# 6. TRANSPORT SYSTEM IN ANIMALS

**TEACHING TASK**

**Choose the correct answer**

**1.** Which vein brings clean blood from the lungs into the heart

A. Renal vein B. Pulmonary vein C. Venacava D. Hepatic vein

**Answer: B**

Solution: The pulmonary vein carries oxygenated (clean) blood from the lungs to the left atrium of the heart.

**2.** Which blood vessels does not carry carbondioxide

A. Pulmonary artery B. Venacava C. Hepatic vein D. Pulmonary vein

**Answer: D**

Solution: Pulmonary vein carries oxygen-rich blood from the lungs to the heart, so it has very little CO2.

**3.** Cells formed in bone marrow are

A. RBC B. WBC C. Both A&B D. None

**Answer: C**

Solution: Bone marrow produces red blood cells (RBCs) and white blood cells (WBCs) through haemopoiesis.

**4.** In the cardiac cycle, diastole is

A. The number of heart beats per minute

B. The relaxation period after contraction of the heart.

C. The forceful pumping of the heart

D. The contraction period after relaxation of th heart.

**Answer: B**

Solution: Diastole is the relaxation phase when the heart chambers fill with blood after contraction.

**5.** In a closed circulatory system, blood is completely enclosed within the

A. Sinuses B.Vessels C. Heart D.Skeleton

**Answer: B**

Solution: In a closed system, blood flows entirely within blood vessels (arteries, veins, capillaries).

**6.** Formation of blood corpuscles is called

A. Haemopoiesis B. Haemogenesis C. Lenopenia D. Microprogation

**Answer: A**

Solution: Haemopoiesis is the process of formation of blood corpuscles in bone marrow.

**7.** Which of the following is hypertension

A. 160/110 mm Hg B. 120/80 mm Hg C. 80/120 mm Hg D. both A & C

**Answer: A**

Solution: Hypertension is high blood pressure, generally above 140/90 mm Hg. 160/110 mm Hg qualifies as hypertension.

**8.** Which of the following is hypotension

A. 160/110 mm Hg B. 90/40 mm Hg C.110/70 mm Hg D.180/120 mm Hg

**Answer: B**

Solution: Hypotension is abnormally low blood pressure, generally below 90/60 mm Hg. 90/40 mm Hg fits this condition.

**9.** Agranulocytes are

A. Eosinophils & Basophils B. Lymphocytes & Monocytes

C. Lymphocytes & Eosinophils D. Basophils & Monocytes

**Answer: B**

Solution: Agranulocytes (a type of WBC) lack visible cytoplasmic granules and include lymphocytes and monocytes.

**10.** Nucleated biconvex RBC's are found in

A. Human B. Rat C. Frog D. Cat

**Answer: C**

Solution: Amphibians like frogs have nucleated RBCs, unlike mammals whose RBCs are anucleated.

**11.** Rh factor is present in

A. All Mammals B. All Vertabrates C. Human and Rhesus Monkey D. None

**Answer: C**

Solution: Rh factor is found in humans and Rhesus monkeys; named after the Rhesus monkey in which it was discovered.""

**12.** The possible blood group of children born to parents having A & AB groups are

A. A,B,AB & O B. A,B & O C. A,B & AB D.A,AB & O

**Answer: C**

Solution: Cross between A (genotypes IAIA or IAi) and AB (IAIB) can produce A, B, or AB blood groups — O is not possible.

**More than one answer**

¨ This section contains multiple choice questions. Each question has 4 choices (A), (B), (C),(D), out of which **ONE or MORE** is correct. Choose the correct options

**13.** What is the largest artery supplies the oxygenated blood to the different parts of the body

i. Aorta ii. Superior venacava iii. Systemic aorta

Answer: i and iii

Solution: The aorta (also called systemic aorta) is the main artery carrying oxygenated blood from the left ventricle to the body. Superior vena cava carries deoxygenated blood, so it's not correct here.

A. i & iii B. i & ii C. Only i D. None

**14.** The special antigen present in the blood group indicates

i. Rh positive ii. Rh negative iii. ' B ' Group iv.' A ' Group

A. i & ii B. i & iii C. ii & iv D. iii & iv

**Answer: B**

Solution: The Rh antigen (Rh factor) is present in Rh-positive blood, and the B antigen is present in the 'B' blood group. Hence, the correct combination is (i) Rh positive and (iii) 'B' group.

**Assertion and Reason :**

This section contains certain number of questions. Each question contains Statement

– 1 (Assertion) and Statement – 2 (Reason). Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct Choose the correct option.

**A: A and R are true and R explains A.**

**B: Aand R are true and R doesnot explain A.**

**C: A is true R is false.** **D: A & R are false.**

**15.** **A -** The liquid part of blood is called plasma.

**R -** Plasma is a colourless liquid.

**Answer: A**

Solution: Both assertion and reason are true. The liquid part of blood is called plasma, and plasma is indeed a pale yellow (not completely colourless) fluid. The reason explains the assertion.

**16.** **A -** During systole the heart contracts.

**R -** During diastole the heart contracts.

**Answer: C**

Solution: The assertion is true because systole is the phase when the heart contracts. The reason is false because diastole is the relaxation phase of the heart, not contraction.

**17.** **A -** BP is measured by the doctor by an instrument called Sphygmomanometer.

**R -** The normal person's BP is 120/80.

**Answer: A**

Solution: Both assertion and reason are true, and the reason explains the assertion. A sphygmomanometer is used to measure BP, and the normal reading for an adult is 120/80 mmHg.

**Match the following**

¨ This section contains Matrix-Match Type questions. Each question contains statements given in two columns which have to be matched. Statements (A, B, C, D) in **Column–I** have to be matched with statments (p, q, r, s) in **Column–II**. The answers to these questions have to be appropriately bubbled as illustrated in the following example. If the correct matches are A-p,A-s,B-r,B-r,C-p,C-q and D-s,then the correct bubbled 4*4 matrix should be as follows:

**18.**

| | | |
|---|---|---|
| 1. Acidophils | ( ) | a) Microscopic Police men |
| 2. Basophils | ( ) | b) Development of immunity |
| 3. Neutrophils | ( ) | c) Phagocytic in nature |
| 4. Lymphocytes | ( ) | d) Destroy toxins |

A) 1-b 2-d 3-a 4-c B) 1-a 2-c 3-b 4-d

C) 1-d 2-c 3-a 4-b D) 1-c 2-d 3-a 4-b

**Answer: D**

Solution:"1 – c $\rightarrow$ Acidophils are phagocytic in nature."2 – d $\rightarrow$Basophils destroy toxins."3 – a $\rightarrow$ Neutrophils act as microscopic policemen."4 – b $\rightarrow$Lymphocytes are involved in the development of immunity.

**19.**

| | | |
|---|---|---|
| 1. Heparin | ( ) | a) Circular and Biconcave |
| 2. Globulin | ( ) | b) Helps in clotting of blood |
| 3. Fibronogen | ( ) | c) Prevents clotting of blood |
| 4. Erythrocytes | ( ) | d) Defence mechanism |

A) 1-b 2-d 3-a 4-c B) 1-a 2-c 3-b 4-d

C) 1-d 2-c 3-a 4-b D) 1-c 2-d 3-b 4-a

**Answer: D**

Solution:"1 – c → Heparin prevents clotting of blood."2 – d → Globulin is part of the defence mechanism."3 – b → Fibrinogen helps in clotting of blood."4 – a → Erythrocytes are circular and biconcave.

**Comprehensive type**

¨ This section contains paragraph. Based upon each paragraph multiple choice questions have to be answered. Each question has 4 choices (A) , (B) ,(C ) and (D) out of which **ONLY ONE i**s correct. Choose the correct option.

**20.** Arterioles are small arteries that deliver blood to capillaries. Arteries also have smooth muscles on thier walls. Capillaries were discovered by Malphigi in 1661. A capillary has no muscular wall. It is made up of a single layer of endothelial cells. Veins have less elastic tissues and smooth muslces. Pulmonary veins carry oxygenated blood from lungs to heart. The wall of the vein is collapsible. Vasa vasarum is network of small blood vessels that supply blood to large blood vessels

1. Capillaries were discovered by

A) William Harvey B) Malphigi C) Louis pasteur D) Leeuwen hoek

**Answer: B**

Solution: Capillaries were discovered by Marcello Malpighi in 1661.

2. Which of the following collect deoxygenated blood from all the body parts

A) Arteries B) Veins C) Capillaries D) None

**Answer: B**

Solution: Veins collect deoxygenated blood from all parts of the body and return it to the heart.

3. Which of the following Blood vessel is collapsible

A) Veins B) Arteries C) Both A & B D) None

**Answer: A**

Solution: Veins have thin, collapsible walls, unlike arteries which are thick and elastic.

4. Which of the following blood vessels supply blood to the large blood vessels

A) Vasa Vasorum B) Capillaries C) Veins D) Both A & B

**Answer: A**

Solution: Vasa vasorum supplies blood to the walls of large blood vessels.

5. Which of the following blood vessels carries oxygenated blood to all the parts of the body except to lungs

A) Veins B) Capillaries C) Both A & B D) Arteries

**Answer: D**

Solution: Arteries carry oxygenated blood from the heart to all parts of the body except the lungs.

**LEARNER'S TASK**

**Choose the correct answer**

**1.** Large organisms need transport systems in their bodies to supply.

A) Food B) Oxygen C) Water D) All

**Answer: D**

Solution: Large organisms need food, oxygen, and water to be supplied to all cells, which is why they require a transport system in the body.

**2.** What are needed for the transport of substances in plants and animals

A) special tissues and organs B) special tissues

C) special organs D) none

**Answer: A**

Solution: Transport of substances in plants and animals requires both special tissues and special organs for effective movement of materials.

**3.** The liquid part of blood is called

A) plasma B) serum C) lymph D) water

**Answer: A**

Solution: The liquid part of blood is called plasma, which suspends blood cells and transports nutrients, hormones, and wastes.““4.

**4.** Plasma consists how much percentage of water?

A) 60% B) 70% C) 80% D) 90%

**Answer: D**

Solution: Plasma is about 90% water, which helps in transporting substances and maintaining blood volume.

**5.** Plasma consists of dissolved substances like

A) proteins B) digested food C) Salt and waste products D) all

**Answer: D**

Solution: Plasma contains proteins, digested food, salts, and waste products dissolved in it.

**6.** Red blood cells are also called as

A) erthrocytes B) leucocytes C) platelets D) A and B

**Answer: A**

Solution: Red blood cells are called erythrocytes; white blood cells are leucocytes, and platelets are thrombocytes.

**7.** RBC is red due to the precence of

A) haemoglobin B) chlorophyll C) A and B D) none

**Answer: A**

Solution: RBCs are red due to the presence of haemoglobin, which binds oxygen and gives the red colour.

**8.** Life span of RBC is

A) 10-12 days B) 12-14 days C) 12-13 days D) 120 days

**Answer: D**

Solution: The average lifespan of RBCs is about 120 days in the human body.

**9.** Which blood cellsplays a major role in clotting of blood

A) RBC B) WBC C) blood platelets D) none

**Answer: C**

Solution: Blood platelets (thrombocytes) play the major role in blood clotting.

**10.** Which blood vessels carry blood from heart to various parts of body

A) arteries B) veins C) capillaries D) A and B

**Answer: A**

Solution: Arteries carry blood from the heart to various parts of the body, while veins return blood to the heart.

**11.** Which blood vessel collects deoxygenated blood from the upper parts of the body

A) superior vera cava B) inferior vena cava

C) pulmorany vein D) pulmonary aorta

**Answer: A**

Solution: The superior vena cava collects deoxygenated blood from the upper parts of the body and brings it to the heart.

**12.** Which valve is the opening between the right auricle and the right ventricle.

A)tricuspid valve B) bicuspid valve

C) aorticsemilunar valve D) pulmonarysemilunar valve

**Answer: A**

Solution: The tricuspid valve is located between the right auricle (atrium) and the right ventricle, allowing blood flow in one direction.

**13.** What is the normal Blood Pressure

A) 100/80 B) 120/80 C) 80/120 D) 180/120

**Answer: B**

Solution: The normal blood pressure for a healthy adult is about 120/80 mmHg.

**14.** Which blood group is called as universal donar.

A) A B) B C) AB D) O

**Answer: D**

Solution: Blood group O is called the universal donor because it can be given to any other blood group in emergencies.

**15.** Which blood group is called as universal recipient

A) A B) B C) AB D) O

**Answer: C**

Solution: Blood group AB is the universal recipient as it can receive blood from all groups without reaction.

**16.** The instrument used for measuring B.P is

A)Manometer B)Sphygmomanometer C) Barometer D) Potentiometer

**Answer: B**

Solution: Blood pressure is measured using an instrument called the sphygmomanometer.

**17.** Which vein brings clean blood from the lungs to the heart

A) Renal vein B) Pulmonary vein C) Vena Cava D) Renal vein

**Answer: B**

Solution: The pulmonary vein brings oxygenated (clean) blood from the lungs to the heart.

**18.** Which blood vessel does not carry any carbondioxide

A) Pulmonary artery B) Vena Cava C) Hepatic Vein D) Pulmonary Vein

**Answer: B**

Solution: The pulmonary vein does not carry carbon dioxide; it carries oxygen-rich blood from the lungs.

**19.** The number of erythocytes in blood is million per cubic millimetre

A) 3.5 - 4.5 B) 4.5 -5.5 C) 6.5-7.5 D) 1.5-2.5

**Answer: B**

Solution: The normal range of red blood cells (erythrocytes) in human blood is 4.5–5.5 million per cubic millimetre. This range ensures adequate oxygen transport to body tissues.

**ANSWER THE QUESTIONS**

**20.** The liquid connective tissue A circulates in our body continuously without stopping.The tissue contains a pigment B which imparts it colour C. The tissue A consists of four components D ,E, F, G. The component D fights infections and protect us from diseases. The component E helps us in clotting of tissue A, if a person gets cut. The component F is a liquid which consists of mainly water with many substances dissolved in it and component G carries oxygen from the lungs to all the parts of the body.

a. What is tissue A, pigment B and colour C

b. Name D,E,F & G.

c. Name one substance which is transported by tissue A in the human body.

d. Which two components of tissues A are the cells without nucleus.

**Answer:**"Tissue A – Blood"Pigment B – Haemoglobin"Colour C – Red

**21.** The Human body has organ A which acts as a double pump. The oxygenated blood coming from the lungs through a blood vessel B enters the upper left chamber C of the double pump. when chamber C contracts , then blood goes into the lower left chamber D. The contraction of chamber D forces the blood to go into blood vessel E which supplies oxygenated blood to all the organs of the body ( except the lungs ) . The deoxygenated blood coming out of the body organs is taken by a blood vessel F to the right upper chamber G of pumping organ.Contraction of chamber G forces deoxygenated blood into right lower chamber H. And finally contraction of H sends the deoxygenaed blood into lungs through a blood vessel I.

a. What is organ A b. Name the blood vessel B, E,F,I.

c. What are chambers C & D. d. What are chambers G & H.

D – White Blood Cells (WBC)"E – Platelets"F – Plasma"G – Red Blood Cells (RBC)

**Answer: Heart**

b) Answer:"B – Pulmonary Vein"E – Aorta"F – Vena Cava"I – Pulmonary Artery""c) Answer:"C – Left Atrium"D – Left Ventricle""d) Answer:"G – Right Atrium"H – Right Ventricle

**More than one answer**

¨ This section contains multiple choice questions. Each question has 4 choices (A), (B), (C),(D),out of which **ONE or MORE** is correct. Choose the correct options

**22.** Identify the correct statements from the following

i. The normal B.P is 120/180. ii. RBC helps in transporting oxygen

iii. white blood cells helps in protection of the body.

iv. Function of platelets is transport of oxygen.

A) Only A B) A,B,C are correct C) iv only D) None

**Answer: D**

Solution:““i is wrong – normal BP is 120/80 mm Hg, not 120/180.““ii is correct – RBCs carry oxygen via haemoglobin.““iii is correct – WBCs fight infections.““iv is wrong – Platelets help in clotting, not oxygen transport.“Since not all are correct, none of the given option combinations match; correct answer is D (None).

**23.** Find out the incorrect statement from the following

i.The instrument used to measure B.P is sphygmomanometer

ii.Blood group O is universal acceptor

iii. Antibodies are secreted by R.B.C iv.Platelets helps in Blood clotting

A) i&iv B) ii&iii C) iii&iv D) i&iv

**Answer: B**

Solution:““i is correct – BP is measured by sphygmomanometer.““ii is incorrect – Blood group O is universal donor, not acceptor.““iii is incorrect – Antibodies are secreted by lymphocytes (a type of WBC), not RBC.““iv is correct – Platelets help in blood clotting.“Thus, ii and iii are incorrect ? option B.““

**Assertion and Reason :**

¨ This section contains certain number of questions. Each question contains Statement – 1 (Assertion) and Statement – 2 (Reason). Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct. Choose the correct option.

**A: A and R are true and R explains A.**

**B: Aand R are true and R doesnot explain A.**

**C: A is true R is false. D: A & R are false.**

**24.** **A -** Veins carry blood from body parts towards the heart.

**R -** Pulmonary veins only carry oxygenated blood.

**Answer: A**

Solution: Both assertion and reason are true and reason is the correct explanation of assertion. Veins carry blood towards the heart; pulmonary veins specifically carry oxygenated blood from lungs to heart.

**25**. **A -** Red blood cells live for 120 days in the blood.

**R -** Old red blood cells are destroyed mostly in spleen and liver.

**Answer: A**

Solution:Both assertion and reason are true and reason is the correct explanation of assertion. RBCs live ~120 days and are destroyed mainly in spleen and liver.

**26.** **A -** Red blood cells are also called Erythrocytes.

**R -**The production of RBC is called Erythropoiesis.

**Answer:**

A“Solution: Both assertion and reason are true and reason is the correct explanation of assertion. RBCs are erythrocytes; their production is erythropoiesis.

**Match the following :**

¨ This section contains Matrix-Match Type questions. Each question contains statements given in two columns which have to be matched. Statements (A, B, C, D) in **Column–I** have to be matched with statements (p, q, r, s) in **Column–II**. The answers to these questions have to be appropriately bubbled as illustrated in the following example. If the correct matches are A-p,A-s,B-r,B-r,C-p,C-q and D-s,then the correct bubbled 4*4 matrix should be as follows:

**27.** 1. Tricuspid valve ( ) a) Left auricle and left ventricle
2. Bicuspid valve ( ) b) Right ventricle into pulmonary artery
3. Aortic semilunar valves ( ) c) Right auricle and right ventricle
4. Pulmonary semilunar valves( ) d) Left ventricle and Aorta
A) 1-b 2-d 3-a 4-c B) 1-c 2-a 3-d 4-b
C) 1-d 2-c 3-b 4-a D) 1-c 2-d 3-a 4-b

**Answer: B**

Solution: 1 --> c (Tricuspid valve – between right auricle & right ventricle)
2 -->a (Bicuspid valve – between left auricle & left ventricle)
3 --> d (Aortic semilunar valve – between left ventricle & aorta)
4 -->b (Pulmonary semilunar valve – between right ventricle & pulmonary artery)

**Comprehensive type**

¨ This section contains paragraph. Based upon each paragraph multiple choice questions have to be answered. Each question has 4 choices (A) , (B) ,(C ) and (D) out of which **ONLY ONE i**s correct. Choose the correct option.

**28.** The opening between atria and ventricles are guarded by valve. The valve present on the right Auriculo ventricular septum is called Tricuspid valve. The valve present on the left auriculo ventricular septum is referred as Bicuspid valve or mitral valve.The valve present at the region of pulmonary aorta are calls pulmonary valves. A major blood vessels originates from left ventricle is systemic aorta.The valves present at the region of systemic aorta are called Systemic valves.

1. The location of Tricuspid valve is at
A. Right atria B. Right vertricle
C. Right auriculo-vertricular septum D. None

**Answer: C**

Solution: Tricuspid valve is at right auriculo-ventricular septum.

2. The openings between atria and vertricles are guarded by.
A. Valves B. septum C. both a&b D. none

**Answer: A**

Solution: The openings are guarded by valves.

3. The valves present at the Junction of right vertricles pulmonary aorta is
A. pulmonary valves B. Mitral valve C. Tricuspid valve D. Both b &c

**Answer: A**

Solution: Pulmonary valves are at the junction of right ventricle & pulmonary aorta.

4. Bicuspid valve is also refered as
A. Tricuspid valve B. Aortic valve C. Mitralvalve D. systemic valve

**Answer: C**

Solution: Bicuspid valve is also called Mitral valve.

5. The major function of valve is

A. prevents back ward flow of blood is heart

B. Makes the blood to reach different organs

C. Allows the blood to reach the anterior part of the body
D. None

**Answer: A**

Solution: The major function of valves is to prevent the backward flow of blood in the heart, ensuring unidirectional flow during contraction and relaxation of chambers.

**Single answer questions:**

**1.** Pulmonary artery differs from pulmonary vein in having **(CBSE 2000)**

A. Thick walls B.Thin walls C. Valves D. Both B & C

**Answer: A**

Solution: Pulmonary artery has thick muscular walls to withstand higher pressure from the right ventricle, whereas pulmonary vein has thinner walls.

**2.** When the right ventricle contracts , the blood goes into **(CBSE PMT 1992)**

A. Aorta B. Brain C. Pulmonary artery D.None

**Answer: C**

Solution: When the right ventricle contracts, blood is pumped into the pulmonary artery, which carries it to the lungs for oxygenation.

**3.** Artery are best defined as the vessels which **(AIPMT 2011)**

A. Supply oxygenated blood to different organs
B. Break up into cappilaries which reunite to form a vein
C. Break up into capillaries which reunite to form a artery
D. Carry blood from one visceral organ to another visceral organ

**Answer: B**

Solution: Arteries are best defined as blood vessels that break up into capillaries which reunite to form a vein.

**4.** All veins have deoxygenated blood except **(AIIMS 2001)**

A. Renal vein B. Hepatic vein C.Hepatic portal vein D.Pulmonary vein

**Answer: D**

Solution: Pulmonary vein is the only vein that carries oxygenated blood, transporting it from the lungs to the left auricle.

**5.** Which blood vessel brings oxygenated blood to left auricle **(AFMC 2001)**

A.Pre caval vein B.post caval vein C.Pulmonary vein D. Pulmonary artery

**Answer: C**

Solution: Pulmonary vein brings oxygenated blood from the lungs to the left auricle of the heart.