



# BIOLOGY

## BOOKS - PRADEEP BIOLOGY (HINGLISH)

### BODY FLUIDS AND CIRCULATION

#### Curiosity Questions

1. In which groups of animals would you find water circulation?



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2. Why is closed circulatory system advantageous ?



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3. How does the structure of human erythrocytes fit their function ?



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4. How do avian and mammalian hearts show convergent evolution ?



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5. How does the heart manage to beat nonstop throughout life without getting fatigued ?



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6. What propels the blood from the feet upward to the heart against gravity ?



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7. Why does a person standing still for a long time faint ?



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8. Why does the heart rate increase during exercise ?



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## Notable Question

1. Why does a person having fever has faster pulse ?



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1. Name the components of the formed elements in the blood and mention one major function of each of them.



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2. What is the importance of plasma proteins?



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3. Match the items in column I with those in column II :

**Column I**

- (I) *Eosinophils*
- (II) *R.B.C.*
- (III) *AB Group*
- (IV) *Platelets*
- (V) *Systole*

**Column II**

- (a) *Coagulation*
- (b) *Universal recipient*
- (c) *Resist infections*
- (d) *Contraction of heart*
- (e) *Gas transport*



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4. Why is blood considered to be connective tissue?



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5. What is the difference between lymph and blood?



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6. What is meant by double circulation? What is its significance?



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7. Write the differences between:

(a) Blood and Lymph



(b) Open and Closed system of circulation

(c) Systole and Diastole

(d) P-wave and T-wave



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**8.** Describe the evolutionary change in the pattern of heart among the vertebrates.



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**9.** Why do we call our heart myogenic?



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**10.** Sino-atrial node is called the pacemaker of our heart. Why?



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**11.** What is the significance of atrio-ventricular node and atrio-ventricular bundle in the functioning of heart?



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**12.** Define a cardiac cycle and the cardiac output.



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**13.** Explain heart sounds.



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**14.** Draw a standard ECG and explain the different segments in it.



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**Additional Questions Very Short Answer Questions**

**1.** What is systemic circulation ?



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2. What is lymph node ?



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3. In human circulatory system open or closed ?



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4. What is the size and weight of the human heart ?



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5. Which side of the heart contains oxygenated (pure) blood ?



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6. What are great blood vessels ?



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7. Give the location of moderator band.



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8. Write the full form of S.A. node. What is its other name ?



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9. What are the contraction and relaxation of the heart called ?



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**10.** Man has double circulation. Name the two circulations.



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**11.** Why is the S-A node called pace-maker of the heart ?



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**12.** Give the location of A-V node.







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**13.** Give the term used for rise in the R.B.C. count.



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**14.** What is a pace-maker ?



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15. Expand the terms EEG and ECG.



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16. Which ion is involved in blood clotting ?

(a)  $K^+$  (b)  $Na^+$  (c)  $Fe^{++}$  (d)  $Ca^{++}$



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17. A boy has the blood group AB. What is true of the inheritance of this blood group in his

case ?

(a) His parents should be one with O group and the other with B group.

(b) His father should be with A group and mother with B group.

(c ) His parents should be one with O group and the other with A group.

(d) Both his parents should be with B group.



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**18.** Name the enzyme that catalyses the formation of carbonic acid in erythrocytes.



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**19.** Due to developmental abnormality, the wall of left ventricle of an infant's heart is as thin as that of right ventricle. What would be its specific effect on circulation of blood ?



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**20.** Name the blood component which is viscous and straw coloured fluid.



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**21.** Name the vascular connection that exists between the digestive tract and liver.



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22. Given below are the abnormal conditions related to blood circulation. Name the disorders

Acute chest pain due to failure of  $O_2$  supply to heart muscles

Increased systolic pressure



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[Additional Questions Short Answer Questions](#)

1. What is the heart skeleton composed of ?

Give its role.



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2. Of which 3 events a heart beat or cycle consists ? Give the duration of heart beat.



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**3.** Name the 2 heart sounds. How are they produced ?



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**4.** Which portal systems man has and which he lacks ?



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5. What is a myogenic heart beat ? In which animals is it found ?



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6. Give the locations of S-A node and A-V node.



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7. Name the various types of formed elements present in the blood.



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**8.** Mention the animals with single circulation, incomplete double circulation and complete double circulation.



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**9.** What is sphygmomanometer ?



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**10. Define blood pressure.**



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**11. What is blood ?**



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**12. Why is a mammalian heart referred to as myogenic ?**



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**13.** Define a portal vein. Explain the functions of such a vein in our digestive tract.



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**14.** Describe the condition termed as atherosclerosis. How does it affect the body ?



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**15.** How is foetus with  $Rh^+$  blood affected if the mother is  $Rh^-$  ?



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**16.** Name different types of granulocytes. Give the functions of one which constitutes maximum percentage of the total leucocytes.



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**17.** What do you call the circulatory fluid in the body of cockroach ? Mention its three functions.



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**18.** Complete the missing word in the statement given below

(a) Plasma without ..... is called serum.

(b) ..... and monocytes are phagocytic cells.

(c ) Eosinophils are associated with .....

reactions.

(d) ..... ions play a significant role in clotting.

(e) One can determine the heart beat rate by counting the number of ..... complex in an ECG.



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**19.** State the function of the following in blood

:

(a) Fibrinogen

(b) Globullin

(c ) Neutrophils

(d) Lymphocytes



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**20.** What is blood ? Describe its components.



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**21.** Write the differences between :

(a) Blood and haemolymph (b) Open and closed system of circulation.





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**22. What is the heart rhythm ? Discuss.**



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**23. What is electrocardiogram ? Write about its significance.**



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**24.** What is hypertension ? What are its causative factors ?



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**25.** What is an artificial pacemaker ? Explain.



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**26.** How is arteriosclerosis different from atherosclerosis ? Discuss.



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**27.** How is the flow of blood to the organs regulated ?



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**28.** Why is the heart not fatigued even though it beats nonstop ?



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**29.** What is meant by double circulation ? Give its advantages.



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**30.** How is the rate of heart beat controlled ?



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**31.** How is the blood moved through the veins ?





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**32.** Describe the coronary circulation.



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**33.** Draw a diagram of the external structure of human heart (front view) and label the parts.



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**34.** Write a note on heart rate or pulse.



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**35.** Describe the process of blood clotting.



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**36.** What is lymph ? Describe its circulation in brief.



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**37.** Give the causes of the following :

(a) Heart sounds

(b) Non-mixing of deoxygenated and oxygenated blood in the mammalian heart.



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**38.** What is meant by a portal vein ? Name the two portal veins in the human body. Specify the function of anyone of them.



**39.** Fill in the blanks :

(i) Left auriculoventricular aperture is guarded by \_\_\_\_ valve while right auriculoventricular aperture is guarded by \_\_\_\_ valve.

(ii) The human heart consists of \_\_\_\_ chambers while the fish heart has \_\_\_\_ chambers.

(iii) In man left auricle receives \_\_\_\_ blood by \_\_\_\_ pulmonary veins.

(iv) Heart of cockroach has \_\_\_\_ funnel shaped, segmentally arranged chambers. In each



segment, a pair of \_\_\_\_\_ muscles is present on the either side of the heart.

(v) An abnormal rise in R.B.C. count is called \_\_\_\_\_ and that of W.B.C. count is called \_\_\_\_\_ .



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**40.** Match the items listed in column I with appropriate items (one or more) from column

II.

**Column I**

- (i) S.A. node
- (ii) Water circulation
- (iii) Cyclosis
- (iv) Haemolymph
- (v) Thoracic duct

**Column II**

- (a) *Paramecium*
- (b) Cockroach
- (c) Pace-maker
- (d) Sponges
- (e) Lacteals
- (f) Right auricle
- (g) Lymphatic system.



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**41. Match column I with column II**

**Column I**

- (i) Haemolymph
- (ii) RBC
- (iii) Antibody
- (iv) Platelets
- (v) Systole

**Column II**

- (a) Coagulation
- (b) Immunity
- (c) Cockroach
- (d) Contraction
- (e) Gas transport
- (f) Hypertension



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**42.** Match the items listed in column I with appropriate items from column II :

**Column I**

- (i) S-A node
- (ii) Right A-V aperture
- (iii) Interstitial fluid
- (iv) Water circulation
- (v) Sinus venosus
- (vi) Single type of circulation

**Column II**

- (i) Accessory chamber
- (ii) Fishes
- (iii) Right auricle
- (iv) Tricuspid valve
- (v) Intercellular spaces
- (vi) Sponges



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**43.** Write true or false :

(a) Atrioventricular node is natural pacemaker of heart.

- (b) Human heart has inter-auricular foramen.
- (c) Heart of cockroach is segmentally arranged.
- (d) Right atrioventricular valve is a semilunar valve.
- (e) Normal systolic and diastolic pressure of humans is 120 and 60 mm Hg., respectively.



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**44.** Indicate whether the following statements are true or false :

(i) Fish heart contains only oxygenated blood.

(ii) Closure of A-V valves produces the second heart sound.

(iii) The vagus nerve retards the heart rate.

(iv) The S-A node is the pacemaker of the heart.

(v) Columnae carneaee occur in the auricles.

(vi) Purkinje fibres are nerve fibres present in the heart wall.



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- 45.** Indicate whether the following statements are true or false :
- (a) Both auricles of amphibian heart open into the same ventricle.
  - (b) Prawn's heart carries only oxygenated blood.
  - (c ) Purkinje fibres are nerve fibres supplying the ventricular muscles.
  - (d) The first heart sound results from a closure of semilunar valves.
  - (e ) The vagus nerve reduces the heart rate.
  - (f) The A-V node normally initiates the cardiac impulse.

(g) Semilunar valves open during the ventricular diastole.



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**46.** Note the relationship between the first two words and suggest a suitable word for the fourth place :

(i) Distributing vessels : arteries : collecting vessels \_\_\_

(ii) Contraction of heart : systole : relaxation of heart \_\_\_\_\_

(iii) Pulmonary artery : deoxygenated blood :

pulmonary vein \_\_\_\_

(iv) Red fluid tissue : blood : colourless fluid

tissue\_\_\_\_\_

(v) Hepatic portal system : liver : renal portal

system \_\_\_\_



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**47.** Differentiate between

Blood and lymph



Basophils and eosinophils

tricuspid and bicuspid valve



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**48.** The walls of ventricles are much thicker than atria. Explain.



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**49.** What is the significance of hepatic portal system in the circulatory system?



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## Additional Questions Long Answer Questions

1. Draw a diagram to show the internal structure of human heart. Label only one heart chamber, any two heart valves and any three other structures.



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2. Describe the structure of human heart.



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3. Describe the importance of pulmonary circulation.



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4. What is lymphatic system ? Discuss its importance.



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5. Define the terms : (a) SA node (b) Systole (c ) Diastole (d) Pulmonary circulation.



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6. How can you explain the following ?

- (i) Auricles have thinner walls than ventricles.
- (ii) Blood flows under pressure in the arteries.
- (iii) Heart has striped muscles unlike other

viscera.

(iv) There is a slight gap between auricular systole and ventricular systole.



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7. Discuss functions of circulatory system.



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8. Draw a well labelled diagram of human heart to show its internal structure.



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**9. Distinguish between the following :**

(i) Pulmonary circulation and systemic circulation.

(ii) Blood and lymph.

(iii) Arteries and veins.

(iv) Myogenic and neurogenic heart.



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**10.** Explain the following :

(a) Why does the atrial systole normally precedes the ventricular systole ?

(b) Why is S-A node called the pacemaker of the heart ?

(c ) Why does the ventricle relax as a closed chamber in the early phase of its diastole ?

(d) Why is there no mixing of deoxygenated and oxygenated blood in mammalian heart ?

(e ) Why can you palpate the pulse on an artery in each heart beat ?

(f) Why does the lymph contain much less

proteins than the plasma ?

(g) Why does the ventricle contract as a closed chamber in the early phase of its systole ?

(h) Why is the closed circulatory system more efficient than the open one ?

(i) Why does the left ventricle has a thicker wall than the right ventricle ?



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**11. Contrast between the following :**

(a) S-A node and A-V node.



(b) Atrial systole and ventricular systole.

(c ) Mitral valve and semilunar valve.

(d) Effects of sympathetic nerves and vegus on the heart.



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**12.** Describe the conducting system of human heart.



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**13.** How does blood flow through the heart during the different phases of cardiac cycle ?



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**14.** What is cardiac cycle ? Describe the events that occur during joint diastole and atrial systole.



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**15. (a)** Draw the L.S. of human heart showing the internal structure. Label the parts of the left side of the heart and the blood vessels that enter and leave the chambers of the same side.

(b) What is the significance of the remnants of sinus venosus in the mammalian heart ?



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**16.** Describe the sequence of events which occur in the cardiac cycle in humans. Where and how are the sounds lubb and dubb produced in the heart during this cycle ?



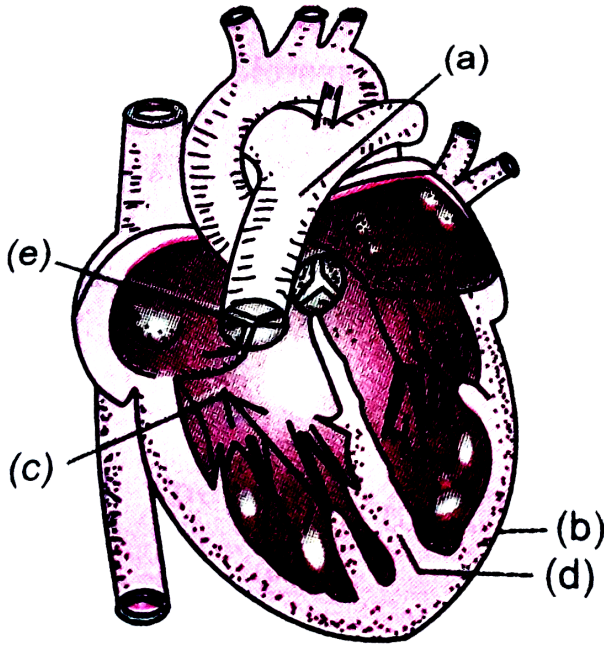
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**17.** Figure of internal structure of mammalian heart is provided. Carefully study it and

(i) Name the parts labelled as a, b, c, d,e.

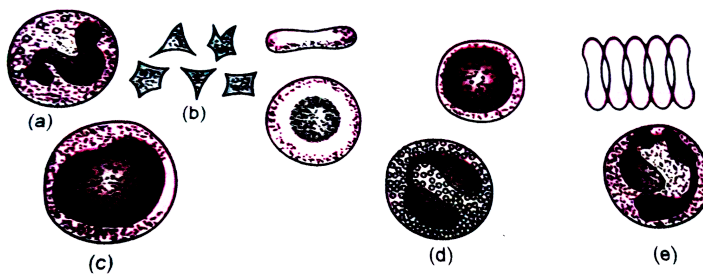
(ii) Give one most important function of each

of these parts.



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**18.** Study blood cells carefully shown in figure and answer the following questions :



(i) Name various types of blood cells labelled as (a), (b), (c ), (d) and (e ).

(ii) Give one important function of each .



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**19.** Explain Rh-incompatibility in humans.



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**20.** Describe the events in cardiac cycle. Explain 'double circulation'.



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**21.** Explain different types of blood groups and donor compatibility by making a table



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**Analytical Question With Answers**

1. (i) Present day life styles have resulted in increased number of patients with blockage in the arteries and they are advised to undergo appropriate treatment. Name that non-surgical treatment done by cardiologists.

(ii) What is a stent ?

(iii) What can you suggest to avoid such a situation ?



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2. What are sinusoids ? Where are they found ?



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3. Can all the four chambers of the human heart experience systole simultaneously ?



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4. What is heart murmur ? Name atleast two diseases which may result in heart murmur.



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5. (i) What is meant by blood pressure ? Which instrument the doctor uses to measure it ?

(ii) What is the harmful effect of high blood pressure on our health ?



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6. (i) How is cigarette smoking harmful for one's heart ?

(ii) What is angina pectoris ?



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7. What is heart attack ? List atleast two possible causes of heart attack .



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**8.** What do you mean by arterial pulse ? Where can it be felt ? What is tachycardia ?



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**9.** Why does the left ventricle has a thicker wall than the right ventricle ? Explain.



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**10.** What is haemopoiesis ? List haemopoietic tissues of the body



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**11. (a)** In which groups of non-chordates would you find closed circulatory system ?

**(b)** Why is closed circulatory system advantageous ?



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**12.** Very briefly explain the meaning of following terms :

(i) Polycythemia

(ii) Erythrocytopenia

(iii) Leucocytosis

(iv) Leucopenia

(v) Haemopoiesis



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**13. (a)** Which leucocytes are the largest in size ? What is their major role ?

(b) Which leucocytes occur in maximum percentage in the blood ? What is their major role ?

(c ) Name the leucocytes which have coarse granules, S-shaped nucleus and take basic stain. What is their role ?



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**14.** As the erythrocyte develops, it loses the nucleus and many cell organelles and contains

homogeneous cytoplasm. What advantage it derives from such a situation ?



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**15.** What is erythropoiesis ? Where does it occur in foetus and after birth of young one ? Name the two B-complex vitamins which stimulate erythropoiesis.



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**16.** Rh factor plays a crucial role in child's birth born out of a marriage between  $Rh^-$  woman and a  $Rh^+$  man. Explain how ?



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**17.** In which ways blood plasma and serum differ from each other ?



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**18.** (a) What is the duration of one complete heart beat (cardiac cycle) ?

(b) When do the sounds 'lub' and 'dup' occur ?

(c) Name the pace maker of the heart.



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**19.** What is electrocardiogram (ECG) ? Name the instrument used to record ECG. What do five waves P, Q, R, S and T of ECG indicate ?



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**20.** What is tissue fluid ? How does it differ from blood ? Write its important functions.



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**21.** A cardiologist observed an enlarged QR wave in the ECG of a patient. What does it indicate ?



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## Practice Questions | Multiple Choice Questions

1. Thromboplastin is secreted by

- A. Platelets
- B. Lymphokines
- C. Helper T cells
- D. Mast cells

**Answer: A**



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

A. Malleus-anvil

B. SA node-Pacemaker

C. Leucocytes-lymphocytes

D. Haemophilia-blood cancer

**Answer: B**



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3. Which of the following substances, if introduced into the blood system, would cause coagulation of blood at the site of its introduction

A. prothrombin

B. fibrinogen

C. thromboplastin

D. heparin

**Answer: C**



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4. G-6-P dehydrogenase deficiency is associated with hemolysis of :

- A. leucocytes
- B. lymphocytes
- C. platelets
- D. erythrocytes

**Answer: A**



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**5. Heart of Heart is**

**Pace maker of the heart is**

A. SA node

B. AV node

C. bundle of His

D. purkinje fibres

**Answer: D**



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6. Heparin is synthesised in

A. liver

B. kidney

C. saliva

D. pancreas

**Answer: A**



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7. Which of the following is phagocytic ?

A. monocyte

B. R.B.C

C. eosinophil

D. basophil

**Answer: A**



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**8.** People living at sea level have around 5 million RBC per cubic millimetre of their blood whereas those living at an altitude of 5400

metres have around 8 million. This is because at high altitude.

A. people eat more nutritive food, therefore, more RBCs are formed.

B. people get pollution-free air to breathe and more oxygen is available.

C. atmospheric  $O_2$  level is less and hence more RBCs are needed to absorb the required amount of  $O_2$  to survive.

D. there is more UV radiation which enhances RBC production.

**Answer: C**



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

A. Octopus

B. Pheretima

C. Periplaneta

D. Hirudinaria

**Answer: C**



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**10. Antibodies in our body are complex**

A. glycoproteins

B. lipoproteins

C. steroids

D. prostaglandins

**Answer: A**



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**11. Rh factor is present in**

A. all vertebrates

B. all mammals

C. all reptiles

D. man and rhesus monkey only

**Answer: D**



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**12. Lymphoid tissue is found in**

A. thymus

B. tonsils

C. lymph nodes

D. all of these

**Answer: D**



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**13. Pacemaker is**

A. AV node

B. SA node

C. bundle of His

D. ventricle

**Answer: B**



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

A. haemophilia

B. haematuria

C. haematoma

D. sickle cell anaemia

**Answer: D**



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**15.** How many double circulations are normally completed by the human heart in one minute

A. eight

B. sixteen

C. seventy two

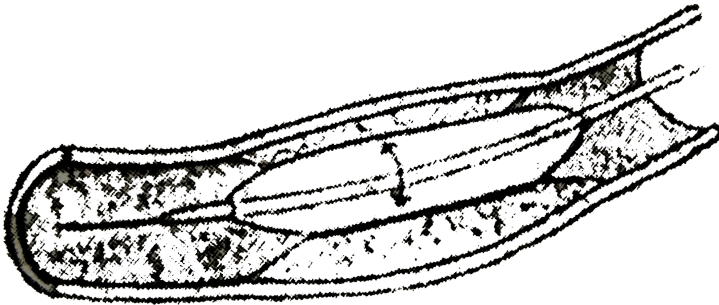
D. thirty six

**Answer: C**



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16. The given figure shows an angiogram of the coronary blood vessel. Which one of the following statements correctly describes, what is being done ?



- A. it is coronary artery which has a cancerous growth that is being removed.
- B. it is coronary artery which is blocked by a plaque and the same is being cracked.

C. it is coronary vein in which defective valves are being opened.

D. it is coronary vein blocked by a parasite (blood fluke) that is being removed.

**Answer: B**



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**17. Which one of the following statements is incorrect ?**

- A. the principle of counter current flow facilitates efficient respiration in gills of fishes
- B. the residual air in lungs slightly decreases the efficiency of respiration in mammals
- C. the presence of non-respiratory air sacs, increases the efficiency of respiration in birds.

D. in insects, circulating body fluid serve to distribute oxygen to tissues.

**Answer: D**



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**18.** If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence

A. serum globulins

B. fibrinogen in the plasma

C. haemocytes

D. serum albumins

**Answer: A**



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**19.** A drop of each of the following, is placed separately on four sides. 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

**Answer: A**



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20. Possible blood groups of children born to parents having A and AB groups are

A. O, A

B. A, B, AB

C. O, A, B

D. O, A, B, AB

**Answer: D**



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21. Which of the following is the correct statement about the circulatory system of cockroach

A. it is closed type of circulatory system

B. it is complicated type of circulatory system

C. it takes place without the participation of tissue

D. it has 13-chambered heart and in each segment one pair of ostia are present

**Answer: D**



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**22.** In ABC blood groups, how many phenotypes are found?

A. 6

B. 8

C. 1

D. 4

**Answer: D**



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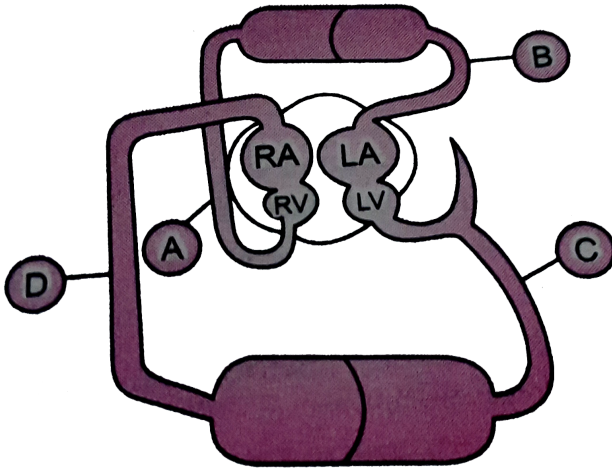
**23.** In the given diagram which blood vessel represents vena cava ?

RA-Right auricle

RV-Right ventricle

LA-Left auricle

# LV-Left ventricle



A. C

B. D

C. A

D. B

**Answer: B**



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24. Rh-ve person donated blood to Rh+ve person for the second time. Then

A. Rh-ve person will die

B. nothing happens to Rh+ve person

C. Rh +ve blood starts reacting to Rh -ve blood

D. Rh +ve person will be

**Answer: B**



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**25. Coronary heart disease is due to**

- A. Streptococci bacteria
- B. inflammation of pericardium
- C. weakening of the heart valves
- D. insufficient blood supply to the heart muscles

**Answer: D**



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**26.** Interferons are

- A. antibacterial protein
- B. anti-viral protein
- C. complex protein
- D. anti-clotting protein

**Answer: B**



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27. Which one is correct ?

A. Blood = plasma + RBC + WBC + blood

platelets

B. Plasma = blood - lymphocytes

C. Neuron = Cyton + dendrite + axon +

synapse

D. Lymph = plasma + RBC + WBC

**Answer: A**



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28. the largest RBCs are seen in

A. elephant

B. Whale

C. amphibia

D. man

**Answer: C**



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29. Maximum surface area of circulatory system is of

A. heart

B. capillaries

C. arterioles

D. veins

**Answer: B**



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**30.** Which one of the following blood vessels in mammals would normally carry the largest amount of urea

- A. Renal artery
- B. Hepatic vein
- C. Renal vein
- D. Hepatic portal vein

**Answer: B**



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31. Blood does not clot inside the blood vessels due to the presence of

A. Heparin

B. fibrinogen in the plasma

C. Vitamin K

D. Thrombin

**Answer: A**



**Watch Video Solution**

**32. Average life span of human RBC is**

A. 20 days

B. 120 days

C. 100 days

D. 150 days

**Answer: B**



**Watch Video Solution**

**33.** Heart of Heart is

Pace maker of the heart is

A. SA node

B. AV node

C. bundle of His

D. Purkinje's fibre

**Answer: A**



**Watch Video Solution**

**34.** Which of the following parts of heart first receives deoxygenated blood ?

A. Right ventricle

B. Left auricle

C. Right auricle

D. Left ventricle

**Answer: C**



**Watch Video Solution**



**35.** Renal portal system is absent in

A. Reptiles

B. Amphibian

C. Reptiles and amphibians

D. Birds

**Answer: D**



**Watch Video Solution**

**36.** The first heart sound is produced when

A. Semilunar valve shuts

B. Interventricular pressure decreases

C. Diastole begins

D. Bicuspid and tricuspid valves close  
quickly

**Answer: D**



**Watch Video Solution**

37. Which of the following situation will be fatal to second foetus ?

A. If  $Rh^+$  man marries  $Rh^+$  woman

B. If  $Rh^-$  man marries  $Rh^+$  woman

C. If  $Rh^+$  man marries  $Rh^-$  woman

D. If  $Rh^-$  man marries  $Rh^-$  woman

**Answer: C**



**Watch Video Solution**

**38.** 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

**Answer: D**



**Watch Video Solution**

**39.** Most active phagocytic white blood cells are

- A. Eosinophils and lymphocytes
- B. Neutrophils and monocytes
- C. Neutrophils and eosinophils
- D. Lymphocytes and macrophages

**Answer: B**



**Watch Video Solution**

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

- A. Stimulation of the sinoauricular node
- B. Pressure difference between the post caval and atrium
- C. Pushing open of the venous valves
- D. Suction pull

**Answer: B**



**Watch Video Solution**

**41.** Consider the following statement about biomedical technologies

A. During open heart surgery blood is circulated in the heart lung machine

B. Blockage in coronary arteries is removed by angiography

C. Computerised axial tomography (CAT) shows detailed internal structures as seen in a section of body

D. X-rays provides clear and detailed images of organs like prostate gland and lungs

**Answer: A**



**Watch Video Solution**

**42.** Which one of the following leucocytes transforms into macrophages

A. Eosinophil



B. Basophil

C. Monocyte

D. Lymphocyte

**Answer: C**



**Watch Video Solution**

**43.** The duration of cardiac cycle is

A. 0.8 sec

B.  $0.8\mu$  sec

C. 0.08 sec

D. 0.008 sec

**Answer: A**



**Watch Video Solution**

**44.** Number of leucocytes in decreasing order in human blood is

A. Eosinophils > Basophils >

Neutrophils

B. Basophils > Eosinophils >

Neutrophils

C. Neutrophils > Eosinophils >

Basophils

D. Eosinophils > Neutrophils >

Basophils

**Answer: C**



**Watch Video Solution**

**45.** In Frog anterior abdominal vein is formed by union of

A. Femoral vein

B. Sciatic vein

C. Renal vein

D. Pelvic vein

**Answer: D**



**Watch Video Solution**

**46.** In normal healthy individual percentage of adult and foetal haemoglobin , HbA: HbA<sub>2</sub>: HbF is

A. 96: 2: 2

B. 45: 45: 10

C. 50: 45: 5

D. 80: 10: 10

**Answer: A**



**Watch Video Solution**

47. Siderocyte is RBC having

A. Pappenheimer bodies

B. Russel bodies

C. Herring's bodies

D. Schuffner's dots

**Answer: A**



**Watch Video Solution**

**48.** Neutrophils promote adhesion of neutrophils to endothelium attract other neutrophils, monocytes and eosinophils and dilate capillaries by secreting

- A. Cytokines
- B. Leukotrienes
- C. Lymphokines
- D. Monokines

**Answer: A**



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49. In the resting person saturation of haemoglobin as blood leaves the tissue capillaries is approximately

A. 0.75

B. 0.4

C. 0.03

D. 0.46

**Answer: A**







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50. In the extrinsic clotting pathway the active factor VII activates factors

A. X and XI

B. IX and XI

C. IX and X

D. XI and XII

**Answer: C**



Watch Video Solution

51. If the heart sound recording and ECG recordings are superimposed then the first heart sound would occur

- A. At the P wave
- B. Just after the P wave
- C. Just before the QRS complex
- D. Just after the QRS complex

**Answer: D**



**Watch Video Solution**

52. The deposition of lipids on the wall lining the lumen of large and medium sized arteries is referred to as

- A. Deep vein thrombosis
- B. Stokes-Adams Syndrome
- C. Osteoporosis
- D. Atherosclerosis

**Answer: D**



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53. Two chambered heart is a feature of

A. amphibians

B. fishes

C. reptiles

D. birds

**Answer: B**



Watch Video Solution

54. Which prevents conversion of prothrombin to thrombin in an undamaged blood vessel ?

- A. thromboplastin
- B. fibrinogen in the plasma
- C. heparin
- D. calcium ions

**Answer: C**



**Watch Video Solution**

55. Erythropoiesis starts in

A. Kidney

B. Liver

C. Spleen

D. Red bone marrow

**Answer:**



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56. Mitral valve is present between

A. Right atrium and right ventricle

B. Left atrium and left ventricle

C. Right and left ventricle

D. Left ventricle and aorta

**Answer: B**



**Watch Video Solution**

**57. Heart of Cockroach is**

A. 13 chambered

B. 29 chambered

C. 9 chambered

D. 6 chambered

**Answer: A**



**Watch Video Solution**

**58.** Blood group agglutinin is

A. glycoprotein

B. phosphoprotein



C. haemoprotein

D. phospholipid

**Answer: A**



**Watch Video Solution**

**59.** In a standard ECG which one of the following alphabets is the correct representation of the respective activity of the human heart ?

A. P-depolarisation of the atria

B. R-repolarisation of ventricles

C. S-start of systole

D. T-end of diastole

**Answer: A**



**Watch Video Solution**

**60.** Compared to blood our lymph has

A. more RBCs and less WBCs

B. no plasma

C. plasma without proteins

D. more WBCs and no RBCs

**Answer: D**



**Watch Video Solution**

**61.** Globulins contained in human blood plasma are primarily involved in

A. clotting of blood

B. defence mechanisms of body

C. osomtic balance of body fluids

D. oxygen transport of blood

**Answer: B**



**Watch Video Solution**

**62.** Which of the following cells does not exhibit phagocytic activity ?

A. Monocytes

B. Neutrophil

C. Basophil

D. Macrophage

**Answer: C**



**Watch Video Solution**

**63.** One of the common symptoms observed in people infected with Dengue fever is

A. Significant decrease in RBC count

B. Significant decrease in WBC count

C. Significant decrease in platelets count

D. Significant increase in platelets count

**Answer: D**



**Watch Video Solution**

**64.** Which among the following is correct during each cardiac cycle ?

- A. The volume of blood pumped out by the Rt and Lt ventricles is same.
- B. The volume of blood pumped out by the Rt and Lt ventricles is different
- C. The volume of blood received by each atrium is different
- D. The volume of blood received by the aorta and pulmonary artery is different

**Answer: A**



**Watch Video Solution**

**65.** Cardiac activity could be moderated by the autonomous neural system. Tick the correct answer

A. The parasympathetic system stimulates heart rate and stroke volume

B. The sympathetic system stimulates heart rate and stroke volume

C. The parasympathetic system decreases the heart rate but increase stroke



volume

D. The sympathetic system decreases the heart rate but increase stroke volume

**Answer: B**



**Watch Video Solution**

**66.** Mark the pair of substances among the following which is essential for coagulation of blood.

A. Heparin and calcium ions

B. Calcium ions and platelet factors

C. Oxalates and citrates

D. Platelet factors and heparin

**Answer: B**



**Watch Video Solution**

**67.** ECG depicts the depolarisation and repolarisation process during the cardiac

cycle. In the ECG of a normal healthy individual one of the following waves is not represented.

- A. Depolarisation of atria
- B. Repolarisation of atria
- C. Depolarisation of ventricles
- D. Repolarisation of ventricles

**Answer: B**



**Watch Video Solution**

**68.** Which one of the following types of cells lack nucleus in humans ?

A. RBC

B. Neutrophils

C. Eosinophils

D. Monocytes

**Answer: A**



**Watch Video Solution**

69. Which one of the following blood cells is involved in antibody production ?

A. B-Lymphocytes

B. T-Lymphocytes

C. RBCs

D. Neutrophils

**Answer: A**



**Watch Video Solution**

70. The cardiac impulse is initiated and conducted further upto ventricle. The correct sequence of conduction of impulse is

- A. *SA*    *AV*    Purkinje    *AV*  
Node    Node    fiber    Bundle
- B. *SA*    Purkinje    *AV*    *AV*  
Node    fiber    Node    Bundle
- C. *SA*    *AV*    *AV*    Purkinje  
Node    Node    Bundle    fiber
- D. *SA*    Purkinje    *AV*    *AV*  
Node    fiber    Bundle    Node

**Answer: C**



**Watch Video Solution**

71. The cells involved in inflammatory reactions are

A. Basophils

B. Neutrophils

C. Eosinophils

D. Lymphocytes and macrophages

**Answer: A**



**Watch Video Solution**

72. The second heart sound (dubb) is associated with the closure of

- A. Tricuspid valve
- B. Semilunar valves
- C. Bicuspid valve
- D. Tricuspid and bicuspid valves.

**Answer: B**



**Watch Video Solution**



**73.** Which of the following correctly explains a phase/event in cardiac cycle in a standard electrocardiogram

A. QRS complex indicates artial contraction.

B. QRS complex indicates ventricular contraction.

C. Time between S and T represents artial systole.

D. P-wave indicates beginning of ventricular contraction.

**Answer: B**



**Watch Video Solution**

**74.** Which of the following statements is incorrect ?

A. A person of 'O' blood group has anti 'A' and anti 'B' antibodies in his blood plasma.

B. A person of 'B' blood group can't donate blood to a person of 'A' group.

C. Blood group is designated on the basis of the presence of antibodies in the blood plasma.

D. A person of AB blood group is universal recipient.

**Answer: C**



**Watch Video Solution**

75. What would be the cardiac output of a person having 72 heart beats per minute and a stroke volume of 50 mL ?

A. 360 mL

B. 3600 mL

C. 7200 mL

D. 5000 mL

**Answer: B**



**Watch Video Solution**

76. Match the terms given under Column 'A' with their functions given under Column 'B' and select the answer from the options given below



A. A-ii, B-I, C-iii, D-iv

B. A-iii, B-I, C-iv, D-ii

C. A-iii, B-I, C-ii, D-iv

D. A-ii, B-I, C-iii, D-iv

**Answer: B**



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**77.** Read the following statements and choose the correct option

Statement 1 : Atria receive blood from all parts of the body which subsequently flows to ventricles

Statement 2 : Action potential generated at sino-atrial node passes from atria to ventricles.

A. Action mentioned in Statement 1 is dependent on action mentioned in Statement 2

B. Action mentioned in Statement 2 is dependent on action mentioned in Statement 1

C. Action mentioned in Statement 1 and 2 are independent of each other.

D. Action mentioned in Statements 1 and 2 are synchronous

**Answer: B**



**Watch Video Solution**

**78.** Which of the following statement is true about RBCs in humans?

- A. They do not carry  $CO_2$  at all
- B. They carry about 20-25% of  $CO_2$
- C. They transport 99.5% of  $O_2$



D. They transport about 80%  $O_2$  only and rest 20% of it is transported in dissolved state in blood plasma

**Answer: B**



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**79.** If due to some injury the chordae tendineae 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 pulmonary artery will be reduced.
- B. The flow of blood into the aorta will be slowed down.
- C. The pace maker will stop functioning
- D. The blood will tend to flow back into the left-atrium

**Answer: A**



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**80.** Which two of the following changes (A-B) usually tend to occur in the plain dwellers when they move to high altitudes (3500 m or more )

(A) Increase in red blood cell size

(B) Increase in red blood cell production

( C) Increased breathing rate

(D) Increase in thrombocyte count

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. 1 and 4

**Answer: B**



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**81.** Given below are four statements (A-D) regarding human blood circulatory system

(A) Arteries are thick-walled and have narrow lumen as compared to veins

(B) Angina is acute chest pain when the blood circulation to the brain is reduced

(C) Persons with blood group AB can donate blood to any person with any blood group under ABO system

(D) Calcium ions play a very important role in blood clotting

A. 1 and 2

B. 1 and 4

C. 2 and 3

D. 3 and 4

**Answer: A**



82. The haemoglobin content per 100 ml of blood of normal healthy human adult is

- A. 12-16 g
- B. 25-30 g
- C. 17-20 g
- D. 5-11 g

**Answer: A**



**83.** When red blood corpuscles containing both A and B antigens are mixed with your blood serum, they agglutinate. Hence your blood group is.....type.

A. A

B. B

C. AB

D. O

**Answer: D**



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84. If the systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg, the pulse pressure is \_\_\_\_\_

A.  $120 - 80 = 40$  mm Hg

B.  $120 / 80 = 1.5$  mm Hg

C.  $120 \times 80 = 9600$  mm Hg

D.  $120 + 80 = 200$  mm Hg

**Answer: A**





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**85.** The blood does not clot inside the body because of

A. oxygenation of blood

B. movement of blood

C. heparin in blood

D. absence of fibrinogen in blood

**Answer: C**



86. Red cell count is carried out by

- A. haemocytometer
- B. haemoglobinometer
- C. sphygmomanometer
- D. electrocardiogram

**Answer: A**



**87.** Rh factor can produce disease

A. AIDS

B. Turner's syndrome

C. Erythroblastosis foetalis

D. Sickle cell anaemia

**Answer: C**



**Watch Video Solution**

**88.** Heparin is produced by

A. kidney cells

B. blood cells

C. bone marrow

D. liver cells

**Answer: D**



**Watch Video Solution**

**89.** The cardiac cycle in normal subject is about

A. 0.5 sec.

B. 0.8 sec.

C. 1.0 sec.

D. 1.2 sec.

**Answer: B**



**Watch Video Solution**

**90.** Pulmonary vein carries

A. deoxygenated blood

B. oxygenated blood

C. mixed blood

D. none of these

**Answer: B**



**Watch Video Solution**

91. Blood clotting corpuscle is

A. thrombocyte

B. Monocytes

C. lymphocyte

D. erythrocyte

**Answer: A**



**Watch Video Solution**

92. In the clotting mechanism pathway , thrombin activates factors

A. XI, VII, V

B. XI, IX,X

C. VIII, X, V

D. IX, VIII,X

**Answer: A**



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93. Which statement is incorrect ?

A. mast cells and basophils secrete histamine and heparin

B. mast cells are long lived, basophils are short lived

C. mast cells are smaller than basophils with a bilobed nucleus

D. mast cells are relatively sessile, basophils are mobile

**Answer: C**



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**94.** Aggregates of lymphoid tissue present in the distal portion of the small intestine are known as

- A. Villi
- B. Peyer's patches
- C. rugae
- D. choroid plexus

**Answer: B**



**Watch Video Solution**

**95.** Mature erythrocyte cannot utilise glucose because they lack

A. Golgi complex

B. enzymes

C. mitochondria

D. nucleus

**Answer: C**



**Watch Video Solution**

**96.** Bundle of His is a part of which one of the following organs in humans

A. brain

B. heart

C. kidney

D. pancreas

**Answer: B**



**Watch Video Solution**

**97.** Which one of the following proteins involved in the coagulation of blood?

A. albumin

B. secum amylase

C. globulin

D. fibrinogen

**Answer: D**



**Watch Video Solution**

**98.** 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

**Answer: B**



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**99.** 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 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

**Answer: D**



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**100.** Frogs differ from humans in possessing

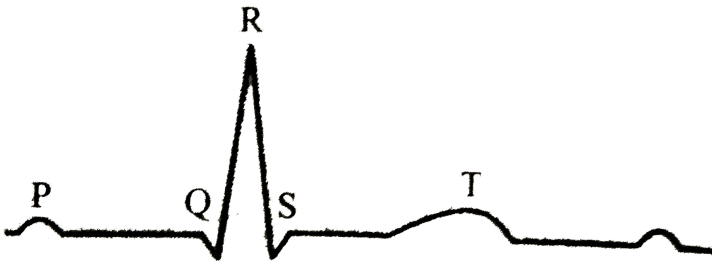
- A. paired cerebral hemispheres
- B. hepatic portal system
- C. nucleated red blood cells
- D. thyroid as well as parathyroid

**Answer: C**



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101. The given figure 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

**Answer: A**



**Watch Video Solution**

**102.** Lub sound produced by heart is caused by

A. ventricular diastole

B. ventricular systole

C. atrial diastole

D. atrial systole.

**Answer: B**



**Watch Video Solution**

**103.** If haemoglobin (Hb) of a normal individual and a sickle-cell anaemia patient are run in electrophoretic field, they will show

A. same mobilities

B. different mobilities

C. Hb of patient will not move at all

D. Hbs are immobile.

**Answer: B**



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**104.** 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

**Answer: C**



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**105.** A patient brought to a hospital with myocardial infraction is normally immediately given

A. Penicillin

B. Streptokinase

C. Cyclosporin-A

D. Statins

**Answer: B**



**Watch Video Solution**

**106.** People who have migrated from the plains to an area adjoining Rohtang pass about six months back

- A. have more RBCs and their haemoglobin has a lower binding affinity to  $O_2$ .
- B. are not physically fit to play games like football.
- C. suffer from altitude sickness with symptoms like nausea, fatigue etc.
- D. have the usual RBC count but their haemoglobin has very high binding affinity to  $O_2$ .

**Answer: A**





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



- A. initiation of the ventricular contraction
- B. beginning of the systole
- C. end of systole
- D. contraction of both the atria

**Answer: D**



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**108.** Figure shows schematic plan of blood circulation in humans with labels A to D, Identify the label and given its function /s



A. B-Pulmonary artery -Takes blood from

heart to lungs,  $PO_2 = 90$  mm Hg

B. C-Vena cava-Takes blood from body parts

to right auricle,  $PCO_2=45$  mm Hg

C. D-Dorsal aorta-Takes blood from heart to

body parts,  $PO_2 = 95$  mm Hg

D. A-Pulmonary vein -Takes impure blood

from body parts,  $PO_2 = 60$  mm Hg

**Answer: D**



**Watch Video Solution**

**109.** How do parasympathetic neural signals affect the working 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

**Answer: A**



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**110.** 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

**Answer: A**



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

A. Haemophilia-Blood cancer

B. SA-node-Pacemaker

C. Malleus-Anvil

D. Leucocytes-Lymphocytes

**Answer: B**



**Watch Video Solution**

**112.** 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  
of blood from atria

D. Semilunar valves close down after the  
blood flows into vessels from ventricles

**Answer: D**





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**113.** Blood pressure in the pulmonary artery is

- A. More than that in the carotid
- B. More than that in the pulmonary vein
- C. Less than that in the venae cavae
- D. Same as that in the aorta

**Answer: B**



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**114.** Serum differs from blood in

- A. lacking globulins
- B. lacking albumins
- C. lacking clotting factors
- D. lacking antibodies

**Answer: C**



**Watch Video Solution**

**115.** A decrease in blood pressure / volume will not cause the release of

A. atrial natriuretic factor

B. aldosterone

C. ADH

D. renin

**Answer: A**



**Watch Video Solution**

**116.** Adult human RBCs are enucleate. Which of the following statements (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)

**Answer: D**



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**117.** Which of the following statements is correct ?

A. The descending limb of loop of Henle is impermeable to water

B. The ascending limb of loop of Henle is permeable to water

C. The descending limb of loop of Henle is permeable to electrolytes

D. The ascending limb of loop of Henle is impermeable to water

**Answer: D**



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

<b>Column I</b>	<b>Column II</b>
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.  $A \quad B \quad C$   
 $iii \quad I \quad ii$

B.  $A \quad B \quad C$   
 $i \quad iii \quad ii$

C.  $A \quad B \quad C$   
 $i \quad ii \quad iii$

D.  $A \quad B \quad C$   
 $ii \quad i \quad iii$

**Answer: A**



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**119.** Which of the following gastric cells indirectly help in erythropoiesis ?

- A. Chief cells
- B. Mucous cells
- C. Goblet cells
- D. Parietal cells



**Answer: D**



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**120.** 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.  $A \quad B \quad C$   
 $iii \quad ii \quad i$

B.  $A \quad B \quad C$   
 $i \quad ii \quad iii$

C.  $A$   $B$   $C$   
 $i$   $iii$   $ii$

D.  $A$   $B$   $C$   
 $ii$   $iii$   $i$

**Answer: D**



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## Practice Questions II Assertion Reason Type Questions

1. Assertion. Poikilothermic animals do not have an adipose layer under the skin.

Reason . Poikilothermic animals use fat in metabolism during hibernation.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: b**



**Watch Video Solution**

2. Assertion. Lymphocytes arise from the stem cells present in the bone marrow and occur in the blood, lymph and connective tissues.

Reason. Lymphocytes migrate to bursal lymphoid tissue or to thymus and differentiate into B or T-cells.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: a**



**Watch Video Solution**

**3. Assertion.** The S-A node acts as pace maker.

**Reason.** The S-A node is located in the wall of the right atrium near the interatrial septum.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: c**



**Watch Video Solution**

4. Assertion. Prothrombin is essential for blood clotting .

Reason Prothrombin is synthesized in the liver in the presence of  $Ca^{++}$  .

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: c**



**Watch Video Solution**

5. Assertion. Peyer's patches represent an endocrine tissue.

Reason. Peyer's patches are located on the epithelium of colon.

A. If both A and R are true and R is the correct explantion of A.



B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: d**



**Watch Video Solution**

**6.** Assertion. Biconcave form of human RBCs is advantageous in gas exchange.

Reason. A biconcave disc has 20-30% more surface area than a sphere.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: a**



**Watch Video Solution**

7. Read the following statements and select the correct option

Statement 1 : Lymphatic capillaries are free and blind at one end

Statement 2 : Lymph does not flow in a circular manner.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: a**



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**8.** Assertion. Veins have valves which open away from the heart.

Reason. Veins distribute blood to the various parts of the body.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: D**



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**9. Assertion.** For a recipient to receive blood from a donor, the recipient's plasma must not have an antibody. Cause the donor's cells to agglutinate.

**Reason.** The possibility of blood clumping does not depend on anti A and anti B antibody and blood type.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: c**



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**10.** Assertion : Persons suffering from haemophilia fail to produce blood clotting factor . VIII.

Reason : Prothrombin producing platelets in such persons are found in very low concentration

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: b**







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**11. Assertion.** Smaller the organism, higher is the rate of metabolism per gram weight.

**Reasons.** The heart rate of six months old baby is much higher than that of person

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false.

**Answer: a**



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