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Roll No. 2019

S. No. of Question Paper : **7513** 17

Unique Paper Code : **32231301** **J**

Name of the Paper : **Diversity of Chordates**

Name of the Course : **B.Sc. (Honours) Zoology**

Semester : **III**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Answer *five* questions in all, including

Question No. **1** which is compulsory.

Draw labelled diagrams wherever necessary.

1. (*a*) Define the following terms : 4

(*i*) Retrogressive metamorphosis

(*ii*) Osmoregulation

(*iii*) Endemic species

(*iv*) Fossorial Adaptations.

P.T.O.

(*b*) Give the scientific name and classify the following upto Orders : 10

(*i*) Rat fish

(*ii*) Glass snake

(*iii*) Acorn worm

(*iv*) Mongoose

(*v*) Mud Puppy.

(*c*) Differentiate between the following terms : 8

(*i*) Lacertilia and Ophidia

(*ii*) Euryhaline and Stenohaline

(*iii*) Carinatae and Ratitae

(*iv*) Wallace's line and Weber's line.

(*d*) Match the following animals with the Zoogeographical region : 3

(*i*)	Two-horned Rhinoceros	(*a*)	Oriental
(*ii*)	Orangutan	(*b*)	Ethiopian
(*iii*)	Bison	(*c*)	Neotropical
(*iv*)	Koala bear	(*d*)	Nearctic
(*v*)	Llama	(*e*)	Palearctic
(*vi*)	Mole rat	(*f*)	Australian

(*e*) State whether the following statements are true *or* false : 2

(*i*) Eyelids of snakes are movable.

(*ii*) Perissodactyles have an even number of digits.

(*iii*) In frogs and toads teeth are present in both upper and lower jaws.

(*iv*) Duck-billed Platypus is endemic to Australian realm.

2. (*a*) "Hemichordates are non-chordates". Justify the statement.

(*b*) Discuss the Echinoderm theory for the origin of Chordates. 6,6

3. (*a*) Enumerate the various structural adaptations in birds related to their aerial mode of life.

(*b*) How do fresh water fishes osmoregulate ? 8,4

4. (*a*) Discuss the theories of distribution of animals.

(*b*) Give an account of the mammalian fauna of the Ethiopian realm. 8,4

5. (*a*) Describe the poison apparatus in snakes and explain the biting mechanism.

(*b*) Discuss the mechanics of bird flight. 7,5

6. (*a*) Discuss the evolution of terrestrial ectotherms.

(*b*) Write a note on the affinities of Prototheria. 8,4

7. Write short notes on any *three* of the following : 4,4,4

(*i*) Migration in fishes

(*ii*) Cursorial adaptations in mammals

(*iii*) Parental care in Amphibia

(*iv*) Affinities of *Sphenodon*

(*v*) General characters of Agnatha.

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S. No. of Question Paper : 7514 (18)

Unique Paper Code : 32231302 J

Name of the Paper : Physiology : Controlling and Coordinating System

Name of the Course : B.Sc. (Hons.) Zoology

Semester : III

Duration : 3 Hours Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all.

Question No. 1 is compulsory.

1. (A) Define : 4

(*i*) Temporal Summation

(*ii*) Tropic hormone

(*iii*) Oxygen debt

(*iv*) Theca interna.

(B) Distinguish between : 5×2=10

(*i*) EPSP and IPSP

P.T.O.

(*ii*) Fused and Unfused Tetanus

(*iii*) Leydig cells and Sertoli cells

(*iv*) Osteoclasts and Osteoblasts

(*v*) Stratified and Pseudo-stratified epithelium.

(C) Expand the following : 3

(*i*) 5-HT

(*ii*) CK

(*iii*) PVN

(*iv*) NE

(*v*) LTH

(*vi*) cAMP.

(D) Give the location and function for each of the following : 4

(*a*) Nebulin

(*b*) Parafollicular Cells

(*c*) Organ of Corti

(*d*) Ependymal Cells.

(E) Give reasons/Physiological significance of the following (any *two*) : 2

(*i*) Blood Testis Barrier.

(*ii*) Amplitude of an action potential once generated is always the same.

(*iii*) Slumping of the head forward on the chest

(F) Fill in the blanks : 4

(*i*) A toxin popularly used in cosmetic surgery is ..... .

(*ii*) Deep grooves in the motor end plate that are rich in receptors are called ..... .

(*iii*) ..... tissue is avascular.

(*iv*) Angiotensinogen, a plasma protein produced by the liver is converted into Angiotensin I by ..... .

2. (*a*) Mention different types of ion channels and describe their role in generation of electrical signals. 8

(*b*) Explain the transmission of nerve impulse across a Chemical Synapse. 4

3. (*a*) Describe the role of troponin, tropomyosin and calcium in muscle contraction. 9

(*b*) Diagrammatically represent the ultrastructure of sarcomere. 3

4. Compare the major changes occurring in the ovary, uterus and their hormonal regulation during the female reproductive cycle. 12

5. (*a*) Explain the various mechanisms regulating hormone secretion. 6

(*b*) How does the adrenal cortex and medulla compare with regard to its structure and function ? 6

6. (*a*) Describe the process of bone ossification. 9

(*b*) Enumerate the various types of cells present in connective tissue. 3

7. Write short notes on the following (any *three*) : 3×4=12

(*i*) Molecular events in Contraction cycle

(*ii*) Bleaching and regeneration of photo-pigments

(*iii*) Mechanism of action of water soluble hormones

(*iv*) Spermatogenesis.

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S. No. of Question Paper : 7515 (19)

Unique Paper Code : 32231303 J

Name of the Paper : **Fundamentals of Biochemistry**

Name of the Course : **B.Sc. (Hons.) Zoology**

Semester : **III**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questins in all, including Q. No. 1 which is compulsory.

Attempt various parts of a question at one place only.

Draw well labelled diagram wherever necessary.

1. (A) Define : 1×5

(1) Peptide bond

(2) Amphipathy

(3) Epimers

(4) Nucleoside

(5) Plasmalogens.

P.T.O.

(B) Differentiate between : 2×5

(1) Reducing and Non-Reducing Sugars

(2) Phi and Psi angle

(3) Isoenzymes and Coenzymes

(4) Alpha helix and Beta pleated sheet structure of protein

(5) B and Z DNA.

(C) Give the structures of the following : 1×5

(1) Proline

(2) Phosphatidyl Serine

(3) Sucrose

(4) Chondroitin sulphate

(5) Adenine.

(D) Fill in the blanks : 1×4

(1) Repeated nucleotide sequence.....the chances of its renaturation.

(2) Enzymes speed up reactions by..... activation energy.

(3) Auto-oxidation of lipids exposed to oxygen results in .....

(4) An increase in side chain alkyl groups numbers increases the.....of the amino acids.

(E) Give contributions of the following : 1×3

(1) Watson and Crick

(2) Linus Pauling

(3) Fredrick Sanger.

2. (*a*) Describe various types of secondary structure of protein taking suitable examples. 8

(*b*) Justify the statement that information of protein folding resides within the sequence of amino acids. 4

3. (*a*) Elucidate the Michaelis-Menten kinetics for a one enzyme-one substrate reaction. 8

(*b*) With the help of well labelled bond angles and bond lengths, diagrammatically explain that peptide bond is rigid and coplanar. 4

4. (*a*) Classify enzymes on the basis of type of reaction catalyzed (International Classification of Enzymes). 4

(*b*) What are different types of DNA ? Briefly discuss different properties of various types of DNA. 8

5. (*a*) Describe the salient features of Clover leaf model of *t*-RNA. 4

(*b*) Give a detailed account of physiologically important carbohydrates. 8

P.T.O.

6. (*a*) With the help of structures, classify phospholipids. 8

(*b*) Briefly discuss about allosteric enzymes. 4

7. Write short notes on any *three* of the following : 3×4

(*a*) Cot Curves

(*b*) Glycolipids

(*c*) Mechanism of enzyme action

(*d*) Protein Denaturation

(*e*) Double reciprocal plot.