3 (Sem–3/CBCS) ZOO HC 1

2021

(Held in 2022)

ZOOLOGY

(Honours)

Paper : ZOO–HC–3016

(Diversity of Chordata)

Full Marks : 60

Time : Three hours

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

1. Answer the following questions : 1×7=7

(i) Notochord is confined to proboscis in

(a) Urochordata

(b) Hemichordata

(c) Cephalochordata

(d) Chordata

Contd.

(ii) Which of the following is a chordate but not a vertebrate ?

(a) Catla

(b) Hippocampus

(c) Hemidactylus

(d) Amphioxus

(iii) Enteropneusta belong to —

(a) Hemichordata

(b) Cephalochordata

(c) Urochordata

(d) Echinodermata

(iv) Which of the following is a lungfish ?

(a) Diplopterax

(b) Hippocampus

(c) Lepidosiren

(d) None of the above

(v) Tailless amphibians are —

(a) Anura

(b) Gymnophiona

(c) Caudata

(d) None of the above

(vi) The number of condyle(s) in the skull of reptiles is/are —

(a) one

(b) two

(c) three

(d) four

(vii) Teeth in mammals are —

(a) Thecodont, homodont, diphyodont

(b) Thecodont, heterodont, diphyodont

(c) Acrodont, homodont, monophyodont

(d) Acrodont, homodont, polyphyodont

2. Answer ***any four*** of the following : 2×4=8

(i) Distinguish between Metatheria and Eutheria.

(ii) Write on parental care in amphibia.

(iii) Write the role of kidneys in osmoregulation of fishes.

(iv) Write a short note on perching mechanism in birds.

(v) Write about the muscles associated with Biting mechanism of snakes.

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

(i) Give a brief account of the general characteristics of birds.

(ii) Differentiate between poisonous and non-poisonous snakes.

(iii) Give a brief account on the affinities of Prototheria.

(iv) Distingusih among hemichordata, urochordata and cephalochordata.

(v) Write on the general characteristics of Agnatha.

4. Answer ***any three*** of the following : 10×3=30

(i) Write about the general characteristics of fishes. Give an outline classification of fishes.

(ii) Describe the retrogressive metamorphosis in urochordata with suitable diagrams.

(iii) Describe the principles and acrodynamics of birds, flight. Write about the migration in birds.

(iv) Write about the theories related to the distribution of animals in different geographical realms. Highligth on how different vertebrates are distributed in different geographical realms.

(v) Give an account of distinguishing characters and outline classification of mammals.

3 (Sem–3/CBCS) ZOO HC 2

2021

(Held in 2022)

ZOOLOGY

(Honours)

Paper : ZOO–HC–3026

(Animal Physiology : Controlling and Coordinating Systems)

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 loss of positive ions from the interior of a neuron produces _____.

   (b) An example of supportive connective tissue is _____.

(c) _____ hormone controls Na^+ and K^+ metabolism in the body.

(d) Deficiency of vasopressin causes _____ disease.

(e) Node of Ranvier is present in _____.

(f) The epithelial tissue present on the inner surface of bronchioles and fallopian tube is _____.

(g) Cortisol is a _____ hormone.

2. Answer the following questions : ***(any four)*** 2×4=8

(a) Why is simple squamous epithelium called pavement epithelium ? 2

(b) Name different hormones produced by ovary with their functions. 2

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

(d) What is erythropoiesis ? Which hormone stimulates it ? 1+1=2

(e) What do you mean by transmission of nerve impulse ? 2

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

(a) Describe the structure and functions of striated muscle.

(b) Write a short note on endocrine function of posterior pituitary.

(c) Describe the methods of contraception in female.

(d) Gonads are also endocrine organs. Justify this statement.

(e) Give an account on histological structure and secretion of testis with suitable diagram.

4. Answer ***any three*** of the following questions : 10×3=30

(a) Define epithelial tissue. Describe the classification of epithelial tissues with suitable diagram. 2+8=10

(b) Explain the molecular mechanism of amine hormone action with suitable example. 10

Contd.

(c) Describe different components of blood with their functions. How does blood differ from lymph ? 8+2=10

(d) Define muscle twitch. Describe molecular and chemical basis of striated muscle contraction with suitable diagram. 2+8=10

(e) Give an account on histological structure and secretion of pancreas. 10

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3 (Sem–3/CBCS) ZOO HC 3

2021

(Held in 2022)

ZOOLOGY

(Honours)

Paper : ZOO–HC–3036

(Fundamentals of Biochemistry)

Full Marks : 60

Time : Three hours

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

1. Answer the following as directed : ***(any seven)*** 1×7=7

   (a) Which amino acid is the precursor of melanin pigments of skin ?

   (b) Name *two* amino acids which act as neurotransmitter in the brain.

   (c) Side chains of all of the following amino acids contain aromatic rings, except

   (i) phenylalanine

   (ii) alanine

   (iii) tyrosine

   (iv) tryptophan

   (Choose the correct option)

(d) The alpha helix formation is due to
(i) intramolecular hydrogen bonds
(ii) intermolecular hydrogen bonds
(iii) van der Waals interaction between amino acids
(iv) ionic interactions
(Choose the correct option)

(e) A gene codes for a protein of 200 amino acids length. What is the size of gene in terms of bp ?

(f) Give *two* examples of fibrous protein.

(g) An essential fatty acid is one, that cannot be synthesised by the body and therefore required essentially in diet. Name *two* essential fatty acids.

(h) If the DNA of a species has the mole fraction of $G + C = 0{\cdot}36$, the mole fraction of $A + T$ will be
(i) 0·64
(ii) 1·28
(iii) 0·36
(iv) 0·32 *(Choose the correct option)*

(i) Coenzymes FMN and FAD are derived from
(i) vitamin C
(ii) vitamin B6
(iii) vitamin B1
(iv) vitamin B2
(Choose the correct option)

2. Answer ***any four*** of the following : 2×4=8

(a) What is the difference between oxidase and oxygenase enzymes ?

(b) Write down the structural formula of nucleotide.

(c) Distinguish between IgG and IgM.

(d) What is denaturation of protein.

(e) What are derived lipids ? Give examples.

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

(a) Describe the structure and function of mucopolysaccharides.

(b) Describe the structure and function of phospholipids.

(c) What is Chargaff's rule ? "The backbone of nucleic acid structure is 3'–5' phsophodiester bridge." Justify.

(d) What are coenzymes ? Write briefly the role of coenzymes in enzyme action.

(e) What is immunoglobulin domain? Draw a schematic diagram of structure of immunoglobulin.

Answer the following questions : ***(any three)*** 10×3=30

4. What is epitope? Write in detail about the structure and function of different isotypes of antibody. 2+8=10

5. Write an account of various factors affecting enzyme action. Write an explanatory note on the classification and nomenclature of enzymes. 4+6=10

6. What is complementary base pairing? Name different RNA and discuss their structure and function. 2+8=10

7. Discuss the saturated and unsaturated fatty acids of biological importance, along with their structures. 10

8. Discuss the structure and functions of three biochemically important disaccharides and three homopolysaccharides. 10