**3 (Sem–4/CBCS) ZOO HC 1**

**2023**

**ZOOLOGY**

( Honours Core )

Paper : ZOO–HC–4016

***( Comparative Anatomy of Vertebrates )***

*Full Marks : 60*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

1. Choose the correct answer : 1×7=7

*(a)* Ampullae of Lorenzini are found in-

*(i)* the tadepoles of frog

*(ii)* the warts in the skin of toad

*(iii)* the internal ear of fish

*(iv)* under the skin of sharks

(b) Sweat glands are found in-

(i) whales and sea cows

(ii) only in whales

(iii) only in sea cows

(iv) None of the above

(c) Furcula is a part of

(i) pectoral girdle of Varanus

(ii) pectoral girdle of fowl

(iii) scapula of rabbit

(iv) None of the above

(d) Fangs of a poisonous snake are placed on the

(i) Maxillae

(ii) Premaxillae

(iii) Vomers

(iv) Dentaries

(e) A "chewing stomach" (gizzard) is not found in

(i) Hen

(ii) Vulture

(iii) Parrot

(iv) Sparrow



(f) Hypophysis develops from

(i) Rathke's pocket

(ii) Vermiform appendix

(iii) Parotid glands

(iv) Endostyle

(g) Uropygial glands are found

(i) in all birds

(ii) in all aquatic animals

(iii) only in aquatic birds

(iv) only in pigeons

2. Answer the following questions : 2×4=8

(a) Write a brief note on scent glands.

(b) What are the different types of feathers found in birds ?

(c) What is Foramen magnun? Mention its function. 1+1=2

(d) What are neuromast organs? How do they function ? 1+1=2

3. Answer the following questions : **(*any* three)** 5×3=15

(a) What are receptors? Write a brief note on different types of receptors. 1+4=5

(b) Describe the different types of skeleton in vertebrates.

(c) Give an account of the dentition in mammals.

(d) Describe the structure and functions of accessory respiratory organs in fishes.

(e) Explain the derivatives of skin in different group of chordates with suitable diagram.

4. (a) Give an account of the integument in vertebrates with suitable diagram and explain its function. 8+2=10

*Or*

(b) Write a comparative account of the alimentary canal of a birds and a mammal and state how these are adapted to their respective feeding habits. 5+5=10

5. (a) Give a comparative account of brain and cranial nerves in mammals. 10

*Or*

(b) Describe briefly the comparative account of different types of lungs in vertebrates.

6. (a) Define aortic arches. Discuss the modification of aortic arches in different groups of vertebrates. 2+8=10

*Or*

(b) Describe a comparative account of the structure of kidney in the vertebrates with neat labelled diagram. 10

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**3 (Sem–4/CBCS) ZOO HC 2**

**2023**

**ZOOLOGY**

(Honours Core)

Paper : ZOO–HC–4026

***(Animal Physiology; Life Sustaining System)***

*Full Marks : 60*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

1. Fill in the blanks : 1×7=7

   *(a)* The digestion of milk is catalysed by the enzyme _____ at the begining stage.

   *(b)* _____ plays important role in fat digestion.

   *(c)* The exchange of gases occurs in the _____ of the lungs.

(d) The formation of carbonic acid is more in the RBC due to the presence of the enzyme _____ in RBC.

(e) The formation of concentrated or dilute urine is due to the presence of a hormone _____.

(f) Our heart is _____ type of heart.

(g) Inactive trypsinogen is converted to active trypsin by the catalytic action of the enzyme _____ from small intenstine.

2. Answer very briefly : 2×4=8

(a) What is Bohr effect ?

(b) What is the $O_2$–*Hb* dissociation curve ?

(c) What are the salivary glands in mouth ?

(d) What is cardiac cycle ?

3. Answer the following : ***(any three)*** 5×3=15

(a) State what are different types of WBC in detail.

(b) What is the role of pancreas in digestion ?



(c) How monosaccharides are absorbed after digestion of carbohydrates ?

(d) Write the different stages of blood coagulation in detail.

(e) Write about control of respiration.

4. (a) What are different enzymes secreted from pancreas for digestion of different types of food ? How the inactive pancreatic enzymes are activated and how digestion occurs by their catalytic action ? 3+4+3=10

***Or***

(b) How secretion of digestive juices in alimentary canal is regulated by different hormones in different parts of the canal and in digestive glands ? 10

5. (a) Write about formation of RBC and WBC in details. Also functions of RBC and WBC. 5+5=10

***Or***

(b) Write about blood group and blood transfusion with special reference to Rh factor. Write about erythroblastosis fetalis. 2+4+4=10

6. *(a)* What do you mean by chloride shift ? Explain with reactions. What are the factors that cause the Bohr effect ? Write with diagrams. 4+6=10

*Or*

*(b)* Write about the mechanism of respiration in detail and also describe the different parts that participate in respiration. 6+4=10

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3 (Sem–4/CBCS) ZOO HC 3

**2023**

**ZOOLOGY**

(Honours Core)

Paper : ZOO–HC–4036

***(Biochemistry of Metabolic Processes)***

*Full Marks : 60*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

1. Fill in the blanks : 1×7=7

   *(a)* Adipose cells are the major site of accumulation of _____.

   *(b)* Lactate and alanine are the major raw materials of _____.

   *(c)* Human erythrocytes contain no _____.

   *(d)* Gluconeogenesis and Glycolysis are _____ regulated.

(e) The compound in urine responsible for the color reactions was identified as _____.

(f) _____ is the precursor for steroid hormones such as progesterone, testosterone etc.

(g) Degradative processes are termed as _____.

2. Answer the following briefly : 2×4=8

(a) What are triacylglycerols ?

(b) State *two* physiological roles of fatty acids.

(c) How liver maintains a constant level of glucose in the blood ?

(d) Define oxidation and reduction.

3. Answer the following : ***(any three)*** 5×3=15

(a) Define glycolysis and gluconeogenesis. State the enzymatic differences between glycolysis and gluconeogenesis.

(b) Describe ureotelic, uricotelic and ammonotelic animals.



(c) What is oxidative phosphorylation ? Write a note on the significance of the ADP-ATP high energy cycle.

(d) Discuss aerobic and anaerobic hydrogen transfer reaction. Compare the energy yield of the *two* processes.

(e) Describe catabolism and anabolism.

4. (a) What is glycolysis ? Give an account on the different steps in the glycolytic pathway along with its energetics. 2+6+2=10

***Or***

(b) What is Citric Acid Cycle or TCA ? Explain the various steps of citric acid cycle along with its energetics. 2+6+2=10

5. (a) What are Ketone bodies ? Under what circumstances are they formed in the body ? Write a note on the consequences of Ketosis. 2+3+5=10

***Or***

(b) Give an account of the ornithine cycle of urea synthesis in animals. 10

6. *(a)* Explain Cori's cycle with a schematic diagram. Add a note on its significance. 3+2+5=10

***Or***

*(b)* What is deamination ? Describe the glucogenic and ketogenic amino acids and their deamination. 2+8=10

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