the liver.

35. Which of the following is NOT a function of the circulatory system?

(A) Transport of nutrients
(B) Production of bile
(C) Transport of oxygen
(D) Removal of waste

Correct Answer: B

Explanation: Bile is produced by the liver, not the circulatory system.

36. A patient has a blocked coronary artery. What is the most likely consequence?

(A) Reduced blood flow to lungs
(B) Reduced blood flow to kidneys
(C) Reduced blood flow to heart muscle
(D) Reduced blood flow to intestines

Correct Answer: C

Explanation: Reduced blood flow to heart muscle — this correctly answers the question.

37. A person has a deficiency of platelets. What is the most likely consequence?

(A) Reduced oxygen transport
(B) Reduced immunity
(C) Increased blood pressure
(D) Increased risk of bleeding

Correct Answer: D

Explanation: Platelets are essential for blood clotting. A deficiency would increase the risk of bleeding.

38. Which of the following would increase the risk of atherosclerosis?

(A) High cholesterol diet
(B) Regular exercise
(C) Low blood pressure
(D) Healthy weight

Correct Answer: A

Explanation: High cholesterol diet — this correctly answers the question.

39. A patient has a hole in the septum. What is the most likely effect?

(A) Reduced heart rate
(B) Mixing of oxygenated and deoxygenated blood
(C) Increased blood pressure
(D) Reduced blood clotting

Correct Answer: B

Explanation: Mixing of oxygenated and deoxygenated blood — this correctly answers the question.

40. Which of the following is the correct order of blood vessels from the heart to the body and back?

(A) Vein → Venule → Capillary → Arteriole → Artery
(B) Artery → Capillary → Arteriole → Vein → Venule
(C) Artery → Arteriole → Capillary → Venule → Vein

(D) Arteriole → Artery → Capillary → Vein → Venule

Correct Answer: C

Explanation: Blood flows from the heart through arteries, arterioles, capillaries, venules, and veins back to the heart.

41. A person has a diet deficient in iron. What is the most likely consequence?

(A) Reduced blood clotting
(B) Reduced immunity
(C) Increased blood pressure
(D) Reduced oxygen transport

Correct Answer: D

Explanation: Iron is needed for haemoglobin synthesis. A deficiency would reduce oxygen transport.

42. Which of the following statements about the left ventricle is correct?

(A) It has the thickest wall
(B) It pumps blood to the lungs
(C) It receives blood from the body
(D) It has three cusps

Correct Answer: A

Explanation: The left ventricle has the thickest wall because it pumps blood to the whole body.

43. A patient has a condition where the bicuspid valve does not close properly. What is the most likely effect?

(A) Backflow of blood from right ventricle to right atrium
(B) Backflow of blood from left ventricle to left atrium
(C) Backflow of blood from aorta to left ventricle
(D) Backflow of blood from pulmonary artery to right ventricle

Correct Answer: B

Explanation: The bicuspid valve is between the left atrium and left ventricle. If it does not close properly, blood can flow back from the left ventricle to the left atrium.

44. Which of the following is a function of the pericardium?

(A) Pump blood
(B) Produce blood cells
(C) Protect the heart
(D) Store blood

Correct Answer: C

Explanation: The pericardium is a protective sac that surrounds the heart.

45. A person has a condition where the SA node is not functioning properly. What is the most likely effect?

(A) Reduced oxygen transport
(B) Increased blood clotting
(C) Reduced immunity
(D) Irregular heartbeat

Correct Answer: D

Explanation: The SA node is the pacemaker of the heart. If it is not functioning properly, the heartbeat may become irregular.

46. Which of the following is the correct sequence of the cardiac cycle?

(A) Systole → Diastole
(B) Diastole → Systole
(C) Systole → Systole
(D) Diastole → Diastole

Correct Answer: A

Explanation: Systole → Diastole — this correctly answers the question.

47. A patient has a condition where the aortic semilunar valve does not close properly. What is the most likely effect?

(A) Backflow of blood from left ventricle to left atrium
(B) Backflow of blood from aorta to left ventricle
(C) Backflow of blood from pulmonary artery to right ventricle
(D) Backflow of blood from right ventricle to right atrium

Correct Answer: B

Explanation: The aortic semilunar valve is between the left ventricle and aorta. If it does not close properly, blood can flow back from the aorta to the left ventricle.

48. Which of the following is the correct pathway of blood through the pulmonary circuit?

(A) Left ventricle → Pulmonary artery → Lungs → Pulmonary vein → Right atrium
(B) Right ventricle → Pulmonary vein → Lungs → Pulmonary artery → Left atrium
(C) Right ventricle → Pulmonary artery → Lungs → Pulmonary vein → Left atrium
(D) Left ventricle → Pulmonary vein → Lungs → Pulmonary artery → Right atrium

Correct Answer: C

Explanation: The pulmonary circuit carries blood from the right ventricle to the lungs via the pulmonary artery and returns it to the left atrium via the pulmonary vein.

49. Which of the following would decrease the risk of heart disease?

(A) Smoking
(B) High cholesterol diet
(C) High blood pressure
(D) Regular exercise

Correct Answer: D

Explanation: Regular exercise — this correctly answers the question.

50. A person has a condition where the tricuspid valve does not close properly. What is the most likely effect?

(A) Backflow of blood from right ventricle to right atrium
(B) Backflow of blood from left ventricle to left atrium
(C) Backflow of blood from aorta to left ventricle
(D) Backflow of blood from pulmonary artery to right ventricle

Correct Answer: A

Explanation: The tricuspid valve is between the right atrium and right ventricle. If it does not close properly, blood can flow back from the right ventricle to the right atrium.