

[This question paper contains 4 printed pages.]

Your Roll No. 2023-2024

Sr. No. of Question Paper : 1539

Unique Paper Code : 2232012301

Name of the Paper : Diversity of Chordates

Name of the Course : B.Sc. (H) Zoology – 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 any **FOUR** questions in all.
3. Question No. 1 is compulsory.
4. Draw well-labelled diagrams wherever necessary.

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

(a) Notochord

P.T.O.

- (b) Preen Gland
- (c) Amniote
- (d) Proteroglyphous
- (e) Paedogenesis
- (f) Rete mirabile

(ii) Differentiate between the following (**any three**) : (6)

- (a) Cephalochordate and Hemichordate
- (b) Prototheria and Metatheria
- (c) Anura and Apoda
- (d) Artiodactyla and Perissodactyla

(iii) Give Genus name of the following and classify upto order (**any four**) : (4)

- (a) Flying fish
- (b) Squirrel
- (c) Midwife toad
- (d) Lamprey
- (e) Krait

2. (a) Discuss various larval forms of protochordates and their significance.
- (b) Give the general characteristics of Agnatha. (9+6)
3. (a) Describe the osmoregulation in marine fishes.
- (b) Write a note on fauna of oriental region. (9+6)
4. (a) Give a stepwise account of biting mechanism of snake.
- (b) Justify the statement 'Sphenodon is a living fossil'. (9+6)
5. (a) Describe the various adaptations of the Aves that make them the master of the air.
- (b) How do birds find their way during migration? (9+6)
6. Write the short notes on **any three** of the following : (15)
- (a) Origin of Tetrapods

(b) Swim Bladder

(c) Parental Care in Amphibia

(d) Continental Drift Theory

[This question paper contains 4 printed pages.]

Your Roll No.

2023-2024

Sr. No. of Question Paper : 1577

Unique Paper Code : 2232012302

Name of the Paper : Biochemistry : 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 including Question No. 1 which is compulsory.
3. Draw well-labelled diagrams wherever necessary.

1. (i) Define the following terms (**Any four**) :

(1×4=4)

(a) Ubiquinone

(b) Chemiosmosis

P.T.O.

- (c) Ketogenesis
- (d) Substrate level phosphorylation
- (e) Catabolism
- (f) Uridine Diphosphate Glucose (UDPG)

(ii) Differentiate between **(Any two)** : $(2 \times 2 = 4)$

- (a) Phosphofructokinase I and Phosphofructokinase II
- (b) Glycogen phosphorylase and Glycogen synthase
- (c) Acyl CoA and Acetyl CoA
- (d) SGOT and SGPT
- (e) Phosphoenolpyruvate carboxykinase and Pyruvate kinase

(iii) Write the steps to bring about the following conversions with Structural formula **(Any two)** : $(2 \times 2 = 4)$

- (a) Pyruvate to Acetyl CoA
- (b) Succinyl CoA to Succinate
- (c) Fatty acid to Fatty acyl CoA
- (d) Aspartate to Glutamate

(iv) Give reasons for the following (**Any Three**) :
(1×3=3)

(a) Elevated level of glucose and acetone in untreated diabetes mellitus.

(b) Strenuous exercise leads to an increase in formation of lactate.

(c) Upon entering a cell glucose is phosphorylated. Give two reasons why this reaction is required.

(d) Role of biotin in Fatty acid oxidation

(i) Trace the path of electrons starting from Complex-I to Molecular Oxygen. Also discuss oxidative phosphorylation in its reference.

(12)

(ii) Give any three reactions catalyzed by dehydrogenases in Krebs's Cycle. (3)

(i) Elucidate the metabolic pathway for the biosynthesis of palmitic acid. Give the Structure of fatty Acid Synthase Complex. (9)

(ii) Enumerate the steps of glycolysis with chemical structures. (6)

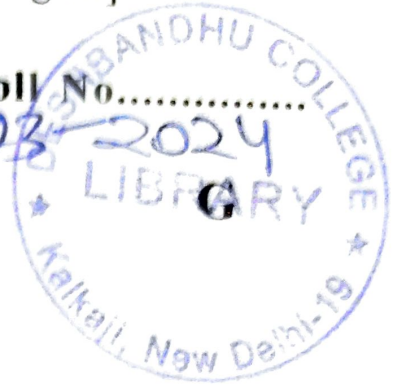
4. (i) Explain the hexose Monophosphate shunt with structural formula and its physiological importance. (10)
- (ii) Explain the role of transamination in the catabolism of amino acids. Support your answer with suitable examples. (5)
5. (i) Describe ornithine-citrulline cycle, represent chemical reaction with structures and enzymes only. (10)
- (ii) What is gluconeogenesis? Gluconeogenesis is energetically expensive but essential. Explain. (5)
6. Write short notes (**Any three**): (3×5=15)
- (i) Fate of C-skeleton of amino acids
 - (ii) Omega Oxidation of Fatty acid
 - (iii) Glycogen Metabolism
 - (iv) Shuttle system
 - (v) Cascade of metabolic events in fasting and starvation

(26)

[This question paper contains 8 printed pages.]

Your Roll No.....

9023-2024



Sr. No. of Question Paper : 1713

Unique Paper Code : 2233012003

Name of the Paper : DSE-3, 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. Attempt any **five** questions in all including question No. 1, which is compulsory.

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

(i) Epidemiology

(ii) Tetany

P.T.O.

(iii) Metastasis

(iv) Merozoites

(v) Thrombosis

(b) Distinguish between : (2×4=8)

(i) Primary host and secondary host

(ii) Benign tumours and malignant tumours

(iii) Parasitism and symbiosis

(iv) Incidence and Prevalence

(c) State True or False. (1×4=4)

(i) Culex is the vector of Dengue virus.

(ii) Cushing's syndrome is caused by low levels of hormone cortisol.

(iii) The SARS virus is a RNA virus.

(iv) *Myxovirus parotiditis* is causative agent for mumps.

(d) Fill in the blanks : (1×4=4)

(i) In TNM staging of cancer, N and M stands for _____ & _____, respectively.

(ii) Pellagra is related to deficiency of _____ .

(iii) _____ is commonly known as the giant Asian intestinal fluke.

(iv) MMR is related to the vaccination of

_____ .

(e) Choose the correct options :

(1×4=4)

(i) HIV is thought to have originated from-

(A) Dogs

(B) Chimpanzees

(C) Deer

(D) Goat

(ii) Which one is caused by bacterial infection-

(A) Mumps

(B) Cholera

(C) Addison's disease

(D) Influenza

(iii) For malaria parasite man is the-

(A) Intermediate host

(B) Definitive host

(C) Accidental host

(D) Sexual host

(iv) Marasmus is caused due to deficiency of-

(A) Vitamin A

(B) Protein

(C) Fat

(D) Carbohydrate

2. (a) What are the differences between acromegaly and gigantism? (3)
- (b) How is parasitism different from symbiosis and commensalism? (3)
- (c) Enlist three nutritional deficiencies along with their treatments. (9)
3. What are the clinical manifestations of *Wuchereria bancrofti* infection? How is it transmitted, diagnosed and treated? (15)

4. (a) Write a short note on carcinogens. (5)
- (b) Describe staging and grading in cancer. (10)
5. (a) Describe iron deficiency Anaemia (5)
- (b) What is the causative organism of tuberculosis?
- Explain diagnosis and treatment of the tuberculosis disease. (10)
6. What are the different diseases which come under cardiovascular diseases (CVD)? Explain three of them. (15)
7. Write short note on **any three** of the following :
- (a) Cretinism.

(b) How is diabetes mellitus different from diabetes insipidus?

(c) Inflammatory Bowel Disease (IBD)

(d) Osteoporosis

(e) Dengue

(5×3=15)

[This question paper contains 4 printed pages.]

2023
Your Roll No. 2024.....

Sr. No. of Question Paper : 2264

Unique Paper Code : 2234002001

Name of the Paper : Food Nutrition and Health

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

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. Question No. 1 is compulsory in each section.
3. Answer any **four** question.
4. Draw neat and labelled diagram wherever necessary.

1. (a) Define the following :

(5)

(i) Hypoglycemia

P.T.O.

- (ii) Body mass index
- (iii) Hypertension
- (iv) Prebiotics
- (v) Food pyramid

(b) Differentiate between :

(2×3)

- (i) Macronutrient and micronutrient
- (ii) Fat soluble and water soluble Vitamins
- (iii) Anorexia nervosa and Bulimia nervosa

(c) Fill in the blanks :

(4)

- (i) Vitamin D is a _____ vitamin.
- (ii) A disorder caused by Iodine deficiency is _____.
- (iii) Beri beri is caused due to deficiency of _____.
- (iv) Name one rich source of calcium _____.

2. (a) What are the physiological changes during old age? (5)
- (b) Discuss the nutritional needs during adolescence. What type of foods should be included in the diets of adolescents? (10)
3. (a) What are the factors that causes Diabetes mellitus? (7)
- (b) Describe various dietary and life style modification of a diabetic person. (8)
4. (a) Describe the causes, symptoms and treatment of Vitamin A deficiency diseases. (7)
- (b) Describe the various groups into which food can be classified. Mention the main nutrient in each food group. (8)
5. (a) What do you mean by malnutrition? Discuss with Protein energy malnutrition with examples. (10)
- (b) Define the term Health. (5)

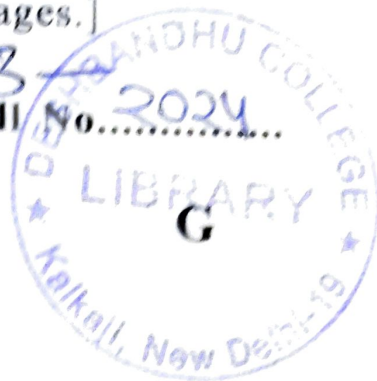
6. Write short notes on any **THREE** of the following

- (i) Vitamin K
- (ii) Role of Dietary Fibre
- (iii) Functions and Source of Vitamins
- (iv) RDA

(3×5)

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2023
Your Roll No. 2024



Sr. No. of Question Paper : 4355

Unique Paper Code : 32231301

Name of the Paper : Diversity of Chordates

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

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.
3. Question No. 1 is compulsory.
4. Illustrate your answers with diagram wherever necessary.

1. (a) Define :

(i) Neoteny

(ii) Realm

P.T.O.

(iii) Pterylosis

(iv) Amniotes

(4×1=4)

(b) Differentiate between the following :

(i) Prototheria and Eutheria

(ii) Placoid and Ctenoid scales

(iii) Altricial and Precocial development

(iv) Anura and Urodela

(4×2=8)

(c) Give the scientific name and classify the following upto order :

(i) Flying lizard

(ii) Mud puppy

(iii) Mongoose

(iv) Rat fish

(4×1½=6)

(d) Mark the following statement as TRUE or FALSE :

(i) Terrestrial ectotherms have evolved from the Crossopterygian fishes.

- (ii) Tail feathers of birds are called as remiges.
- (iii) Amphibians possess a dicondylic skull.
- (iv) R.B.Cs. of birds are enucleated.
- (v) Stomach of ruminants is three chambered.
- (vi) Quadrate is immovable in snakes.
(6×1/2=3)

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

- (i) Jacobson's organ
- (ii) Chloride cells
- (iii) Endostyle
- (iv) Pecten
(4×1 1/2=6)

2. Describe the various morphological, anatomical and physiological features of birds for a successful aerial life.
(12)

3. (a) Explain the different types of migratory movements of fishes.
(6)

(b) Describe the poison apparatus and biting mechanism of venomous snake.
(6)

4. (a) Define adaptive radiation and explain the structural modifications in locomotory appendages of mammals in relation to their habitats. (8)
- (b) Explain the retrogressive metamorphic changes during the development of Urochordates. (4)
5. Describe the parental care and its significance in Amphibians with suitable examples. (12)
6. (a) How is the internal balance of salt and water maintained in freshwater fishes? (4)
- (b) Describe the salient features and fauna of Australian and Ethiopian regions. (8)
7. Write short notes on **ANY THREE** of the following :
- (a) *Archaeopteryx*
- (b) Plate tectonic theory
- (c) *Sphenodon*
- (d) Dipleurula concept of origin of chordates
- (3×4=12)

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Your Roll No.....

Sr. No. of Question Paper : 4409

Unique Paper Code : 32231302

Name of the Paper : Physiology: Controlling and Coordinating Systems

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

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. Draw diagrams where ever required.

1. (a) Define the following terms : (5)
 - (i) Pseudostratified epithelium
 - (ii) Sarcomere
 - (iii) Graafian follicle
 - (iv) Gap junctions
 - (v) Integrating neurons

P.T.O.

(b) Differentiate between the following : (10)

- (i) Adenohypophysis and Neurohypophysis
- (ii) Isotonic and isometric muscle contraction
- (iii) Leydig cells and Sertoli cells
- (iv) Graded potential and Action potential
- (v) Autocrine and paracrine signalling

(c) Expand the following (**any FOUR**) : (4)

- (i) EPSP
- (ii) IGF
- (iii) ENS
- (iv) GABA
- (v) ACh
- (vi) MAO

(d) Give location and functions of the following : (4)

- (i) Islet of Langerhans
- (ii) Schwann cells
- (iii) Sarcoplasmic reticulum
- (iv) Parafollicular cells

(e) Fill in the blanks :

(4)

(i) _____ gives rise to the acrosome during spermiogenesis.

(ii) Hypersecretion of hGH during childhood results in _____

(iii) Keratinized stratified squamous epithelium is found in _____ and nonkeratinized stratified squamous epithelium is found in _____

2. (a) With the help of suitable examples, describe how negative feedback loops help in controlling hormone secretion. (6)

(b) How are blood calcium levels regulated in the body? (6)

3. (a) How and where in a neuron is an action potential generated? (10)

(b) If action potentials follow the all or none principle, how are different intensities of sensations like pain or touch perceived? (2)

4. (a) How does excitation of the sarcolemma result in contraction of a skeletal muscle? (7)

- (b) Name the structural proteins present in the skeletal muscle and their functions? (5)
5. (a) Discuss the role of different hormones secreted by the pituitary and the ovaries during the follicular and the luteal phases of the menstrual cycle. (10)
- (b) What is the significance of the positive feedback effect of estrogens in the menstrual cycle? (2)
6. (a) Describe the signal transduction pathway in the physiology of vision. (10)
- (b) What is light and dark adaptation? (2)
7. Write short notes on **any three** of the following : (3×4=12)
- (a) Synthesis of thyroid hormones
- (b) Histological differences between spongy and compact bone
- (c) Male accessory glands
- (d) Glial cells

(29)

[This question paper contains 4 printed pages.]

2023-2024
Your Roll No.....

Sr. No. of Question Paper : 4523

G

Unique Paper Code : 32231303

Name of the Paper : Fundamental of Biochemistry

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

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 **FOUR** questions in all.
3. Question No. 1 is compulsory.

1. (i) Define the following (**any six**) : (6)
 - (a) Isoelectric point
 - (b) Cofactors
 - (c) K_{cat}/K_m
 - (d) Ampholytes
 - (e) Chiral carbon

(f) Cerebrosides

(g) Molecular Chaperons

(ii) Differentiate between the following (**any six**) :

(2×6=12)

(a) Phospholipid and Glycolipid

(b) Amylose and amylopectin

(c) Competitive and Non-competitive Inhibition

(d) Reducing and non-reducing sugar

(e) Glycosidic and Peptide bond

(f) Phi-angle and Psi-angle

(g) Globular and Fibrous protein

(iii) Write structure for the following (**any three**) :

(1×3=3)

(a) An aromatic amino acid

(b) Deoxyribose

(c) Glycerol

(d) Guanine

(e) β -D Fructofuranose

- (iv) Write the contribution of following scientists: (1×3=3)
- (a) Daniel E. Koshland
 - (b) Christian B. Anfinsen
 - (c) Max F. Perutz
- (v) State whether True or False : (0.5×6=3)
- (a) Oleic acid is an example of monounsaturated fatty acid.
 - (b) Unsaturated fats have double bond in the carbon chain of their fatty acid.
 - (c) An equimolar concentration of D and L-alanine rotates the plane of polarized light.
 - (d) Allosteric enzymes are oligomeric and follow Michaelis-Menten equation.
 - (e) Histidine is an aromatic amino acid.
 - (f) Sphingomyelin is a membrane lipid that contains an amide bond.

2. (a) Derive Michaelis Menten equation, plot a Graph and Explain concept of change in Velocity and V_{max} , under different condition $S \ll K_m$, $S \gg K_m$, and $S = K_m$.