

CHAPTER 5 - A REPRESENTATIVE STUDY OF MAMMALS

(Blue Print – 1 X 1 = 1 and 3 X 2 = 6 Total Marks : 7)

PART - A

1. Select important characteristic features of mammals

i) four-chambered heart ii) fore-limbs and hind limbs iii) milk-producing glands iv) post anal tail

Answer: iii) milk-producing glands

2. Carnivorous animals use these teeth to tear flesh.

i) incisors ii) canines iii) premolars iv) molars

Answer: ii) canines

3. The Henle's loop of nephron is mainly responsible for reabsorption of water in the kidney. Which of the following has a long loop of Henle in its nephrons to conserve water?

i) polar bear ii) camel iii) frog iv) whale

Answer: ii) camel

4. Which blood cells of mammals are concerned with immunity?

i) Young Erythrocytes ii) Leucocytes iii) Thrombocytes iv) Matured Erythrocytes

Answer: ii) Leucocytes

5. You were given two unlabelled slides with blood smears of an amphibian and a mammal. You would differentiate the blood samples by observing the _____ .

i) colour ii) nature of RBC's iii) nature of WBC's iv) contents of plasma

Answer: ii) nature of RBC's

6. For the digestion of cellulose, an enzyme called cellulase is required. Some mammals lodge cellulase producing bacteria in their digestive system by offering them food and shelter. These mammals are mostly _____. i) Herbivores ii) Carnivores iii) Omnivores iv) Sanguivores

Answer: i) Herbivores

7. Forelimbs of mammals have a common basic structure or pattern, but are different in their usage/ function in different animals. They can be called _____ .

i) Homologous organs ii) Analogous organs iii) Vestigial organs iv) Rudimentary organs

Answer: i) Homologous organs

8. Sensitive whiskers are found in _____.

i) Bat ii) Elephant iii) Deer iv) Cat

Answer: iv) Cat

9. The tusks of elephants are modified _____.

Answer: Canines

10. Pick out an animal which has a four-chambered stomach.

i) Elephant ii) Dolphin iii) Deer iv) Kangaroo

Answer: iii) Deer

11. Normal body temperature of man is _____.

i) 98.4 – 98.6 °F ii) 96.6 – 96.8 °F iii) 94.4 – 98.6 °F iv) 98.4 – 99.6 °F

Answer: i) 98.4 – 98.6 °F

12. Mitral valve is found between _____.

i) Right auricle and right ventricle ii) Left auricle and left ventricle

iii) Right ventricle and pulmonary artery iv) Left ventricle and aorta

Answer: ii) Left auricle and left ventricle

13. Assertion (A) : Mammalian heart is called myogenic heart.

Reason (R) : Heartbeat is regulated by a specialized muscle bundle (pacemaker) in mammals.

i) Both 'A' and 'R' are true and 'R' explains 'A'. ii) Both 'A' and 'R' are true but 'R' doesn't explain 'A'.

iii) 'A' is true but 'R' is false. iv) A is false but 'R' is true.

Answer: i) Both 'A' and 'R' are true and 'R' explains 'A'.

14. One of the following groups contains a non-mammalian animal. Pick up the group.

i) dolphin, walrus, porcupine, rabbit, bat ii) elephant, pig, horse, donkey, monkey

iii) antelope, deer, cow, buffalo, black buck iv) dog, cat, crocodile, lion, tiger

Answer: iv) dog, cat, crocodile, lion, tiger

15. The epidermis of mammals contains _____ .

i) hair, bristles, quills ii) hair, nails, claws iii) hair, bristles, horns iv) hair, nails, scales

Answer: i) hair, bristles, quills

16. Based on relationship, fill up:

Whale: Flippers:

Bat : _____

Answer: Bat : **Wing - Patagium**

17. Fill in the blank.

RBC: Carrier of oxygen

WBC: _____

Answer: WBC: **Immunity**

18. Based on modifications, make the pairs:

Incisor: tusks of elephant;

_____ : quills of porcupine

Answer: **Epidermal hair** : quills of porcupine

PART - B

19. Mention the two unique characteristics of mammals.

Answer: 1. Epidermal Hair
2. Milk producing glands

20. Give two examples each: (i) ruminating mammals (ii) marine mammals.

Answer: (i) Ruminating mammals – **Goats and Deer**
(ii) Marine mammals – **Whale and Dolphin**

21. What type of dentition is seen in mammals? What are elephant tusks?

Answer: 1. Mammals have **heterodont dentition** with different types of teeth that are highly specialized to match specific eating habits. For example, the carnivorous animals have canine teeth to tearing flesh.

2. In **elephants**, the **incisors** are modified into **tusks** and are used in **defence**.

22. Mention any four adaptations seen in the camel so that it can live successfully in deserts.

Answer:

1. The **skin** of the camel is **doubly thick**.
2. The skin contains **water-storing osmotic cells** to conserve water, as they live in deserts.
3. They have **thick bushy eyebrows** covering the eyes to protect their eyes from sand storms.
4. Their **nostrils can be closed** during desert storms to prevent the entry of sand particles.

23. What is echo location? Give an example.

Answer: The nocturnal bat can fly without crashing into things and still capture insects by echo location. As a bat flies, it emits a rapid series of extremely high pitched clicking sounds. The sound waves bounce off objects or flying insects and the bat hears the echo.

24. Mention the various valves and their location in the human heart.

Answer:

Name of the valve	Location
1. Tricuspid valve	It is found in the right auriculo-ventricular aperture.
2. Bicuspid valve or mitral valve	It is found in the left auriculo ventricular aperture.
3. Semi-lunar valve	It is found at the base of the pulmonary artery.
4. Aortic valve	It is found at the base of the aorta.

25. Write any four differences between arteries and veins in mammals.

Answer:

No.	Arteries	Veins
1.	Arteries carry the blood from the heart to different parts of the body.	The veins carry the blood from different parts of the body to the heart .
2.	All the arteries carry oxygenated blood except pulmonary artery which carries deoxygenated blood.	All veins carry deoxygenated blood except the pulmonary vein which carries oxygenated blood.
3.	Arteries are thick walled .	Veins are thin walled .
4.	Arteries are mostly deeply situated .	Veins are mostly superficially situated .

26. Name the three important blood proteins seen in plasma. Add a note on their functions.

Answer:

No.	Blood proteins seen in plasma	Function
1.	Globulin	For immunity
2.	Fibrinogen	For blood clotting
3.	Albumin	For water balance

27. Which blood cells are without nuclei? What is the advantage of this condition?

Answer: **Red blood cells** are without nuclei.

The advantage of Non-Nucleated condition of RBCs.

RBCs contain the red pigments haemoglobin which helps in carrying oxygen throughout the body.

As an adaptation to accommodate greater amount of Haemoglobin, RBCs do not have nucleus.

28. Name the protein and the blood-cells responsible for the clotting of blood.

Answer: 1. The protein responsible for the clotting of blood is **Fibrinogen**.

2. The blood-cells responsible for the clotting of blood is **Blood Platelets – Thrombocytes**

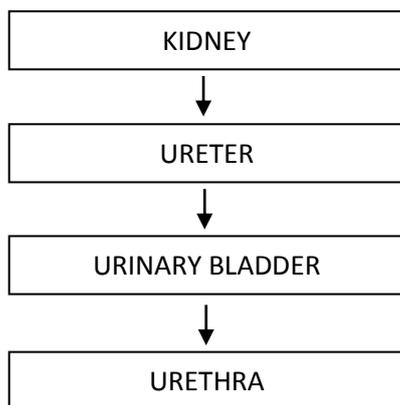
29. i) What are the structural and functional units of kidney?

ii) Arrange the organs of the human excretory system in the correct order, based on the passage of urine.

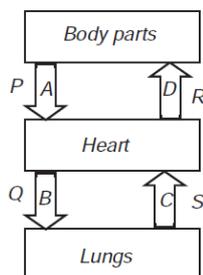
Ureter, Urethra, Kidney, Urinary bladder

Answer: i. **Nephrons** are the structural and functional units of kidney?

ii. The correct order of Human excretory system based on the passage of urine.



30. Observe the following flow-chart depicting blood-circulation in mammals.



1. Pick out the correct blood vessels A,B,C,D from the following:

i) Pulmonary veins ii) Venacava iii) Pulmonary artery iv) Aorta

2. Among the P,Q,R and S samples, identify the correct match from the following

a) P & Q = Oxygenated and R& S = Deoxygenated b) P & Q = Deoxygenated and R& S = oxygenated

c) All are Oxygenated d) All are Deoxygenated

Answer:

1. A. Venacava

B. Pulmonary artery

C. Pulmonary vein

D. Aorta

2. b) P & Q = Deoxygenated and R & S = oxygenated

31. Study the following passage:

Most of the vertebrates have jaws with teeth. The mode of arrangement of teeth on the jaws is called dentition. The various types of teeth seen in mammals are incisors(I) canines (C) premolars (P) and molars (M). They are used for biting , tearing, chewing and grinding respectively. Canines, the tearing teeth are well-developed in carnivores and ill-developed or absent in herbivores.

Now answer the following questions:

- i) In frogs, all the teeth in the upper jaw look alike, whereas in human beings they are different. The type of dentition in man can be called_____. a) Homodont b) Isodont c) Heterodont d) Acrodont
 ii) The dental formula of a mammal is written as ICPM =2023/1023. The teeth missing in it are _____.
 a) incisors b) canines c) premolars d) molars.

Answer: i. c) Heterodont
 ii. b) canines

32. Fill up the empty boxes with suitable answers with respect to the valves of a mammalian heart.

Valve(s)	Location	Function
Bicuspid valve or Mitral valve		Prevents the backward flow of blood from left ventricle to left auricle
	At the right auricular ventricular aperture	Regulates the flow of blood from right auricle to right ventricle
Aortic valve	At the base of Aorta	
Semi-lunar valve		Regulates the flow of blood from right ventricle to pulmonary artery

Answer:

Valve(s)	Location	Function
Bicuspid valve or Mitral valve	<u>At the left auricular ventricular aperture</u>	Prevents the backward flow of blood from left ventricle to left auricle
<u>Tricuspid valve</u>	At the right auricular ventricular aperture	Regulates the flow of blood from right auricle to right ventricle
Aortic valve	At the base of Aorta	<u>It regulates the flow of blood from the left ventricle into the aorta.</u>
Semi-lunar valve	<u>At the base of the pulmonary artery.</u>	Regulates the flow of blood from right ventricle to pulmonary artery

33. Any change in the lifestyle, the food habits and the body form of an organism in order to make it comfortable in the environment / habitat, is called adaptation. Identify the suitable adaptation given below against each mammal.

- i) conservation of body heat in large marine mammals like whale (Jaws are modified into baleen plates / Forelimbs are modified into flippers / Fat is deposited in subcutaneous tissue.)
 ii) Locating food source by bats-(Forelimbs are modified into wings / Hanging upside down using legs / Production of sounds and detection of the echo)

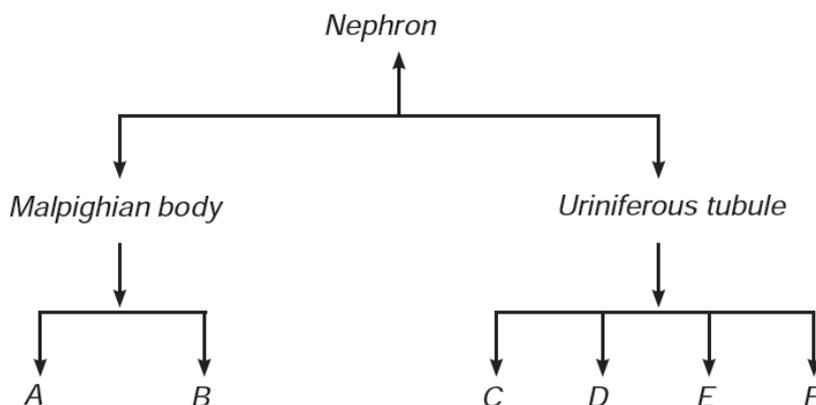
Answer: i. **Fat** is deposited in **subcutaneous tissue**.
 ii. Production of sounds and detection of the **echo**

34.The Master chemists of our body are the kidneys. Justify.

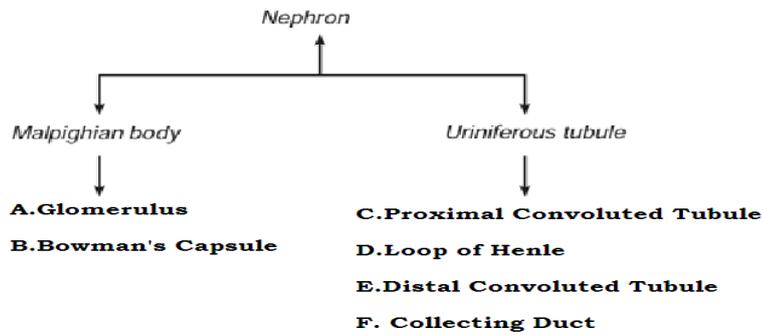
- i) Kidneys filter all chemicals in the body. ii) Kidneys maintain the chemical composition of blood.
 iii) Kidneys eliminate all chemicals absorbed by the body. iv) Kidneys store the chemicals accumulated in the body.

Answer: ii) Kidneys maintain the chemical composition of blood.

35. Observe the chart depicting the structure of a nephron and mention the structures A to F



Answer:

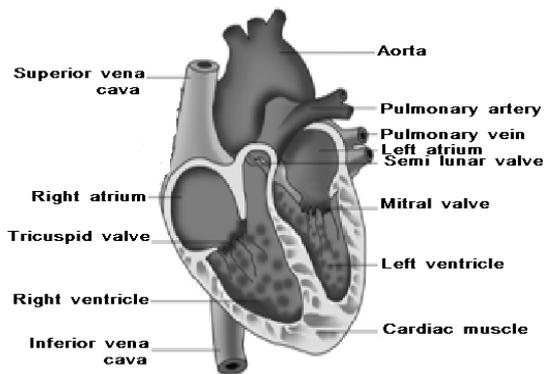


36. Write the main function of a nephron.

Answer: 1. Nephrons are the **structural** and **functional** units of the kidney.
2. The nephrons **filter the blood** and form the **urine**.

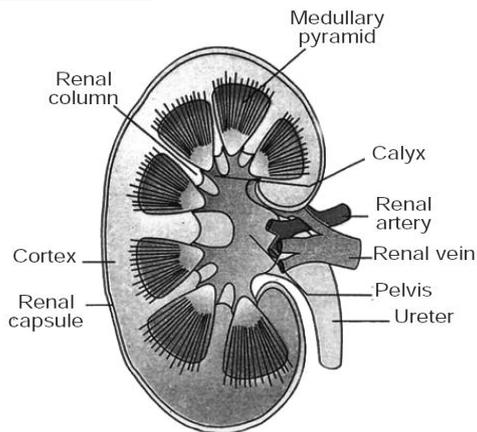
37. Draw and label the L.S of Heart.

Answer: L.S of Heart



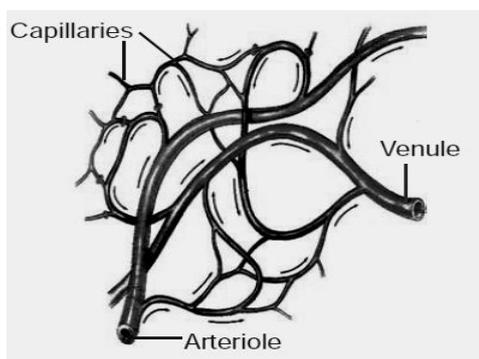
38. Draw and label the L.S of kidney.

Answer: L.S of kidney.



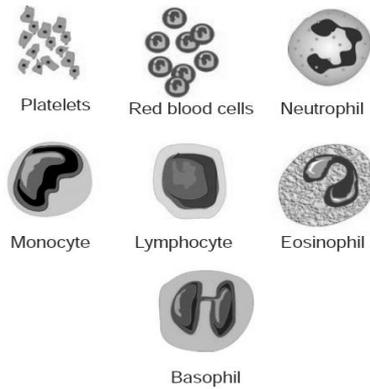
39. Draw and label the Arteries, Veins and Capillaries.

Answer: Arteries, Veins and Capillaries



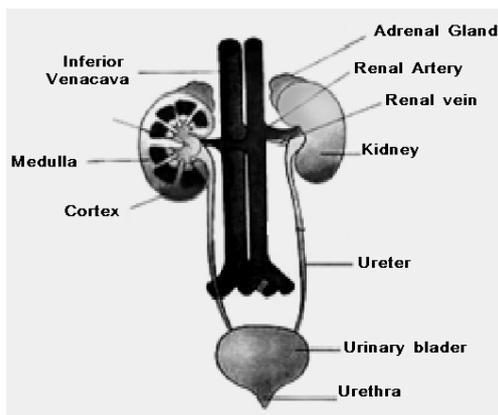
40. Draw the diagrams of the Blood cells.

Answer: Blood cells



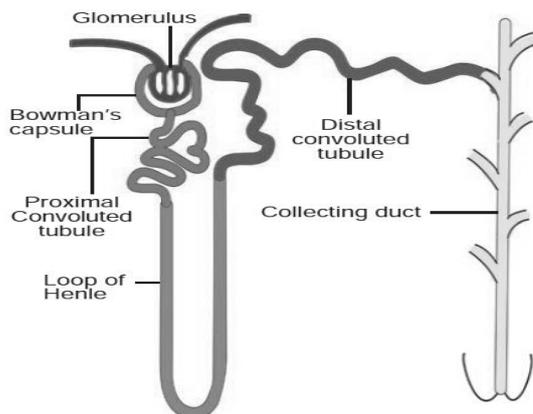
41. Draw and label the Excretory System of Man.

Answer: Excretory System of Man.



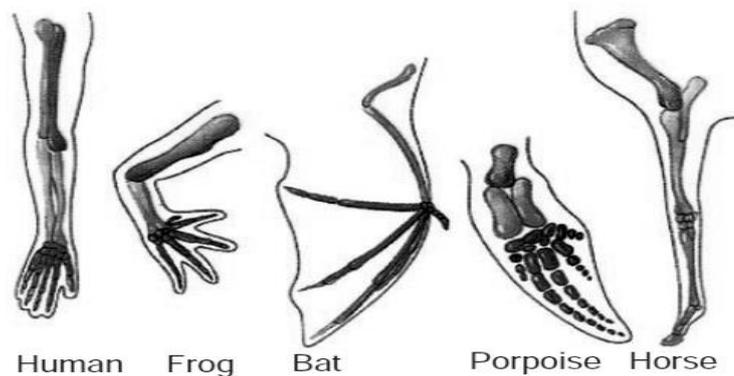
42. Draw and label the Nephron.

Answer: Nephron



43. Draw the diagram of Basic pattern of forelimbs of vertebrates.

Answer: Basic pattern of forelimbs of vertebrates.



44. What is adaptation?

Answer: A change or adjustment in a plant or animal that makes it better able to live in a particular environment or habitat is known as adaptation.

45. Mention the adaptations found in Whale.

Answer: 1. In marine-mammals like **whales** and dolphins the **limbs** are modified into **flippers** which are used as **oars to swim** in water.
2. They also possess **huge subcutaneous fat** deposits to conserve heat.
3. The **jaws of the whales** are modified into **baleen plates** to sieve the water and trap minute planktonic organisms called **krill**, which is their food.

46. Mention the adaptations found in Polar bear.

Answer: Polar bears have thick skin and wooly fur so as to withstand cold weather in the polar regions.

47. Mention the adaptations found in Kangaroo.

Answer: Marsupials, like kangaroo, have developed **abdominal pouches** to bear young ones.

48. Mention the adaptations found in Herbivorous mammals.

Answer:

1. Herbivorous mammals **eat plants** only. To digest the cellulose-rich food, they have developed a **mutual partnership with bacteria** that have cellulose-splitting enzymes (**cellulase**).

2. Herbivorous mammals have a **huge four-chambered stomach** that functions as storage and fermentation vats. The stomach of cattle also helps them to **ruminate or chew the cud**.

49. Fill up the empty boxes with suitable answers with respect to the important excretory organ and their excretory products.

Excretory organ	Disposed as	Excretory products
Kidneys	Urine	-----
-----	Exhaled / Expired air	Carbondioxide and water-vapour
Skin	-----	Excess water and salt

Answer:

Excretory organ	Disposed as	Excretory products
Kidneys	Urine	<u>Nitrogenous waste products – urea, uric acid, creatinine, etc.</u>
Lungs	Exhaled / Expired air	Carbondioxide and water-vapour
Skin	Sweat	Excess water and salt

50. Fill in the blanks.

i. Milk producing glands are modified _____. (Endocrine gland / Sweat gland)

ii. Mammals are _____. (Warm blooded / Cold blooded)

iii. A thin transparent membrane called _____ covers the kidney. (Meninges / Capsule)

iv. The heart is covered by a protective double layered membrane called _____. (Pericardium / Pleura)

Answer:

i. Sweat gland

ii. Warm blooded

iii. Capsule

iv. Pericardium

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