

[This question paper contains 4 printed pages.]

Your Roll No. ....

Sr. No. of Question Paper : 1088

Unique Paper Code : 2232012301

Name of the Paper : Diversity of Chordates

Name of the Course : B.Sc. (H) Zoology NEP-UGCF

Semester : III

Duration : 2 Hours

Maximum Marks : 60

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Answer **four** questions in all.
3. Question No. 1 is compulsory.
4. Draw well labelled diagram wherever needed.

1. (a) Define the following terms (**any three**) : (3)

(i) Operculum

P.T.O.



- (ii) Preen gland
  - (iii) Diastema
  - (iv) Stomochord
  - (v) Opisthoglyphous fangs
- (b) Differentiate between the following terms (**any two**) : (4)
- (i) Physostomous and Physoclistous swim bladder.
  - (ii) Tornaria and Tadpole larvae.
  - (iii) Altricious and precocious birds.
- (c) Give the function of the following (**any four**) :(4)
- (i) Nuptial pads
  - (ii) Buccal funnel
  - (iii) Jacobson organ
  - (iv) Keel
  - (v) Crop
  - (vi) Weberian ossicle

(d) Give the scientific names and classify upto order  
(any two) : (4)

(i) Australian Lung fish

(ii) Hagfish

(iii) Duck billed platypus

(iv) Flying lizard

2. (a) Compare and discuss the characteristics of  
modern-day living agnathans. (8)

(b) Describe osmoregulation by teleost fishes in sea  
and freshwater? How does shark maintain their  
osmoregulation? (7)

3. (a) Explain various characteristic features which help  
bird to adapt to aerial mode of life. (8)

(b) A classic example of adaptive radiations can be  
seen in mammalian locomotory appendages.  
Explain with examples. (7)

4. (a) Give an elaborative account of parental care in  
amphibians. (9)

- (b) Explain plate tectonic theory and comment on the fauna of Australian realm. (6)

5. (a) Write a detailed note on origin of Tetrapods. (7)

- (b) Briefly explain the poison apparatus and biting mechanism in snakes. (8)

6. Write short notes on any **three** of the following : (15)

- (i) Wallace and Weber line
- (ii) Origin of chordates
- (iii) Retrogressive metamorphosis
- (iv) *Sphenodon*

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Your Roll No. ....

Sr. No. of Question Paper : 1145 **I**

Unique Paper Code : 2232012302

Name of the Paper : Biochemistry of Metabolic Processes

Name of the Course : B.Sc. (H) Zoology, NEP

Semester : III

Duration : 2 Hours

Maximum Marks : 60

### Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FOUR** QUESTIONS in all, question no. 1 is COMPULSORY.

1. (a) Define the following (**Any Four**) : (1×4=4)

(i) Anaplerotic reaction

(ii) Shuttle system

(iii) Ketosis

P.T.O.

(iv) Fermentation

(v) Oxidative phosphorylation

(b) Differentiate between the following (Any **three**) :  
(2×3=6)

(i) Substrate level phosphorylation and Oxidative Phosphorylation.

(ii) Transamination and Deamination.

(iii) Hexokinase and Glucokinase.

(iv) Acyl CoA and Acetyl CoA.

(c) Expand the following terms (Any **Four**) :  
( $\frac{1}{2} \times 4 = 2$ )

(i) PFK

(ii) PLP

(iii) UDP Glucose

(iv) HMG CoA

(v) EMP

(vi) PEP

(d) Name the cofactor/coenzyme required for the following enzymes : (1×3=3)

(i) Pyruvate dehydrogenase Complex

(ii) Hexokinase

(ii) Cytochrome oxidase

2. (a) With the help of chemical structures describe Tricarboxylic Acid Cycle. And write its energetics involved per cycle. (10)

(b) What are ketone bodies? Add a note on it. (5)

3. (a) Explain the sequence of reactions involved when one molecule of C-16 fatty acid is to be oxidized. (10)

(b) Comment upon chemiosmotic hypothesis. (5)

4. (a) Explain the reactions and significance of the Pentose Phosphate Pathway. Describe its role in NADPH generation. (10)

(b) "Gluconeogenesis is not just the reversal of glycolysis", justify the statement. (5)

5. (a) Give a detailed explanation of the Urea cycle with structural formulae, highlighting the events that occur in the mitochondria and cytosol. (10)
- (b) Give a detailed account of oxidative deamination with examples. (5)
6. Write short notes on **Any Three** : (5×3=15)
- (i) Malate aspartate shuttle
  - (ii) Glycogenolysis
  - (iii) Cascade of metabolic events in fasting and starvation
  - (iv) Complexes of Electron Transport Chain
  - (v)  $\omega$ -oxidation of fatty acid

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Your Roll No.....

Sl. No. of Question Paper : 1347

Unique Paper Code : 2233012003

Name of the Paper : Medical Zoology

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

Semester : III (DSE-3)

Duration : 3 Hours

Maximum Marks : 90

**Instructions for Candidates**

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

2. First or is compulsory and attempt 5 Q. in all.

1. (a) Define the following : (2×5=10)

- (i) Density-dependent inhibition
- (ii) Atherosclerosis
- (iii) Virulence
- (iv) Nyctalopia
- (v) Merozoites

P.T.O.

(b) Distinguish between :

(2×4=8)

- (i) Rickets and Osteoporosis
- (ii) Coronavirus and Rhinovirus
- (iii) Niacin deficiency and Thiamine deficiency
- (iv) Parasitism and Commensalism

(c) State True or False :

(1×4=4)

- (i) Severe lymphedema of limbs and genitalia are common clinical manifestations of intestinal hookworm infection.
- (ii) Aphids feed on phloem of plant stems with their piercing mouthparts and excrete sugary fluid. Ants carry aphids to different food sources, and protect them from predation. This is an example of mutualism.
- (iii) *Tsetse* fly is a vector that causes schistosomiasis.
- (iv) Leptospirosis is a zoonotic disease.

(d) Fill in the blanks :

(1×4=4)

- (i) The agents that cause cancer are called \_\_\_\_\_.

- (ii) The epidemiological triad model of infectious diseases causation includes \_\_\_\_\_ and, \_\_\_\_\_ besides environment.
- (iii) \_\_\_\_\_ is the causative organism of typhoid.
- (iv) Congenital hypothyroidism is also commonly called as \_\_\_\_\_.

(e) Expand the following :

(1×4=4)

- (i) SARS
- (ii) HIV
- (iii) MMR
- (iv) IBD

- 2. (a) Describe the pathogenesis of *Mycobacterium tuberculosis*. (7)
- (b) Explain how diabetes mellitus is different from diabetes insipidus. (8)
- 3. (a) Write a note on life history and pathogenicity of *Entamoeba histolytica*. (5)
- (b) Describe the biology of tumor growth, invasion and metastasis. (10)

4. (a) Explain transmission, prevention and control of malaria. (7)
- (b) What are the causes and symptoms of scurvy and anaemia? How is obesity linked with cardiovascular diseases? (8)
5. (a) Write a note on Vitamin D deficiency. (5)
- (b) Differentiate between marasmus and kwashiorkor. (5)
- (c) Explain symptoms, diagnosis and treatment of Lyme's disease. (5)
6. (a) Give a brief account on *Treponema* and mumps virus with suitable diagrams. (7)
- (b) Describe cause, symptoms and treatment of Cushing's syndrome. (8)
7. Write a short note on the following (**any three**):  
(5×3=15)
- (a) Rickettsia
- (b) Grading and staging of cancer
- (c) Measles
- (d) Crohn's disease
- (e) AIDS

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Your Roll No. ....

Sr. No. of Question Paper : 5855

Unique Paper Code : 32231301

Name of the Paper : Diversity of Chordata (OC)  
(LOCF)

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

Semester : III

Duration : 3 Hours

Maximum Marks : 75

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **FIVE** questions in all. Question No. 1 is compulsory.
3. **All** parts of a question should be answered together.
4. Draw labelled diagrams wherever necessary.

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

(i) Pneumatic bone

P.T.O.



(ii) Brood parasitism

(iii) Zoogeography

(iv) Adaptive radiation

(v) Paedogenesis

(b) Give the scientific name and classify upto order :  
(5)

(i) Sea Horse

(ii) Lance let

(iii) Parrot

(iv) Bat

(v) Cobra

(c) Differentiate between the following (**any four**) :  
(8)

(i) Catadromous and Anadromous migration

(ii) Eutheria and Metatheria

(iii) Ratitae and Carinatae

(iv) Tornaria larva and Tadpole larva

(v) Wallace's line and weber's line

(d) Give one function of each of the following  
(any five) : (5)

- (i) Ampullae of Lorenzini
- (ii) Patagium
- (iii) Endostyle
- (iv) Uropygial gland
- (v) Gas gland
- (vi) Proventriculus

(e) State whether the following statements are true  
or false : (5)

- (i) Snakes and turtles are without sternum.
- (ii) Gills are covered by an operculum in Chondrichthyes.
- (iii) Weberian ossicles are modified vertebrae.
- (iv) All chordates have a renal portal system.
- (v) Salmon fish is the example of catadromous migration.

2. (a) Give a brief account on origin of tetrapoda. (5)

(b) Discuss retrogressive metamorphosis in Urochordates. (7)

3. (a) Describe various larval forms in protochordates. Add a short note on retrogressive metamorphosis. (9)
- (b) Briefly discuss the structure of weberian ossicles. (3)
4. Define migration? Discuss the phenomenon of migration in birds. How do birds find their way during migration. (12)
5. (a) Explain the structure and function of various types of swim bladder. (6)
- (b) State the advanced features of vertebrates over protochordates. (6)
6. (a) Write a detailed note on the affinities of *Sphenodon*. (6)
- (b) Explain the structure of poison apparatus in snake with the help of well labelled diagrams. (6)
7. Write short notes on of the following (**any three**) : (4,4,4)
- (i) Osmoregulation in fish
  - (ii) Continental drift theory
  - (iii) Affinities of prototheria
  - (iv) General characteristics of Cephalochordata

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Your Roll No.....



Sr. No. of Question Paper : 6023

Unique Paper Code : 32231303

Name of the Paper : DSC-Fundamentals of Biochemistry

Name of the Course : B.Sc. (Hons.) Zoology, CBCS-LOCF

Semester : III

Duration : 3 Hours

Maximum Marks : 90

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. This paper contains **seven** questions.
3. Attempt **FIVE** questions in all.
4. Question no. 1 is compulsory.
5. Write structural formulae wherever required.

1. (i) Define the following terms : (5)

(a) Mutarotation

P.T.O.

- (b) Amphoteric molecules
  - (c) Holoenzyme
  - (d) Epimer
  - (e) Hypochromicity
- (ii) Differentiate between the following : (10)
- (a) Saturated Fats and Unsaturated fats
  - (b) N-Glycosidic and O-Glycosidic bond
  - (c) Cysteine and Cystine
  - (d) Reversible and irreversible enzymatic inhibition
  - (e) t-RNA and r-RNA
- (iii) Draw the structures of the following : (4)
- (a) Thymine
  - (b)  $\alpha$ -D-Fructose
  - (c) Phosphatidic acid
  - (d) Tyrosine

(iv) Give reasons for the following : (5)

- (a) Gelatin has low nutritional value.
- (b) Sucrose does not give positive Benedict's test.
- (c) Oils are liquid at room temperature.
- (d) Glycine is the only amino acid which is achiral.
- (e) Competitive inhibition can be overcome by increasing substrate concentration.

(v) Give name of the Scientists for the following : (3)

- (a) Lock and Key Model
- (b) Complementarity of DNA
- (c) Secondary structure of protein

2. (a) Explain structures and functions of structural and storage polysaccharides. (8,4)

(b) Write a note on isomerism in carbohydrates.

3. (a) Give salient features of Watson and Crick model of DNA. (6,6)

- (b) Explain different types of DNA.
4. (a) Describe the different levels of protein organization with appropriate diagrams. (9,3)
- (b) Write the physiological significance of essential and non-essential amino acids.
5. (i) Give classification of phospholipids with the help of structures. (8,4)
- (ii) Write a note on sterol-derived lipids.
6. (i) Derive the equation to explain the kinetics for a one-enzyme-one substrate reaction. (8)
- (ii) What is double reciprocal plot, give its significance. (4)
7. Write short notes (**Any three**): (4×3=12)
- (i) Cot Curves
- (ii) Glycoconjugates
- (iii) Denaturation of Proteins
- (iv) Factors affecting the activity of enzymes