

**2023**

**Time - 3 hours**

**Full Marks - 60**

*Answer all groups as per instructions.*

*Figures in the right hand margin indicate marks.*

*Candidates are required to answer  
in their own words as far as practicable.*

*Draw labelled diagrams wherever necessary.*

**GROUP – A**

1. Fill in the blanks. (all)

[1 × 8

- (a) Pseudometamerism is found in \_\_\_\_\_.
- (b) In Greek word, Onychophora means \_\_\_\_\_.
- (c) \_\_\_\_\_ is called as moulting hormone.
- (d) Epipodites are found in \_\_\_\_\_.
- (e) Limulus possesses \_\_\_\_\_ gills.
- (f) Tiedmann's body is found in \_\_\_\_\_.
- (g) Larval stage of Echinoidea is called \_\_\_\_\_.



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- (h) Immature stage is called \_\_\_\_\_ in incomplete metamorphosis in Arthropoda.

**GROUP – B**

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) What is metamerism ?
- (b) What do you mean by superposition image ?
- (c) What is book lung ?
- (d) What do you mean by moulting ?
- (e) Write about pallial gills.
- (f) What is detorsion ?
- (g) Amphibious forms of respiration in Mollusca
- (h) What is tube feet ?
- (i) What is Apiary ?
- (j) Function of water-vascular system in Echinodermata

**GROUP – C**

3. Write notes on any eight of the following within 75 words each.

[2 × 8

- (a) Types of gills in Crustacea



- (b) Origin of metamerism
- (c) Tracheal respiration in Arthropoda
- (d) Ctenidia in different classes of Mollusca
- (e) General characteristics of phylum Annelida
- (f) Evolutionary significance of Peripatus
- (g) Effect of Torsion
- (h) Garstang's neotenus theory
- (i) Larvae of Crinoidea
- (j) Characteristic features of true social insect

**GROUP – D**

4. Answer any four of the following questions within 500 words each.

- (a) Give an account of excretion in Annelida. [6]
- (b) Write an essay on evolution of coelom. [6]
- (c) Write an essay on vision in insects. [6]
- (d) What is metamorphosis ? Describe the process of metamorphosis in insects. [6]
- (e) Describe the structure and evolutionary significance of Trochophore larva. [6]



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- (f) Describe the social life in Termites. [6]
- (g) Write a note on general characteristics and classification upto classes of phylum Echinodermata. [6]



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**GROUP – A**

1. Answer any eight questions. [1 × 8]
- (a) Name the structure that provides mechanical adhesion between adjacent cells.
  - (b) Name the cell organelle responsible for concentration and storage of secretory products.
  - (c) Name the carriers that transport two types of molecules in the same direction.
  - (d) Name the integral component that acts as a sodium-potassium pump.
  - (e) Name the nuclear division that forms haploid cells.



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- (f) Name the types of daughter chromosomes that appears V shaped during anaphase.
- (g) Name the type of ER associated with glycoprotein synthesis.
- (h) Who postulated chemiosmotic coupling hypothesis ?
- (i) What prevents leakage of pancreatic secretory proteins in blood ?
- (j)  $F_0-F_1$  ATPase is a membrane bound enzyme found in the inner membrane of \_\_\_\_\_.

**GROUP – B**

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) Define Prions.
- (b) What are euchromatins ?
- (c) Define  $F_0-F_1$  complex.
- (d) What are occluding junctions ?
- (e) What are autophagic vacuoles ?
- (f) What are three primary functions of Golgi apparatus ?
- (g) Give examples of Intermediate filaments.
- (h) Define Osmosis.



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- (i) What are Cadherins ?
- (j) Explain significance of Meiosis.

**GROUP – C**

3. Write notes on any eight of the following within 75 words each.

[2 × 8

- (a) Bacteriophage
- (b) Desmosomes
- (c) Nuclear-pore complex
- (d) Danielli-Davson Model
- (e) Microtubules
- (f) Zygotene
- (g) Regulation of Cell cycle
- (h) Functions of Lysosome
- (i) Differentiate between simple diffusion and facilitated diffusion.
- (j) Differentiate between gap junction and tight junction.

**GROUP – D**

4. Answer any four of the following questions within 500 words each.

- (a) What are anchoring junctions ? Describe different types of anchoring junctions.

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- (b) Explain the process of active transport across cell membrane. [6]
- (c) Describe the structure, types and functions of Endoplasmic Reticulum. [6]
- (d) Describe the structure and function of lysosome. [6]
- (e) Explain the mechanism of chemi-osmotic coupling hypothesis. [6]
- (f) Describe about mitochondrial respiratory chain. [6]
- (g) Give an account of chromosomal DNA and its packaging. [6]
- (h) Write a note on the process of Mitosis. [6]



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**GROUP – A**

1. Fill in the blanks. (any eight)

[1 × 8

- (a) Sexual cycle of Plasmodium is called as \_\_\_\_\_.
- (b) The spongocoel is lined by the cell called \_\_\_\_\_.
- (c) Pneumatophores are present in \_\_\_\_\_.
- (d) The excretory cells of tapeworm are \_\_\_\_\_.
- (e) The parasites which complete their life cycle in two hosts are called \_\_\_\_\_.
- (f) Pseudo-metamerism is found in \_\_\_\_\_.
- (g) The mother layer of Pearl formation is \_\_\_\_\_.



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- (h) Bipinnaria larva is the larval stage of class \_\_\_\_\_.
- (i) Heart in crocodile is \_\_\_\_\_ chambered.
- (j) During flight, \_\_\_\_\_ muscle lowers the wing of bird.

**GROUP – B**

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) Define canal system.
- (b) Explain Termitaria.
- (c) What are dactylozooids ?
- (d) What are gravid proglottids ?
- (e) Write down three characters of class Reptilia.
- (f) Why Dipnoi is called lung fish ?
- (g) What are tube feet ?
- (h) What is meant by parental care ?
- (i) What is catadromous migration ?
- (j) Give three names of placental mammals.



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**GROUP – C**

3. Answer any eight of the following questions within 75 words each.

[2 × 8

- (a) What is signet ring stage ?
- (b) What is importance of polymorphism ?
- (c) What is cysticercus larva and in which animal it is found ?
- (d) Differentiate between direct and indirect life cycle.
- (e) What are advantages of fish migration ?
- (f) What is the composition of pearl ?
- (g) Write a note on different castes of honey bee.
- (h) What is hibernation ?
- (i) What are significance of Torsion ?
- (j) Explain diphyletic origin of birds.

**GROUP – D**

4. Answer any four of the following questions within 500 words each.

- (a) Explain life cycle of *Plasmodium vivax*. [6
- (b) Give an account of the canal system in sponges. [6
- (c) Give an account on steps during artificial pearl culture. [6

P.T.O.



- (d) Discuss on larval forms in Echinodermata. [6]
- (e) Discuss on osmoregulation in fishes. [6]
- (f) Give an account of general organization of Amphibia with reference to the emergence to the terrestrial life. [6]
- (g) Describe origin of birds. Mention important theories regarding origin of birds. [6]
- (h) Explain on Dentition in mammals. [6]