

Circulatory system

1. The compound formed when haemoglobin combines with carbon dioxide in blood.

(2019)

Answer:

Carbaminohaemoglobin

2. Carbon monoxide is dangerous when inhaled. Give suitable biological reasons

(2019)

Answer:

Haemoglobin has a very strong affinity for carbon monoxide, forming a stable compound carboxyhaemoglobin. This cuts down the capacity of blood for transporting oxygen, sometimes resulting in death.

3. While recording the pulse rate, where exactly does a doctor press on our wrist?

- A. Nerve
- B. Vein
- C. Artery
- D. Capillary

(2019)

Answer:

C. Artery

4. A muscular wall is absent in :

- A. Capillary
- B. Venule
- C. Arteriole
- D. Vein

(2019)

Answer:

A. Capillary

5. The blood vessel which supplies blood to the liver

(2018)

Answer:

Hepatic artery [Hepatic Portal Vein can also be the answer because the type of blood is not specified].

6. State the main functions of coronary artery

(2019)

Answer:

Supply blood to heart muscles.

7. Choose between the two options to answer the question specified in the brackets : Blood in the pulmonary artery or pulmonary vein (Which one contains less oxyhaemoglobin?)

(2018)

Answer:

Blood in pulmonary artery

8. Given below is a set of five terms each. Rewrite the terms in correct order in a logical sequence: Fibrin, Platelets, Thromboplastin, Fibrinogen, Thrombin.

(2017)

Answer:

Platelets, Thromboplastin, Thrombin, Fibrinogen, Fibrin.

9. Choose the ODD one out from the following terms given and name the CATEGORY to which the others belong: Lumen, muscular tissue, connective tissue, pericardium

(2018)

Answer:

Odd term – Pericardium, Category – Parts of blood vessels

10. Mention the exact location : Pulmonary semi-lunar valves

(2018)

Answer:

Opening of right ventricle into pulmonary artery

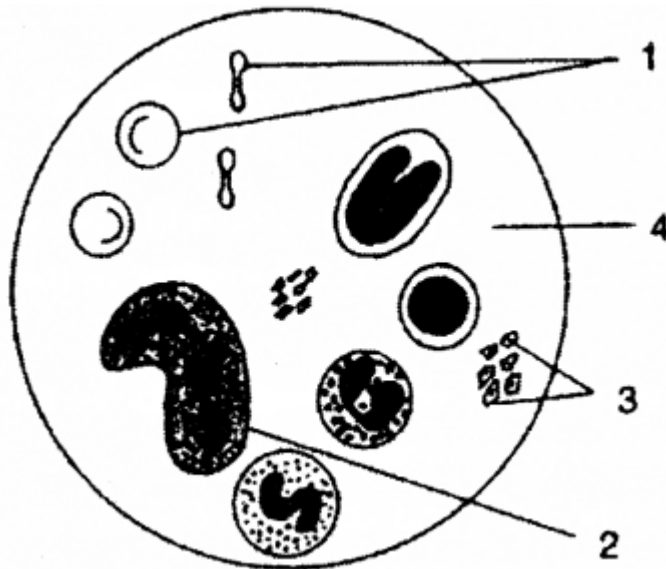
11. Give appropriate biological term : The relaxation phase of the heart.

(2018)

Answer:

Diastole

12. Given below is a diagram of a human blood smear study the diagram and answer the questions that follow:



(i) Name the components numbered '1' to '4'.

(ii) Mention two structural differences between the parts '1' and '2'.

(iii) Name the soluble protein found in part '4' which forms insoluble threads during clotting of blood.

(iv) What is the average lifespan of the component numbered '2'?

(v) Component numbered '1' do not have certain organelles but are very efficient in their function. Explain.

(2018)

Answer:

(i)

1. Red blood cells / Erythrocytes
2. White blood cells / Leucocytes
3. Platelets / Thrombocytes

4. Blood plasma

(ii)

RBC

Don't have nucleus

Biconcave disc like

WBC

Nucleus present

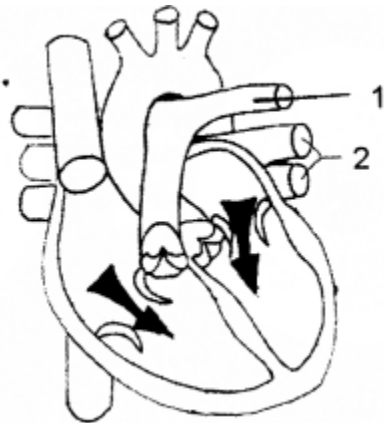
Amoeboid in shape

(iii) Fibrinogen

(iv) 140 days

(v) Loss of Nucleus increases their surface area for absorbing more oxygen, loss of mitochondria means RBCs cannot use oxygen for themselves and loss of endoplasmic reticulum increases flexibility of RBCs for their movement through narrow capillaries.

13. The diagram given below represents a section of the human heart. Answer the questions that follow: **[5]**



(i) Which parts of heart are in the diastolic phase? Give a reason to support your answer.

(ii) Label the parts numbered 1 and 2 in the diagram. What type of blood flows through them?

(iii) What causes the heart sounds 'LUBB' and 'DUP'?

(iv) Name the blood vessels that supply oxygenated blood to the heart muscles.

(v) Draw neat labelled diagrams of a cross-section of an artery and a vein.

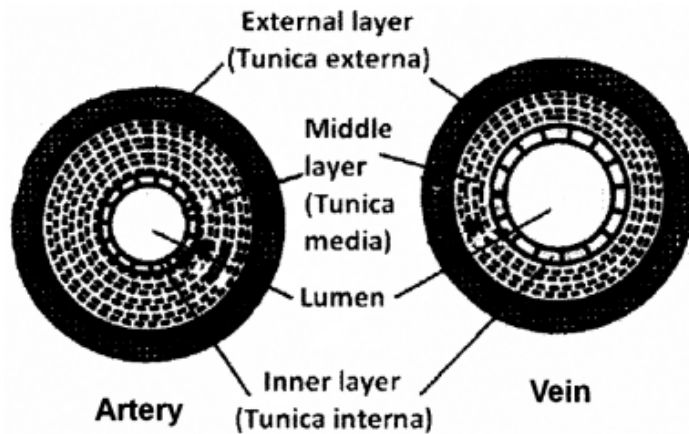
(2017)

Answer:

(i) Ventricles, as the blood is flowing towards ventricle since tricuspid and bicuspid valves are open.

(ii)

1. Pulmonary artery
 2. Left pulmonary veins.
- (iii) The LUBB sound is caused due to the closure of the auriculo-ventricular valves while DUP sound is caused due to the closure of the semilunar valve.
- (iv) Coronary arteries supply oxygenated blood to the heart muscles.



14. Give biological reasons for: The left ventricle of the heart has a thicker wall than the right ventricle.

(2017)

Answer:

It has to push the blood to the remotest parts of the body such as toes of the feet so the left ventricle of the heart has a thicker wall.

15. Name the vein that carries oxygenated blood.

(2015)

Answer:

Pulmonary vein

16. Choose the correct answer from the four options given : The mineral ion needed for the formation of blood clot is :

(A) Potassium (B) Sodium (C) Calcium (D) Iron

(2016)

Answer:

(C) Calcium

17. State the exact location of Chordae Tendinae (2016)

Answer:

Chordae tendinae: At the flaps of the bicuspid and tricuspid valves.

18. What is the exact location of the Bicuspid valve (2015)

Answer:

Between the left auricle and left ventricle

19. State the main function of lymphocytes of blood (2016)

Answer:

Lymphocytes of blood: Produce antibodies.

20. LUBB and DUP (names of the valves whose closure produce the sound) (2016)

Answer:

LUBB: Atrioventricular valves

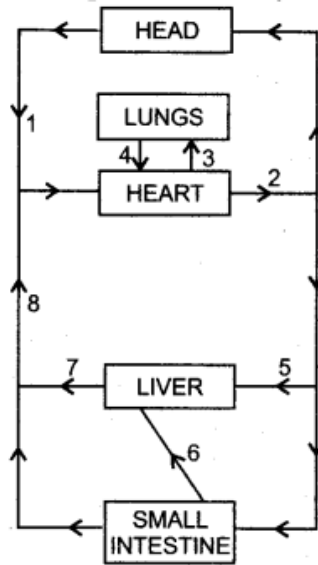
DUP: Semilunar valves.

21. State the exact location of Tricuspid valve (2014)

Answer:

Tricuspid valve: Between right auricle and right ventricle.

22. The diagram below represents the simplified pathway of the circulation of blood.
Study the same and answer the questions that follow :

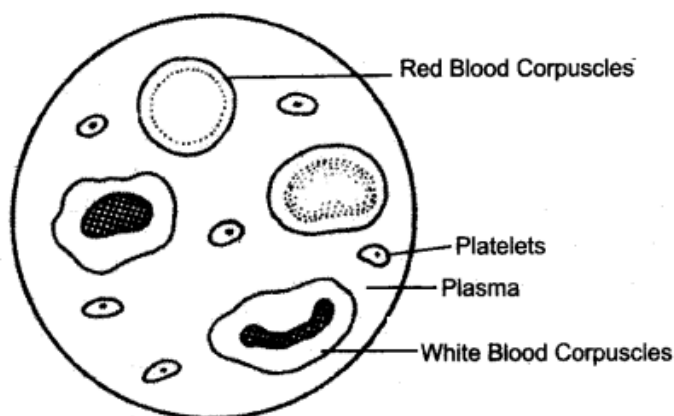


- Name the blood vessels labelled 1 and 2.
- State the function of blood vessels labelled 5 and 8.
- What is the importance of the blood vessel labelled 6 ?
- Which blood vessel will contain a high amount of glucose and amino acids after a meal ?
- Draw a diagram of the different blood cells as seen in a smear of human blood. **[5]**

(2014)

Answer:

- (1) Anterior/Superior venacava (2) Dorsal aorta
- Function of 5: Supply oxygenated blood to liver.
Function of 8: Carry deoxygenated blood from posterior parts of the body to the right auricle of heart.
- Importance of the blood vessel labelled 6: Blood vessel 6 is called Hepatic portal vein. It carries deoxygenated blood from intestine to liver. This blood contains excess glucose, some toxic substances etc. which are sent to liver where they are detoxified and the excess glucose is converted to glycogen and stored. This prevents these substances from directly entering the heart and damaging the heart.
- Blood Vessel-6
-



23. Give a biological term for the vein which drains the blood from the intestine to the liver.

(2016)

Answer:

Hepatic Portal Vein

24. Give biological term for blood vessels carrying blood to the left atrium.

(2016)

Answer:

Pulmonary veins

25. Mature erythrocytes in humans lack nucleus and mitochondria.

(2016)

Answer:

Presence of nucleus would occupy space and reduce the oxygen carrying capacity. Nucleus is also not required as a mature RBC does not divide.

Mitochondria is absent so that oxygen is not consumed by the RBC and all the oxygen is transported to target areas.

26. Carbon monoxide is highly dangerous when inhaled. Give scientific reasons.

(2014)

Answer:

Carbon monoxide has great affinity with haemoglobin of our blood. It mixes with haemoglobin almost 300 times more than that with oxygen. It cuts off the supply of oxygen due to which it is fatal.

27. Give scientific reason : Blood flows in arteries in spurts and is under pressure.

(2016)

Answer:

Arteries carry blood from heart. With every pump of heart blood flows with a jerk and pressure through it.

28. Briefly explain Diapedesis

(2014)

Answer:

The process by which white blood cells squeeze out through the walls of capillaries to reach the site of infection.

29. The protective covering of the heart.

(2014)

Answer:

Pericardium

30. The fluid portion of blood.

(2014)

Answer:

Plasma

31. The phase of cardiac cycle in which the auricles contract.

(2012)

Answer:

auricular systole

32. State the exact location of Pulmonary semi-lunar valves

(2013)

Answer:

Pulmonary semilunar valves: At the base of the pulmonary trunk these valves are found.

33. Choose the correct answer from the four options given below : Pulse wave is mainly caused by the :
(A) Systole of atria (B) Diastole of atria (C) Systole of the left ventricle (D) Systole of the right ventricle

(2013)

Answer:

(C) Systole of the left ventricle

34. State the main function of the following :
(i) Chordae tendinae
(ii) Lymphocytes

(2012)

Answer:

(i) Chordae tendinae – Holds the valves in position.

(ii) Lymphocytes – Produce antibodies to defend the body against infection.

35. Give the exact location of : Mitral valve

(2012)

Answer:

Mitral valve – Between the left auricle and left ventricle.

36. What is the function of Neutrophils?

(2013)

Answer:

Phagocytosis

37. Rewrite the terms in the correct order so as to be in a logical sequence. Intestine, Liver, Intestinal artery, Hepatic Vein, Hepatic Portal Vein.

(2013)

Answer:

Intestinal artery, Intestine, Hepatic Portal Vein, Liver, Hepatic Veins.

38. Give biological term : Chemical found in the blood which act against antigens.

(2013)

Answer:

Immunoglobulins

39. Differentiate between : Bicuspid valve and Tricuspid valve. (Function).

(2013)

Answer:

Bicuspid Valve	Tricuspid Valve
It closes the opening of auriculo-ventricular valves when blood rushes from left auricle into left ventricle.	It closes the opening of auriculo-ventricular valves when blood rushes from right atrium to right ventricle.

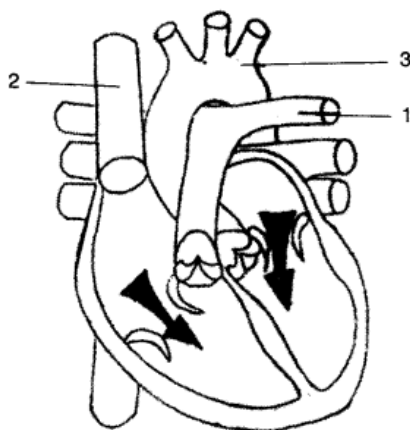
40. Give the biological / technical term: WBCs squeeze through the walls of the capillaries into the tissue.

(2012)

Answer:

Diapedesis

41. The diagram given below represents the human heart in one phase of its functional activities. Study the same and answer the questions that follow :

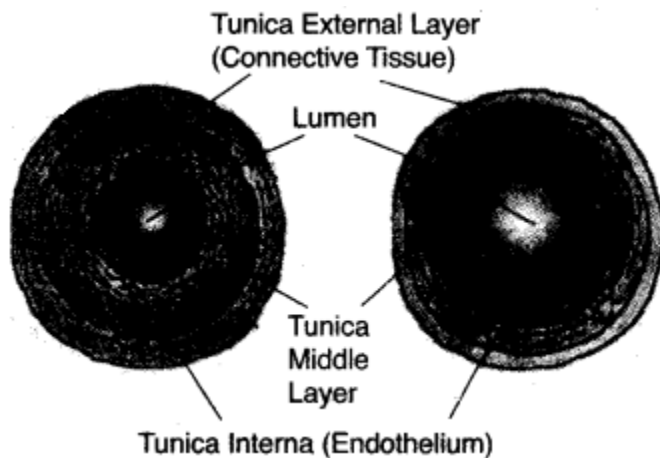


- (i) Name the phase.
- (ii) Label the parts 1, 2, and 3
- (iii) Which part of the heart is contracting in this phase ? Give a reason to support your answer.
- (iv) Draw well labelled diagrams of part 1 and 2 to show the structural differences between them.

(2013)

Answer:

- (i) Atrial systole is the phase.
- (ii) 1. Aorta, 2. Pulmonary Artery, 3. Superior Vena Cava
- (iii) Upper chambers i.e., both the atria are contracting in this phase because blood is flowing downwards (towards the ventricles).
- (iv)



42. Give biological reason : The wall of the ventricle is thicker than the auricles.

(2013)

Answer:

The wall of the ventricles are thicker than the walls of atria due to different muscular development related to their different functions. Ventricles, particularly left ventricle has to pump the blood into aorta under a high pressure, against force of gravity. As such they are adapted to withstand greater pressure.

43. Briefly explain: pulse

(2012)

Answer:

Pulse – It is a wave of pressure of blood passing through the arteries as it is pumped out of the heart.

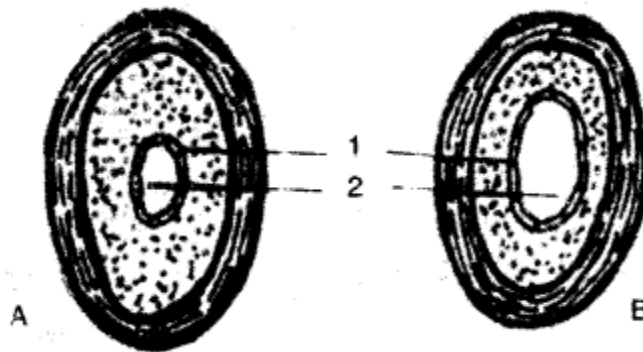
44. Briefly explain : Diabetes Insipidus

(2013)

Answer:

Diabetes insipidus: The condition occurs due to lesser secretion of vasopressin (Anti-diuretic hormone) from the posterior lobe of pituitary gland. The disease is characterized by excretion of large amounts of urine and subsequent dehydration and thirst. No sugar or albumin is present in the urine. A person with severe diabetes insipidus may die due to dehydration if deprived of water for few days.

45. The diagram given below show the cross section of two kinds of blood vessels:



(i) Identify the blood vessels A and B. In each case give a reason to support your answer.

(ii) Name the parts numbered 1 and 2.

(iii) When are the sound “LUBB” and “DUP” produced during a heartbeat ? Name the blood vessel that :

(iv) Name the blood vessel that:

(1) begins and ends in capillaries

(2) supplies blood to the walls of the heart [5]

(2012)

Answer:

(i) A – Artery, B – Vein

A has narrow lumen and thick muscular wall

B has wide lumen and thin muscular wall.

(ii) 1 – Endothelium

2 – Lumen

(iii) "LUBB": Sound is produced when the two auriculoventricular valves shut.

"DUP": Sound is produced when the two semilunar valves shut

1 .Begins and ends in capillaries: "Hepatic porta Vein".

2. Supplies blood to the walls of the Heart: "Coronary artery".

46. The mineral element essential for the clotting of blood.

(2011)

Answer:

Calcium

47. Give the exact location of: Mitral valve

(2011)

Answer:

Between left auricle and left ventricle

48. The blood vessel that begins and ends in capillaries is the

(2011)

Answer:

hepatic portal system

49. A matured mammalian erythrocyte lacks nucleus and mitochondria. Give reason

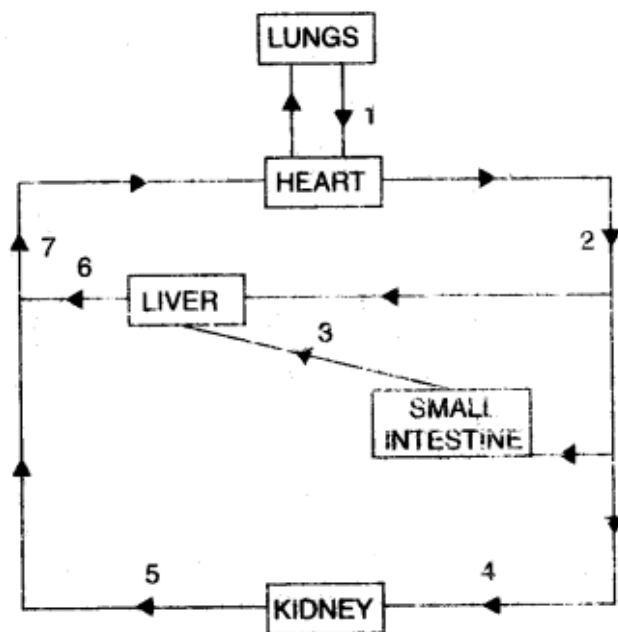
(2011)

Answer:

Lack of nucleus helps in having more surface area for absorption and transport of oxygen.

Lack of mitochondria helps in the way that RBC would not consume any oxygen that it is transporting.

50. The diagram alongside represents circulation in the human body. Answer the questions that follow :



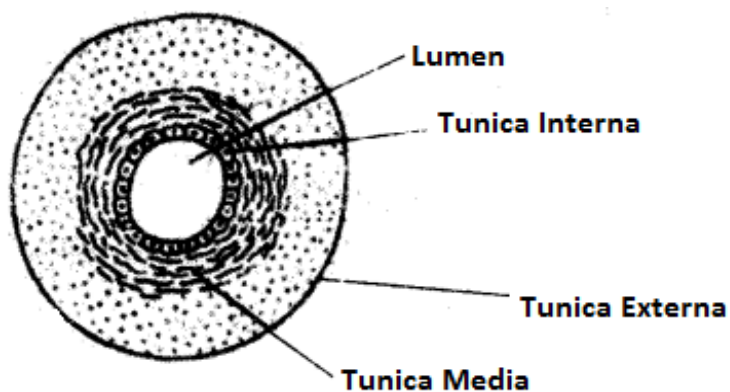
- (i) Name the blood vessels labelled 1, 3, 6, and 7.
- (ii) Name the blood vessel that supplies the walls of the heart with oxygen.
- (in) Draw a neat labelled diagram of the blood vessel numbered '2' as seen in a cross section.
- (iv) Mention one structural difference between blood vessels numbered 4 and 5.

[5]

(2011)

Answer:

- (i) 1 – Pulmonary vein,
3 – Hepatic portal vein,
6 – Hepatic vein
7 – Posterior vena cava.
- (ii) Coronary artery
- (iii)



(iv)

4 (Renal artery)	5 (Renal vein)
Thick muscular wall	Thin muscular wall
Narrow lumen	Wide lumen
Valves absent	Valves present

51. A foreign body that induces the formation of antibodies in the body.

(2010)

Answer:

Antigen

52. Explain antibiotics

(2010)

Answer:

Antibiotics: The chemical substances which are produced by a micro-organism, can stop growth of or kill another micro-organism.

e.g., Pencillin.