

June 2025 H

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S. No. of Question Paper : 5789

Unique Paper Code : 2232011201

Name of the Paper : Non-chordata : Coelomates

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

Semester : II

Duration : 2 Hours

Maximum Marks : 60

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

Attempt any four questions in all.

Question No. 1 is compulsory.

Attempt various parts of question at one place only.

Draw well labelled diagrams wherever necessary.

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

3

(a) Eusociality

(b) Cephalization

(c) Evisceration

(d) Adaptive gills.

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

6

(b) Atoky and Epitoky

(b) Monopectinate and Bipectinate gills

P.T.O.

(c) Apposition and Superposition image

(d) Enterocoelomates and Schizocoelomates

(iii) Name an organism in which the following structures are present. Write one function of each (any *three*) : 3

(a) Radula

(b) Aristotle's lantern

(c) Dermal papillae

(d) Book lungs.

(iv) Give the generic name of the following and classify up to classes (any *three*) : 3

(a) King crab

(b) Sea mica

(c) Brittle star

(d) Peacock worm.

2. (a) Describe the different organs of excretion present in oligochaetes. Draw well labelled diagrams. 8

(b) Write the theories of metamerism in annelida. 7

3. (a) Give an account of social life in honeybees. 6

(b) Describe how insects have evolved various respiratory structures and adapted themselves to thrive in diverse environments. 9

4. Describe the phenomenon of torsion in gastropods. Write its significance and supporting theories. 15
5. (a) Explain the ambulacral system in asteroids with the help of a well labelled diagram. 10
- (b) Briefly discuss the pulmonary respiration in molluscs. 5
6. Write short notes on the following (any *three*) : 15
- (a) Evolutionary significance of *Peripatus*
- (b) Pearl formation in bivalves
- (c) Trochophore larva
- (d) Metamorphosis in insects.

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S. No. of Question Paper : 5809

Unique Paper Code : 2232011202

Name of the Paper : DSC : Fundamentals of Biomolecules

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

Semester : II (NEP-UGCF)

Duration : 2 Hours

Maximum Marks : 60

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

Attempt four questions in all.

Q. No. 1 is compulsory.

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

4×1=4

- (i) Enantiomer
- (ii) Mutarotation
- (iii) Plasmalogens
- (iv) Holoenzyme
- (v) Amphipathy

(b) Distinguish between (any four) :

4×2=8

- (i) Reducing and Non-reducing sugar
- (ii) O-glycosidic linkage and N-glycosidic linkage

P.T.O.

(iii) Syn and anti-conformations

(iv) Essential and Non-essential amino acids

(v) Saturated and Unsaturated fatty acids.

(c) Draw the chemical structures (any *three*) :

3×1=3

(i) Lactose

(ii) Hyaluronic acid

(iii) Adenine

(iv) Cholesterol

(v) Leucine.

2. (a) Describe Watson and Crick model of double helical structure of DNA using a well-labelled diagram. 10

(b) Describe *two* previous studies that formed the basis of double helical structure of DNA proposed by Watson and Crick. 5

3. (a) Derive the Michaelis-Menten equation of enzyme kinetics. 9

(b) What are bi-substrate reactions ? Give their types with example. 6

4. (a) What are structural lipids ? What are different types of structural lipids ? 9

(b) A structural biologist is analyzing the polysaccharide starch, which is composed of amylose and amylopectin.

(i) Draw the structure of amylose and amylopectin and explain how they differ from each other. 3

- (ii) How do the differences in the glycosidic linkages between glucose units in starch and cellulose affect their functions in living organisms ? 3
5. (a) What are the various levels of organization of protein structures ? Describe in detail. 10
- (b) Describe the forces responsible for maintaining the tertiary structure of proteins. 5
6. Write short notes on the following (any *three*) : 3×5=15
- (a) Structural polysaccharides
 - (b) Enzyme inhibition
 - (c) Structure of *t*-RNA
 - (d) Ramachandran plot
 - (e) Classification of amino acids.

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S. No. of Question Paper : 5829

Unique Paper Code : 2232011203

Name of the Paper : Human Physiology-Control and Coordination
Systems/Discipline Specific Core-6

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

Semester : II (NEP-UGCF)

Duration : 2 Hours

Maximum Marks : 60

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

Attempt four questions in all.

Question No. 1 is compulsory

Draw well labelled diagram wherever necessary.

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

4

(i) Enteric plexuses

(ii) Second messenger

(iii) Andrology

(iv) Aponeurosis

(v) Spermiation.

P.T.O.

- (b) Differentiate between the following : 4
- (i) IPSP and EPSP
 - (ii) Sertoli and Leydig cells.
- (c) Fill in the blanks : 2
- (i) cells of pancreatic islet secrete insulin.
 - (ii) A is a bundle of axon located in the central nervous system.
- (d) Expand the following abbreviation : 2
- (i) PNS
 - (ii) ACh
 - (iii) GAGs
 - (iv) TBG
- (e) Give the location and function of the following : 3
- (i) Acrosome
 - (ii) Chromaffin cells
 - (iii) Cremaster muscle

2. (a) Discuss the events involved in excitation-contraction coupling cycle. 8
- (b) Give an account on microscopic organization of skeletal muscle. 7
3. (a) Discuss the concept of summation of graded potential. How does generation of action potentials take place using different types of voltage gated channels ? 9
- (b) Compare graded potential with action potential in neuron. 6
4. (a) Describe the process of spermatogenesis and differentiate it with oogenesis. 8
- (b) Write a note on hormonal control of testicular function. 7
5. (a) Describe the mechanism of action of peptide hormone with a suitable example. 7
- (b) Name the various hormones secreted by anterior pituitary with their functions. How is the hormonal secretion regulated ? 8

6. Write short notes on any *three* :

3×5=15

- (a) Implantation
- (b) Rigor mortis
- (c) Blood-testis barrier
- (d) Structure of neuron
- (e) Motor unit.