3 (Sem–2/CBCS) ZOO HC 1

2022

ZOOLOGY

(Honours)

Paper : ZOO-HC-2016

(Non-Chordates–II Coelomates)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer : ***(any seven)*** 1×7=7

   (a) Metamerism is first seen in the phylum

   (i) arthropoda

   (ii) nematoda

   (iii) mollusca

   (iv) annelida

(b) Trocophore larva is found in

(i) cnidarians

(ii) sponges

(iii) annelids

(iv) arthropoda

(c) Royal jelly is secreted by

(i) drone

(ii) nurse bee

(iii) queen

(iv) scavenger bee

(d) Chloragogen cell is found in

(i) prawn

(ii) earthworm

(iii) starfish

(iv) sepia

(e) Which of the following shows discontinuous distribution ?

(i) Scorpion

(ii) Mantis

(iii) Crab

(iv) Peripatus

(f) Radula is found in

(i) leech

(ii) pila

(iii) scorpion

(iv) octopus

(g) Peripatus is a connecting link between

(i) Arthropoda and Mollusca

(ii) Annelida and Mollusca

(iii) Annelida and Arthropoda

(iv) Mollusca and Echinodermata

(h) Which of the following is a balancing sense organ ?

(i) Statocyst

(ii) Osphradium

(iii) Nuchal organ

(iv) Antenna

(i) Tube feet in starfish are used for

(i) locomotion and digestion

(ii) locomotion and excretion

(iii) locomotion and food capturing

(iv) locomotion and reproduction

(j) Tiedmann's bodies is found in

(i) mollusca

(ii) annelida

(iii) echinodermata

(iv) arthropoda

2. Distinguish between ***any four*** of the following : 2×4=8

(i) Micronephridia and Mega nephridia

(ii) Coelom and coelomate

(iii) Blood gill and book gill

(iv) Torsion and coiling

(v) Round dance and tail wagging dance

(vi) Incomplete metamorphosis and complete metamorphosis

(vii) Radial canal and stone canal

(viii) Super position eye and apposition eye

3. Write short notes on ***any three*** of the following : 5×3=15

(i) Significance of metamerism

(ii) Swarming of honey bee

(iii) Role of queen honey bee

(iv) Evolutionary significance of onychophora

(v) Distinctive characters of phylum mollusca

(vi) Water vascular system in asteroidea

(vii) Pulmonary respiration of arthropoda

(viii) Significance of trochophore larva

4. Answer ***any three*** of the following : 10×3=30

(a) What is metamerism ? Describe briefly the different types of metamerism. 2+8=10

(b) What is Nephridium ? Mention the types of nephridium. Write briefly the physiology of excretion in annelida. 2+3+5=10

(c) What is metamorphosis ? Mention the types of insect metamorphosis. Write the role of hormones during insect metamorphosis. 2+2+6=10

(d) What are the different types of pearl ? Write detail account on natural pearl formation system with suitable diagram. 2+8=10

(e) What are the distinctive characters of phylum annelida ? Classify the phylum upto class mentioning *five* important characters of each class with example. 4+6=10

(f) Describe the larval forms in different classes of echinodermata.

(g) What is torsion ? Describe the mechanism of torsion with diagram in Gastropoda. 2+8=10

(h) What is Aristotle's lantern ? Describe the water vascular system in Asteroidea with suitable diagram. 2+8=10

3 (Sem–2/CBCS) ZOO HC 2

2022

ZOOLOGY

(Honours)

Paper : ZOO–HC–2026

(Cell Biology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Fill in the blanks : ***(any seven)*** 1×7=7

   (a) The undefined nuclear region of Prokaryotes are known as _____.

   (b) Lipid rafts are patches of cholesterol and _____.

   (c) Gap junction allows the exchange of _____.

   (d) _____ is also known as 'suicide bag' of a cell.

   (e) Cristae in mitochondria serves as sites for _____.

(f) F1 particles/oxysome/elementary particles are present in _____.

(g) _____ fibre is also called actin filaments.

(h) The type of cell division in which number of chromosomes remains constant in the daughter cell is called _____.

(i) The non-dividing state of cell is called _____.

(j) Crossing over occurs in the _____ stage of meiosis I.

2. Answer ***any four*** from the following : 2×4=8

(a) Distinguish between virus and viroids.

(b) Comment on receptor mediated endocytosis.

(c) State the role of ATP in membrane transport.

(d) What is endomembrane system ?

(e) Compare the structure of lysosomes and peroxisomes.

(f) Write about the significance of chromatin remodeling.

(g) What are histones ? State the function of histone protein.

(h) How will you distinguish eukaryotes from prokaryotes ?

3. Answer ***any three*** from the following : 5×3=15

(a) Describe the structure and function of tight junction.

(b) Give an account on different types of membrane protein with its importance.

(c) Write a note on chemi-osmotic hypothesis.

(d) Explain how microfilaments helps in the process of cell division.

(e) Distinguish between heterochromatin and euchromatin.

(f) Describe the structure and function of nucleolus.

(g) Describe the importance of nucleosome in DNA packaging.

(h) Describe the molecular mechanism of cell-cycle regulation.

4. Answer ***any three*** from the following : 10×3=30

(a) Describe the structure of plasma membrane based on fluid mosaic model. What do you mean by symporter and antiporter ? Give example. 6+4=10

(b) Describe the ultrastructure, types and functions of endoplasmic reticulum. 4+1+5=10

(c) Why mitochondria is considered as powerhouse of cell ? Write a note on oxidative phosphorylation. 2+8=10

(d) Define cytoskeleton. Describe the structure and function of microtubules. 2+4+4=10

(e) Describe in detail how micromolecules transported through the plasma membrane ?

(f) Describe the structure of nuclear pore complex and discuss the mechanism involved in nucleocytoplasmic transport. 5+5=10

(g) Discuss various stages of meiosis with the help of diagram. What is its significance ? 7+3=10

(h) What are cell surface receptors ? Describe how signals are transduced through G-protein coupled receptors. 2+8=10
