

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5758

K

Unique Paper Code : 2232011101

Name of the Paper : Non Chordata-Protista to
Pseudocoelomates (DSC-1)

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

Semester : I

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**) : (4)

(a) Digenetic

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(b) Bilateral Symmetry

(c) Holozoic nutrition

(d) Pseudocoelom

(e) Metachronal rhythm

(ii) Differentiate between the following pairs (**any two**) : (4)

(a) Endomixis and Autogamy

(b) Primary host and Secondary host

(c) Dactylozooids and Gonozooids

(iii) Match the Columns : (4)

(a) *Apophyle*

1) *Hydra*

(b) Amphids

2) *Paramecium*

(c) Kappa particles

3) Sponges

(d) Coelenteron

4) Nematoda

(iv) Give the exact location and one function of each of the following (any three) : (3)

- (a) Pyrenoids
- (b) Penial spicules
- (c) Colloblast
- (d) Pneumatophore

2. (a) Explain the process of conjugation in Paramecium. Discuss its significance. (10)

(b) Discuss the sol-gel theory of locomotion in Amoeba with the help of diagram. (5)

3. (a) Give the general characteristics of Phylum Cnidaria. (5)

(b) Define polymorphism. Give a detailed account of polymorphism in Siphonophora and its significance. (10)

4. (a) Define corals. Explain in detail different types of coral reefs. (9)

- (b) Give an outline classification of phylum Platyhelminthes with characters and examples of each class. (6)
5. (a) Explain the course of migration of *Ascaris* larva within its host body. (10)
- (b) What is Parazoa? Mention its main features. (5)
6. Write short notes on any three of the following: (5×3=15)
- (a) Parasitic adaptations in Helminthes
- (b) Ciliary locomotion in Paramecium
- (c) Syconoid Canal System
- (d) Affinities of Ctenophora

(2)
[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5992

K

Unique Paper Code : 2232011103

Name of the Paper : Concepts of Ecology

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

Semester : I

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 including Question No. 1, which is Compulsory.
3. Attempt different parts of the same question **one** after the other.

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1. (a) Define the following (any four) :

(1×4=4)

- (i) Allelopathy
- (ii) Carrying capacity
- (iii) Relative abundance
- (iv) Guilds
- (v) Net Primary Productivity

(b) Distinguish between the following (any two) :

(2×2=4)

- (i) Mutualism and Amensalism
- (ii) Unitary and Modular population
- (iii) r-selected and k-selected species
- (iv) Detritus food chain and grazing food chain

(c) Name the scientist associated with following (any three) :

(1×3=3)

- (i) Capture-Recapture method
- (ii) Spatial Niche
- (iii) Law of minimum
- (iv) Experimental demonstration of Keystone predation

- (d) Illustrate the following with the help of diagrams
(any two) : (2×2=4)
- (i) Type I Functional Response
 - (ii) Logistic growth Curve
 - (iii) Patterns of dispersion
2. (a) Enlist and discuss role of various density-dependent factors in regulating population growth. (9)
- (b) Briefly explain features and components of terrestrial ecosystem and also add a note on stratification in such ecosystem. (6)
3. (a) Describe various possible outcomes of inter-specific competition between two species with graphical representation and equations. (10)
- (b) Briefly discuss the Law of tolerance with the help of examples. (5)
4. (a) Write an illustrative account of community succession. Explain different theories of community succession. (9)

- (b) Explain different diversity indices with equations. Add a note of their significance in ecological studies. (6)
5. (a) Give an illustrative account of linear and Y-shaped energy flow model in an ecosystem with diagram. (9)
- (b) Explain the objective and principles on which environmental impact assessment works. (6)
6. Write short notes on **any three** of the following : (5×3=15)
- (a) Life table
- (b) Light as a limiting factor
- (c) Ecological Pyramids
- (d) Ecotone and Edge effect
- (e) In situ and Ex situ conservation of biodiversity

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[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5738

K

Unique Paper Code : 2232012301

Name of the Paper : Diversity of Chordates.
DSC-7

Name of the Course : B.Sc. (H) Zoology Theory
Examination, Nov-Dec 2025

Semester : III, NEP, UGCF

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 five questions in all.
3. Question No. 1 is compulsory.
4. Draw well labelled diagrams wherever required.

1. (a) Define each of the following terms :

(3)

(i) Amniotes

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(ii) Neornithes

(iii) Retrogressive metamorphosis

(b) Differentiate between each of the following :

(3×2=6)

(i) Notochord and Stomochord

(ii) Anura and Urodela

(iii) Poikilotherms and Homeotherms

(c) Give the location and function of each of the following :

(3)

(i) Chloride cells

(ii) Syrinx

(iii) Endostyle

(d) Classify the following upto orders :

(3)

(i) *Crocodylus*

(ii) *Branchiostoma*

(iii) *Funambulus*

2. (a) Discuss the echinoderm theory of origin of chordates. (8)
- (b) Give an account of the general characteristics of cephalochordates. (7)
3. (a) Discuss parental care in amphibians by citing examples in support of your answer from all the orders that you have studied. (8)
- (b) How do freshwater fishes maintain an internal balance of salt and water? (7)
4. (a) Discuss in detail the biting mechanism of venomous snakes. (10)
- (b) Briefly describe latitudinal migration in birds. (5)
5. (a) Give a detailed account of Wegener's hypothesis for distribution of animals on earth. How does it correlate with the geological time scale? (10)
- (b) Add a note on plate tectonics. (5)

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6. Write short notes on any three of the following:

(a) Characteristics of mammals

(b) Tornaria larva

(c) *Ethiopian realm*

(d) Functions of swim bladder in fishes

(3×5=15)

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Your Roll No.....

Sr. No. of Question Paper : 5816 **K**

Unique Paper Code : 2232012302

Name of the Paper : DSC : Biochemistry of
Metabolic Processes

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. Attempt any **FOUR QUESTIONS** in all, and Question No. 1 is **COMPULSORY**.

1. (i) What do you understand by the following terms?
(any four) (4)

(a) Substrate-level phosphorylation

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(b) Cori Cycle

(c) Rotational Catalysis

(d) NAFLD

(e) P/O ratio

(ii) Fill in the following blanks with an appropriate word : (4)

(a) _____ carries long chain activated fatty acids into the mitochondrial matrix.

(b) Luis Leloir (1957), along with his coworkers, showed that Glycogen is synthesized by a pathway that utilizes _____ .

(c) Transamination reactions transfer amino groups to _____ to form glutamate, which can be deaminated to supply ammonia for CPS I.

(d) During Glycogen synthesis the priming function is carried out by _____ .

(iii) Match the following:

(3)

- | | |
|-----------------------------|---|
| (a) Aconitase | (i) Mono- and Dioxygenases |
| (b) NADH dehydrogenase | (ii) Malonate |
| (c) Diabetic cataract | (iii) Fluoroacetate |
| (d) Glycogen metabolism | (iv) Rotenone, Amytal, and Piericidin A |
| (e) Detoxification | (v) Fructose & Sorbitol |
| (f) Succinate dehydrogenase | (vi) Pyridoxal phosphate |

(iv) Give the supportive reason/s for the following:
(any two) (4)

- (a) Why are the levels of SGOT and SGPT measured in LFT?
- (b) Why Gluconeogenesis is not a reversal of Glycolysis?
- (c) Why is fatty acid oxidation highly exergonic?

2. (a) Explain Glycolysis with the chemical structures, its phases and bioenergetics involved. (10)

(b) Give a detailed account of the fates of pyruvate formed at the end of Glycolysis. (5)

3. (a) What is pentose phosphate pathway and give its significance. 10
- (b) Trace the path of electrons in ETC till they reach Oxygen. (5)
4. How ammonia is excreted in ureotelic animals, explain with the help of chemical structures, and give its stoichiometry. (15)
5. (a) Describe Carnitine shuttle system for the transportation of fatty acids and explain β -oxidation steps in mitochondria. (10)
- (b) Explain how glucagon mobilizes fat from adipose tissue during starvation. (5)
6. Short Notes : (any three) (5×3=15)
- (a) Fructose and Galactose are converted into glycolytic intermediates
- (b) Metabolic interconnection between glucose-6-phosphate, pyruvate, and acetyl-CoA
- (c) Omega oxidation and significance
- (d) Ketogenesis and significance
- (e) Energy-conserving steps involved in the citric acid cycle

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[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5973

K

Unique Paper Code : 2232012303

Name of the Paper : Human Physiology: Life
Sustaining Systems/ DSC-9

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

Semester : III (NEP-UGCF)

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 **four** questions in all. Question no. **1** is compulsory.
3. Draw well-labelled diagrams wherever necessary.

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1. (a) Define the following (any three):

(3)

(i) Macula densa

(ii) Haldane effect

(iii) Ultrafiltration

(iv) Cardiac reserve

(b) Differentiate between the following:

(6)

(i) Peristalsis and segmentation.

(ii) Auerbach's plexus and Meissner's plexus.

(iii) Tricuspid and mitral valve.

(c) Expand the following:

(2)

(i) GIP

(ii) JGA

(iii) EPO

(iv) ENS

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

(i) Type II alveolar cells

(ii) Paneth cells

(iii) Podocytes

(iv) Intercalated discs

2. (a) Describe the different phases of the cardiac cycle. Illustrate the pressure and volume changes during a complete cardiac cycle. (10)

(b) Add a note on the fibrinolytic system, giving its significance. (5)

3. (a) Explain Frank Starling's law of the heart. Describe various factors for regulating stroke volume and heart rate. (9)

(b) Describe various pulmonary volumes and capacities. Illustrate their relationship with the help of a labelled diagram. (6)

4. (a) Explain how the counter-current exchange mechanism helps in the formation of diluted urine. (9)
- (b) Discuss the hormonal regulation of tubular reabsorption and secretion. (6)
5. (a) Give a detailed account of mechanical and chemical digestion in the stomach. (10)
- (b) Explain how bile plays a role in the digestion of fat. (5)
6. Write short notes (**any three**): (5+5+5)
- (i) Carbohydrate absorption in the small intestine.
- (ii) Formation of HCl in the stomach.
- (iii) Juxtaglomerular apparatus.
- (iv) Conduction system of the heart.

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 510

K

Unique Paper Code : 2233010013

Name of the Paper : Reproductive Biology (DSE)

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

Semester : V

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 terms (*Any five*):

(1x5=5)

- a) Amenorrhea
- b) Ectopic pregnancy
- c) Fertilization
- d) Chorionic pulse
- e) Colostrum
- f) Spermiogenesis

(B) Differentiate between the following (*Any five*):

(2x5=10)

- a) Induced ovulation and Spontaneous ovulation
- b) Acrosome reaction and Cortical Reaction
- c) Monoestrus and Polyestrus
- d) Necropermia and Asthenozoospermia
- e) Menopause and Menarche
- f) Steroid and Protein hormone

(C) Fill in the blanks: (*Any five*)

(1x5=5)

- a) _____ is the precursor molecule for synthesis of steroid hormones.
- b) Granulosa cells are luteinised under the influence of _____.
- c) Testis descends into the scrotal sacs from the pelvic cavity through _____.
- d) The human oocyte is arrested at _____ stage of meiosis before fertilization.
- e) _____ structure connects hypothalamus and pituitary.
- f) _____ is primary estrogen during pregnancy.

(D) Name the location and any one function of the following: (*Any five*).

(1x5=5)

- a) Thecal cells

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- b) Cumulus Oophorous
- c) Zona pellucida
- d) Cowper's glands
- e) Ampulla
- f) Leydig Cells

(E) Expand and Function of the following terms (*Any five*):

(1x5=5)

- a) HSD
- b) hCG
- c) StAR
- d) GnRH
- e) RISUG

2. a) Define infertility. Discuss any four causes of female infertility. (9)
 b) With the help of a neat well-labeled diagram show the cellular components of the Testis. Discuss the function of each cell. (6)
3. What is spermatogenesis? Discuss the process in detail, supported by a suitable diagram. Explain the significance of Sertoli cells and blood-testis-barrier in the process. (15)
4. (a) Explain the process of parturition in humans. Add a note on its hormonal control. (9)
 (b) Discuss the changes in the reproductive tract during the menstrual cycle. (6)
5. (a) .What are different methods of contraception? Describe their mode of action. (9)
 (b) Describe the process of implantation in humans. Explain its types and various stages involved. (6)
5. (a) What is assisted reproductive technology (ART)? Describe the various types of ART used in the management of Infertility (any three techniques). (9)
 (b) Give an account of Hypothalamo-hypophyseal ovarian axis in regulation of menstrual cycle. (6)
6. Write short notes on (*Any three*): (5x3=15)
 - a. Steroidogenesis in Fetoplacental unit
 - b. Accessory glands of male reproductive system
 - c. Folliculogenesis
 - d. Sperm maturation in epididymis

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5719

K

Unique Paper Code : 2232013501

Name of the Paper : DSC-13: PRINCIPLES OF IMMUNOLOGY

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

Semester : V (NEP-UGCF)

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.
3. Attempt **FOUR** questions in all.
4. Draw neat labelled diagrams wherever necessary.

1. (a) Define the following terms : (1×4=4)

(i) Haematopoiesis

(ii) Agglutination

(iii) Arthus reaction

(iv) Avidity

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(b) Differentiate between any **THREE** of the following : (2×3=6)

- (i) Active immunity and Passive immunity.
- (ii) Class I MHC molecule and Class II MHC molecule.
- (iii) Classical pathway and Alternative pathway of the Complement System.
- (iv) Primary immunodeficiency and Secondary immunodeficiency.

(c) Expand the following : (4×0.5=2)

- (i) PRR
- (ii) BCR
- (iii) HLA
- (iv) CLIP

(d) Write the contribution(s) of : (3×1=3)

- (i) Edward Jenner
- (ii) Wu and Kabat
- (iii) Milstein and Köhler

2. (a) Describe in detail the role of various barriers involved in the innate immune system. (9)
- (b) Define Immunogenicity. Discuss the factors influencing immunogenicity. (6)
3. (a) Elucidate the structure of the antibody based on experiments. (8)
- (b) Explain the processing and presentation of endogenous antigens in a cytosolic pathway. (7)
4. (a) Categorize the hypersensitivity reactions as per Gell and Coombs classification. Elaborate on Type I and Type II Hypersensitivity reactions in detail. (8)
- (b) Illustrate and discuss the production and selection of monoclonal antibodies by hybridoma technology. (7)
5. (a) Describe the various types of vaccines. How is a multivalent vaccine better than a monovalent vaccine? (8)
- (b) Define autoimmunity and describe its probable causes. (7)

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6. Write short notes on any **THREE** of the following :
(3×5=15)

- (i) Clonal Selection Theory
- (ii) Cytokines
- (iii) AIDS vs SCID
- (iv) Lectin pathway of the complement system
- (v) Cardinal signs of inflammation

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5854

K

Unique Paper Code : 2232013503

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

Name of the Course : **Fundamentals of Genetics**

Semester : V

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.

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

(1×3=3)

(i) Frameshift mutation

(ii) Gynandromorphs

(iii) Penetrance

(iv) Pleiotropy

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(b) Give a suitable example for each (any three) :
(1×3=3)

- (i) Base Analogue
- (ii) Sex-influenced trait
- (iii) Lethal gene
- (iv) An allopolyploid

(c) Differentiate between the following (any three) :
(2×3=6)

- (i) Simple and Composite Transposons
- (ii) Silent mutation and Non-sense mutation
- (iii) Nuclear inheritance and extranuclear inheritance
- (iv) Monoecious and Dioecious organisms

(d) Explain the following : (3)

- (i) Distance in Linkage maps is expressed in map units, not in base pairs.
- (ii) Inversions are crossover suppressors.

2. (a) In *Drosophila*, the recessive mutant allele cinnabar (*cn*) results in bright red eyes, curved (*c*) results in curved wings, and plexus (*px*) has extra wing veins. All three genes are linked. In a cross between *cn c px / + + +* females and *cn c px / cn c px* males, the following progeny were counted :

- (i) Deduce the order of genes.

Phenotype (Genotype)	Number
<i>cn c px</i>	296
<i>cn c +</i>	63
<i>cn + +</i>	119
<i>cn + px</i>	10
<i>+ c px</i>	86
<i>+ c +</i>	15
<i>+ + +</i>	329
<i>+ + px</i>	82
Total	1000

- (ii) Determine the map distance and construct a linkage map.

- (iii) Calculate the coefficient of coincidence and interference. (2+4+2=8)

- (b) Discuss somatic cell hybridisation and the use of HAT medium. Explain its significance for gene mapping. (7)

3. (a) What are non-allelic interactions? Explain any three modified Mendelian ratios. (10)
- (b) Explain how chromosomes carrying visible structural mutations were used to demonstrate the cytological basis of crossing over. (5)
4. (a) Give an account of various types of gene mutations. Discuss their effects with suitable examples. (10)
- (b) What is aneuploidy? Give one example each of monosomy and trisomy in humans, along with their karyotype abbreviations. (5)
5. (a) What is cytoplasmic inheritance? Classify cytoplasmic inheritance with examples. (10)
- (b) Write a note on Retrotransposons. (5)
6. Write short notes on any **three** of the following :
- (i) Dosage Compensation
 - (ii) Transposable elements in Bacteria
 - (iii) Polyploidy
 - (iv) Polygenic Inheritance (3×5=15)

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[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5797 **K**

Unique Paper Code : 2232013502

Name of the Paper : Cell & Molecular Biology

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

Semester : VI NEP-UGCF

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 including Question No. 1 which is compulsory.

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

- (i) Polyribosome
- (ii) Primer
- (iii) Spliceosome
- (iv) Codon

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(b) Differentiate between the following (any four) :

(8)

- (i) Promoter and Enhancer
- (ii) Group I and Group II introns
- (iii) Monocistronic and Polycistronic mRNA
- (iv) Sigma factor and Transcription factor
- (v) Autocrine and Paracrine signaling

(c) Expand the following :

(3)

- (i) RBS
- (ii) sn RNP
- (iii) MAPK
- (iv) EFTu
- (v) CREB
- (vi) SSBP

(d) State the function of the following (any four) :

(4)

- (i) Telomerase
- (ii) RNA polymerase III
- (iii) Cytidine deaminase
- (iv) 7-methyl guanosine cap
- (v) Topoisomerase

2. (a) Describe the characteristic features of an apoptotic cell. How an extracellular factor brings about apoptosis in a cell? (7)
- (b) What are the properties of stem cells? Write a brief note on iPSCs. (7)
3. (a) Comment upon the following : (7)
- (i) Degeneracy and Unambiguity of genetic code
- (ii) Fidelity of protein synthesis
- (b) Illustrate signal transduction through G protein coupled receptor and cAMP with suitable example. (7)
4. (a) Explain the mechanism of transcription termination in prokaryotic and eukaryotic mRNAs. (7)
- (b) Describe the post transcriptional modifications of eukaryotic mRNA. (7)
5. (a) Illustrate semiconservative, semidiscontinuous and bidirectional nature of DNA replication with suitable diagrams (No description required). (7)

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- (b) Discuss the role of various enzymes / proteins involved in DNA replication in prokaryotes. (7)
6. (a) How can one gene produce many different proteins? Explain with examples. (7)
- (b) Describe the process of translation in prokaryotes. (7)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 507

K

Unique Paper Code : 2232014701

Name of the Paper : DSC-19, Animal Models and Experimentation

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

Semester : VII, NEP-UGCF 2022

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.

1. (a) Define **any five** of the following : (5)

(i) Isogenic model

(ii) Organoid

(iii) Bias

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(iv) Preclinical trial

(v) Restraint

(vi) Necroscopy

(b) Distinguish between the following (any four) : (8)

(i) Inbred and outbred animal models

(ii) Rat and mice

(iii) Xenotransplantation and allotransplantation

(iv) Hypothesis and objectives

(v) Animal welfare and animal rights

(c) Expand the following terms (any four) : (2)

(i) ADME

(ii) CRISPR

(iii) IAEC

(iv) SOP

(v) MCI

2. (a) Explain the animal models that are used for studying neurological disorders and discuss their applications. (9)

- (b) What ethical guidelines must be followed when conducting animal experiments? (6)
3. (a) Explain randomization and sample size estimation in the research studies for using animal models. (9)
- (b) Give details of the regulatory framework prevalent in India with regards to animal research. (6)
4. (a) Define Gene editing. Describe the use of CRISPR-Cas9 technology in creating knockout animal models. (9)
- (b) What are 'Good Laboratory Practices' for animal studies? (6)
5. (a) Are there any alternatives to animal studies? Elaborate on any two of the models, giving their advantages and limitations. (9)
- (b) Describe the chemical induction of Type I & Type II diabetic model in mice using Streptozotocin (STZ). (6)

6. (a) Describe the responsibilities, composition and challenges of Institutional Animal Ethics Committee. What are the main criteria they use to evaluate and approve an animal research protocol? (9)
- (b) Distinguish between acute and chronic toxicity studies in preclinical drug testing. (6)
7. Write short notes on **any three** of the following : (3×5)
- (a) Zebrafish as an animal model
- (b) Anxiety tests
- (c) Tissue collection and processing
- (d) Significance of animals in biomedical research
- (e) Principles of the 3Rs

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[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 9130 **K**

Unique Paper Code : 2233010019

Name of the Paper : DSE – Ichthyology

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

Semester : VII (NEP - UGCF)

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.
3. Question no. 1 is compulsory
4. Draw neat and well-labelled diagrams wherever necessary.

1. (a) Define the following : (1×5=5)

(i) Ichthyology

(ii) Exotic carp

(iii) Fisheries

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(iv) Homeostasis

(v) Fecundity

(b) Differentiate between any five of the following :
(2×5=10)

(i) Osteichthyes and Chondrichthyes

(ii) Gastric fish and Agastric fish

(iii) Placoid and Cycloid scales

(iv) Live bearers and egg layers

(v) Monoculture and polyculture

(vi) Physostomous and Physoclistous

(c) Write the location and function of the following :
(2×5=10)

(i) Otolith

(ii) Swim bladder

(iii) Gill arch

(iv) Chloride cells

(v) Caudal fin

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(d) Match the following Columns : (1×5=5)

- | | |
|-----------------------------|-------------------|
| (i) Dipnoi | a. Migratory fish |
| (ii) Mechanoreceptor | b. Lung fish |
| (iii) Eel | c. Sharks |
| (iv) Coiling around the egg | d. Lateral line |
| (v) Heterocercal tail | e. Parental care |

2. (a) What is fish migration? Briefly explain the different type of migration of fishes with suitable examples. (10)

(b) Write the general morphological, physiological, and ecological characteristics of fishes. (5)

3. (a) Describe the various adaptations found in hill-stream fishes with the help of diagrams. (10)

(b) Give a detailed account of parental care in fishes with suitable examples. (5)

4. (a) Describe the different types of scales found in fishes and draw well-labelled diagrams of each type. (10)

(b) What is a swim bladder? Describe its structure, functions, and significance in fishes. (5)

5. (a) Explain the cardiovascular physiology of fishes. Describe the structure of the fish heart and outline the pathway of blood circulation in the fish body. (10)
- (b) Describe in detail the structure of gill in fishes. (5)
6. (a) What is induced breeding in fishes? Explain the techniques, hormones used, and advantages of induced breeding in aquaculture. (10)
- (b) Briefly describe the major adaptations in deep-sea fishes. (5)
7. Write the short notes on any three of the following : (5×3=15)
- (a) Sensory system in fishes
- (b) Acid-base balance in fishes
- (c) Fish larval stages
- (d) Food and feeding habits of fishes

[This question paper contains 2 printed pages]

Your Roll No.....

Sr. No. of Question Paper :
 Unique Paper Code : 2233012003
 Name of the Course : Zoology, DSE-3
 Name of the Paper : Medical Zoology
 Semester : III
 Time : 3 hrs

Maximum Marks : 90

Instructions for Candidates

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

Attempt any five questions in all including question No.1, which is compulsory.

Q.1

(a) Define the following (2x5=10)

- i. Window Period
- ii. Pathogenicity
- iii. Haematoagglutinin (HA)
- iv. Fomites
- v. Nyctalopia

(b) Distinguish between the following (2x4=8)

- i. Vectors and carriers
- ii. Definite and intermediate hosts
- iii. Prevalence and Incidence
- iv. Lymphoma and Myeloma

(c) Fill in the blanks. (1x5=5)

- i. Scurvy is caused by the deficiency of _____.
- ii. The primary site of mumps infection is the _____.
- iii. Widal test is used in diagnosis of _____.
- iv. HbA1c level of _____% or higher indicates diabetes mellitus.
- v. The ring-shaped form of the parasite seen inside RBCs is known as the _____ stage.

(d) State true or False (or tick the correct options) (1x3=3)

- i. Influenza is caused by a protozoan.
- ii. The MMR vaccine is used to prevent Mumps, Measles and Rickets.
- iii. Colonoscopy is used to diagnose and monitor IBD.

(e) Name the causative organism of the following infectious diseases (1x4=4)

- i. Tetanus
- ii. AIDS
- iii. Scrub typhus
- iv. Malaria

- Q.2 (a) Describe the life-history of *Fasciolopsis buski* with the help of suitable diagram. (10)
(b) Discuss the characteristics of Iron Deficiency Anaemia. (5)
- Q.3 (a) What are Oncogenes? Explain their mechanisms. (5)
(b) Discuss the symptoms, diagnosis, treatment and management of diabetes mellitus. (10)
- Q.4 (a) What are the sign and symptoms of pulmonary tuberculosis. Discuss its diagnosis and treatment measures. (10)
(b) Give a brief account of the human diseases caused by *Rickettsia*. (5)
- Q.5 (a) Explain the mechanism of Cushing syndrome and its treatment. (5)
(b) Describe the different hallmarks of cancer. (10)
- Q.6 (a) Describe vitamin deficiency disorders Rickets and Beri Beri. (7)
(b) Discuss the symptoms, diagnosis and treatment of HIV patients. (8)
- Q.7 Write short notes on any three of the following: (5x3=15)
- i. Dengue fever
 - ii. Epidemiology
 - iii. Atherosclerosis
 - iv. Sleeping sickness
 - v. Vaccines