2018

CBCS

3rd Semester

ZOOLOGY

PAPER—C5T

(Honours)

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Chordates

Answer *all* questions

Group—A

1. Answer any *five* questions : 5×2

(a) What is Chorda dorsalis ?

(b) How stomochord differs from notochord ?

(c) What is Wallace's line ?

(d) Mention the order of Armadillo with any two taxonomical characters.

(e) What is Pangea ?

(f) What is lepidotrichia in bony fishes ?

(g) Distinguish between horn and antler.

(h) Distinguish between gill bar and tongue bar.

Group—B

2. Answer any *four* questions : 4×5

(a) Why the nerve cord is hollow in chordates ? What are the deuterostomic traits in the body plan of a chordate ? 2+3

(b) With suitable examples explain what do you mean by adaptive radiation. 4

(c) Comment on the tadpole bearing behaviour in amphibians.

(d) Write a short note on progenesis.

(e) What are lancelets? Explain root effect in fishes.

(f) Discuss in brief the structure of pharynx in amphioxus. 2+3

Group—C

3. Answer any *one* question : 1×10

(a) Describe in brief the hormonal and behavioural changes that occur before the onset of migration in birds. Describe how birds navigate during migration. 2+2+6

(b) Mention the differences between poisonous and nonpoisonous snakes. Describe the structure of poison gland and state the muscles which are associated with the biting mechanism of a snake.

4+4+2

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Animal Physiology :

Controlling and Coordinating System

Answer *all* questions

Group—A

1. Answer any *five* questions : 5×2

(a) Which hormone is secreted by parafollicular cells of the thyroid gland? What hormone produces the opposite physiological effect? 1+1

(b) What is the fate of Hormone–receptor complex ? 2

(c) State the formula for calculating Nernst potential. 2

(d) Differentiate between diaphysis and epiphysis. 2

(e) What do you mean by reflex action ? 2

(f) What is GPCR ? 2

(g) What is cortical reaction ? 2

(h) What is menopause ? 2

Group—B

2. Answer any *four* questions : 4×5

(a) What are the typical functions of a connective tissue ? What is connective tissue proper and name the main cells of it. 3+1+1

(b) Justify—'Hypothalamus is arguably the most essential part of the endocrine system'. 5

(c) Classify hormones—structurally, giving examples Name a chemical messenger capable of acting both as hormone and neurotransmitter. 4+1

(d) Briefly describe different types of cells present in bones. What do you mean by bone remodelling ? 2+3

(e) 'Positive feed-back cycle is responsible for opening of Na^+ channels at the Threshold' — Justify the statement. 5

(f) Explain the role of aldosterone and cortisol to maintain homeostasis. 5

Group—C

3. Answer any *one* question : 1×10

(a) (i) Draw the structure of a typical neuromuscular junction. List the main steps of activation of smooth muscle by Ca^{2+}. 3+3

(ii) Differentiate between isometric and isotonic contraction. 2

(iii) Name the hormones released from posterior pituitary gland. 2

(b) (i) Discuss the signal transduction pathways of steroidal hormones. Comment on second messenger system. 4+2

(ii) Discuss the endocrine control of ovulation. 4

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Fundamentals of Biochemistry

Answer *all* questions

Group—A

1. Answer any *five* questions : 5×2

(a) Why sucrose is considered as nonreducing sugar ? 2

(Turn Over)

(Continued)

(b) What is hyperchromic shift ? 2

(c) What is isozyme ? Cite one example. 2

(d) 'Starch respond negatively in Benedict's Test'— Explain. 2

(e) Why is phosphofructokinase considered as golden enzyme of glucose catabolism ? 2

(f) What are omega-3 and omega-6 fatty acids ? 2

(g) What is meant by the polarity of polypeptide and polynucleotide chain respectively ? 2

(h) What is Zwitterions ? 2

2. Answer any *four* questions : 4×5

(a) Briefly describe the pentose-phosphate pathway of carbohydrate metabolism. 5

(b) (i) Name one uncoupler of Electron Transport System.

(ii) State the role of oligomycin.

(iii) Define a transamination.

(iv) Name the irreversible steps of glycolytic pathway. 1+1+1+2

(c) (i) State the functions of sphingolipid and Eicosanoid.

(ii) Write a short note on allosteric enzyme. (1+1)+3

(d) (i) Describe the Urea cycle with proper diagram.

(ii) What is ketogenic amino acid ? 4+1

(e) Provide an outline classification of amino acids based on R-group (side chain). 5

(f) Write a note on α-helix structure of proteins. 5

Group—C

3. Answer any *one* question : 1×10

(a) (i) How many ATP will be produced from the complete oxidation of a 16 carbon saturated fatty acid ?

(ii) Describe the basic steps of β-oxidation.

(iii) Draw and describe the structure of a t RNA. 2+5+3

(b) (i) 'Enzymes enhance reaction rates by lowering activation energy'— Explain this statement. 4

(ii) What is Michaelis constant ? 2

(iii) Compare between A–, B– and Z DNA. 2

(iv) What is meant by hypo- and hyperchromicity of DNA molecule ? 2

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Chordates Lab.

Group—A

Answer *all* questions

1. Dissect and display the _____. Leave your dissection in a glass slide or watch glass. 4+1

(Turn Over)

2. Identify the specimen A, B, C and D with reasons according to syllabus. 2½×4

3. Laboratory Note Book 2

4. Viva-Voce 3

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(A)

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PAPER—C7P

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(Practical)

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Fundamentals of Biochemistry Lab

Answer *all* questions

1. Identify the sample provided by performing suitable qualitative biochemical test. Mention name of the test performed with observation, inference and conclusion. 1+3+1

(Turn Over)

Or

Write down the principle and procedure of protein separation by SDS-PAGE. 2½+2½

Or

Write down the principle and procedure of paper chromatography of amino acids. 2½+2½

2. Estimate the concentration of given protein sample, using Lowry's method with the help of standard curve provided. Write down the readings, calculation and conclusion. 4+4+2

3. Laboratory Note Book 2

4. Viva-Voce 3

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Apiculture

Answer *all* questions

Group—A

1. Answer any *five* questions : 5×2

(a) Write the chemical composition of honey.

(b) How do you distinguish a queen from a worker bee ?

(c) Name one bacterial and one protozoan disease of honey bee.

(d) State the uses of bee-wax.

(e) What is apiary ?

(f) Write the selection criteria of bee species.

(g) What is Royal Jelly ?

(h) What do you mean by pollen basket ?

2. Answer any *four* questions : 4×5

(a) (i) 'Diet is the major caste determining factor in a bee colony'— Explain. 3

(ii) What are the selection criteria for a good apiary site ? 2

(b) Provide an illustrated description of Langstrotis box used in apiculture. 5

(c) (i) State the uses of the following equipments in bee-keeping industry :

Queen Excluder

Super

Uncapping Knife

Smoker. 4

(ii) Which species of honey bee is widely used in India in bee-keeping ? 1

(d) (i) What is swarming ? 1

(ii) What causes swarming ? 1

(iii) Mention the problems associated with swarming. 3

(e) Write the name of bee enemies and mentioned their control measures. 3+2

(f) Describe briefly on modern method of extraction of honey. 5

Group—C

3. Answer any *one* question : 1×10

(a) (i) Mention the prerequisites for artificial bee rearing. 5

(ii) What are the architectural designs of Beehives ? 5

(b) (i) Name the different species of honey bees domesticated in the world. 2

(ii) What are the benefits of bee-keeping and how does it act as an input for sustainable development of agriculture ? 3

(iii) Mention the causative agent, symptoms and control measures of chalkbrood disease of honey bee. 5

Aquarium Fish Keeping

Group—A

1. Answer any *five* questions : 5×2

(a) What are the criteria for selection of fish species for home aquarium ?

(b) What is an aquarium ?

(c) Write the scientific names of four exotic ornamental fishes.

(d) State the food and feeding behaviour of Angel fish.

(e) State about exotic ornamental fishes. Give two examples.

(f) What do you mean by aquascaping ?

(g) What do you mean by biofilter ? State its importance in aquarium.

(h) What do you mean by Sexual dimorphism ? Write one example of aquarium fish.

2. Answer *four* questions : 4×5

(a) What is formulated feed ? Write the ideal composition of formulated feed for ornamental fishes. 1+4

(b) Briefly write on the accessories used for setting up a home aquarium.

(c) Briefly write on the ornamental fish transportation.

(d) Write a note on different diseases of aquarium fish.

(e) State about aquarium fish marketing in West Bengal.

(f) Give an idea about the plan and budget for setting up an ornamental fish farm.

Group—C

3. Answer any *one* question : 1×10

(a) (i) Discuss the common diseases of ornamental fishes. Write the treatment procedures of these diseases.

(ii) Write a note on ornamental fish breeding with reference to live beaver species. 5+5

(b) (i) Mention the important criteria of a good ornamental fish.

(ii) Give an idea about indigenous ornamental fishes in West Bengal.

(iii) Add a note on feeding management of aquarium fishes. 3+3½+3½

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