

03/12/2018

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This question paper contains 4 printed pages.

Your Roll No.

Sl. No. of Ques. Paper : 125

Unique Paper Code : 32231301

I

Name of Paper : Diversity of Chordates

Name of 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, including Question No. 1
which is compulsory. All the parts of a question must be
attempted together. Draw neat and labelled
diagrams, wherever necessary.**

1. (a) Fill in the blanks:

(i) are called the tail feathers in birds.

(ii) The term 'Realm' was coined by

(iii) is a lizard with bifid tongue.

(iv) Limbless amphibians belong to the order
.....

(v) marsupial is present in North America.

(vi) *Ornithorhynchus* and *Echidna* belong to
subclass

6

P. T. O.

(b) Give the exact location of the following:

- (i) Endostyle
- (ii) Hatschek's pit
- (iii) Jacobson's organ
- (iv) Rhamphotheca
- (v) Carapace.

5

(c) Give the function of the following:

- (i) Preen gland
- (ii) Operculum
- (iii) Chloride cells
- (iv) Lateral line.

4

(d) Differentiate between the following:

- (i) Archaeornithes and Neornithes
- (ii) Cycloid and Ctenoid scale
- (iii) Urochordata and Cephalochordata
- (iv) Proteroglyphous and Opisthoglyphous.

6

(e) State True or False:

- (i) Tornaria larva belongs to *Balanoglossus*.
- (ii) One pair of temporal fossae is present in anapsids.
- (iii) Kiwi is restricted to the forests of New Zealand only.
- (iv) Cyclostomes are jawed vertebrates.
- (v) Devonian is the age of reptiles.

(vi) Peacock belongs to the order galliformes. 6

2. (a) Give an account of larval forms in protochordates with example.
- (b) All vertebrates are chordates but not all chordates are vertebrates. Justify. Also enlist any *four* characteristic features of vertebrates. 8,4
3. (a) Discuss origin and ancestry of Amphibia.
- (b) Describe the biting mechanism of a poisonous snake. 6,6
4. (a) Explain the mode of osmoregulation in teleosts.
- (b) What is adaptive radiation? Explain with reference to locomotory appendages in mammals. 6,6
5. (a) Discuss parental care in fishes.
- (b) Enumerate the general characters of Prototherians. 8,4
6. Give an account of migration in birds. 12
7. Write short notes on any *three* of the following:
- (a) Catadromous migration

(b) Continental Drift Theory

(c) *Sphenodon*

(d) Retrogressive metamorphosis.

4,4,4

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8/12/2018

This question paper contains 4 printed pages.

Your Roll No.

Sl. No. of Ques. Paper : 126 **I**
Unique Paper Code : 32231302
Name of Paper : Physiology: Controlling and
Coordinating Systems
Name of 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. Make well labelled diagrams wherever necessary.

1. (a) Define the following:

- (i) Permissive effect
- (ii) Osteon
- (iii) Synapse
- (iv) Latent period.

1×4=4

(b) Differentiate between the following:

- (i) Tight and gap junction
- (ii) Rods and cones
- (iii) Bone and cartilage
- (iv) Isotonic and isometric contraction
- (v) IPSP and EPSP

P. T. O.

(vi) Chemical synapse and electrical synapse. $2 \times 6 = 12$

(c) Fill in the blanks:

(i) is an enzyme that phosphorylates other cellular proteins.

(ii) binds to Ca^{2+} enabling even more Ca^{2+} to be sequestered as stored within the sarcoplasmic reticulum.

(iii) The period of time when secondary sexual characteristics begin to develop and the potential for sexual reproduction is reached is called The first occurrence of menstruation is called, and the permanent cessation of menstruation is called

(iv) is the hormone secreted by zona glomerulosa of adrenal cortex.

(v) is the process by which graded potentials are added together.

(vi) The of endometrium lines the uterine cavity and sloughs off during menstruation.

(vii) is the structural unit of a compact bone.

(viii) A is a bundle of axon located in the central nervous system. $1/2 \times 10 = 5$

(d) Expand the following abbreviations:

(i) RMP

(ii) ICSH

(iii) PNS

(iv) FOG

(v) SON

(vi) AChE

$1/2 \times 6 = 3$

(e) Give exact location and function of the following:

(i) Cremaster muscle

(ii) Amacrine cell

(iii) Sertoli cells

(iv) Chief cells

(v) Volkmann's canal

(vi) Muscle spindle.

$1/2 \times 6 = 3$

2. (a) Discuss the mode of action of water and lipid soluble hormones with suitable diagram. 7

(b) Delineate the steps in the synthesis and secretion of thyroid hormones. 5

3. (a) Discuss briefly the events involved in excitation-contraction coupling cycle. 8

(b) How does sarcomere length influence the maximum tension that is possible during muscle contraction? 4

4. (a) Explain the generation and propagation of action potential in continuous and saltatory conduction with suitable diagram. 8
- (b) Discuss the factors affecting the speed of propagation. 4
5. (a) Outline the major events of each phase of uterine cycle and correlate them with the events of the ovarian cycle. 9
- (b) Add a note on the role of blood testis barrier. 3
6. (a) How do hair cells in cochlea and vestibular apparatus transduce mechanical vibrations into electrical signals? 5
- (b) Describe the location, structure and function of different types of connective tissue. 7
7. Write short notes on any *three* :
- (a) Ultrastructure of skeletal muscle
- (b) Histology of adrenal gland
- (c) Rhodopsin-retinal visual cycle with suitable diagram
- (d) Hormonal control of testicular function. 4×3

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This question paper contains 4 printed pages.

Your Roll No.

Sl. No. of Ques. Paper : 127

I

Unique Paper Code : 32231303

Name of Paper : Fundamentals of Biochemistry

Name of 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. Make well labelled diagrams wherever necessary.

1. (a) Define the following:

(i) Molecular chaperones

(ii) Epimers

(iii) Zwitter ions

(iv) Holoenzyme

(v) Plasmalogens. 5

(b) Give the structural formulae for the following:

(i) Isoleucine

(ii) Haworth projection formula for α -D-Glucose

(iii) Pyrimidine

(iv) Arachidonic acid. 4

(c) Differentiate between the following:

(i) Oxidoreductase and Transferase

(ii) *t*-RNA and *m*-RNA

(iii) Amylose and Amylopectin

(iv) Cysteine and Cystine

(v) Triglycerides and Phospholipids. 10

(d) Fill in the blanks:

(i) bonds are not broken on denaturation.

(ii) DNA exhibits upon annealing.

(iii) Competitive inhibitor K_m value of enzyme.

(iv) Interconversion of α and β forms of monosaccharides is called

(v) Lock and Key theory was given by 5

(e) Give reasons for the following:

(a) Saturated fatty acids are waxy solids while unsaturated fatty acids of same chain length are oily liquids.

(ii) Sucrose does not give a positive reaction with Benedict's solution.

(iii) Regulatory enzymes show sigmoid saturation curve. 3

2. (a) Give the structure and function of any *two* storage polysaccharides and two structural polysaccharides.

- (b) Write a note on isomerism in carbohydrates. 8,4
3. (a) Derive an equation for determining relation of K_m with substrate concentration and rate of reaction.
- (b) Discuss the factors governing rate of an enzyme catalyzed reaction. 8,4
4. (a) Discuss the salient features of Watson and Crick model of DNA.
- (b) Describe briefly the different types of DNA. 6,6
5. (a) Discuss the different levels of protein organization with suitable diagrams.
- (b) Explain the physiological importance of amino acids. 9,3
6. (a) Explain the structural and functional features of phospholipids.
- (b) How are triacylglycerols formed? What are the advantages of using them as stored fuels? 6,6
7. Write short notes on any *three* of the following:
- (a) Lineweaver Burke plot
- (b) Cot curves

(c) Sphingolipids

(d) Glycoconjugates.

4,4,4