

# WBCS MADE EASY

MWC(O)-ZOO-I/23

2023  
ZOOLOGY  
PAPER-I

Time Allowed — 3 Hours

Full Marks — 200

*If the questions attempted are in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining ones ignored.*

*Answer may be given either in English or in Bengali but all answers must be in one and same language.*

## Group-A

1. Answer any ten questions:

4×10=40

- Evaluate the strength and weakness of evolutionary species concept.
- Distinguish between proteroglyphous and solenoglyphous poison fangs.
- Comment on the significance of baleen in whale.
- State the location and function of Cnidoblast.
- Comment on 'umbrella species'. Give example.
- "Two species cannot co-exist if they occupy the same niche"—Explain.
- Classify Phylum Cnidaria up to subclass.
- State the structural and functional significance of sclerosepta.
- Define the 'Law of Priority' with example.
- Comment on Minamata disease.
- How does double respiration occur in the lungs of a pigeon?
- State the information that must be documented while describing a holotype.

## Group-B

Answer any four questions.

20×4=80

2. Compare the following:

5×4=20

- Gill structure of Chondrichthyes and Osteichthyes
- Mesonephric and Metanephric kidney
- Physostomous and Physoclistous swim bladder in fish
- Neoteny and Paedogenesis

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3. (a) What is coral?  
(b) Mention the types of coral reef along with their distribution.  
(c) State the physical parameters required for coral reef formation.  
(d) Comment on the different kind of threats to coral reef.  
(e) State the significance of coral reef in maintenance of ecological balance.  $2+5+4+6+3=20$
4. (a) Give an account of the nuclear changes during conjugation in *Paramoecium* sp.  
(b) Discuss the modification of aortic arches in the teleost, amphibia and aves.  
(c) Comment on the functional significance of aortic arch.  $6+(4+4+4)+2=20$
5. (a) State the significance of the foramen of ovale.  
(b) Discuss the principles flight in birds.  
(c) Discuss the impact of torsion on the nervous system in gastropods.  
(d) Mention two reptilian and two mammalian features of the monotremes.  $4+6+6+4=20$
6. (a) Explain with example how radial symmetry differs from bilateral symmetry.  
(b) State the adaptive significance of body symmetry.  
(c) Give an illustrated account of amoeboid movement.  
(d) Briefly describe the functionality of a ruminant stomach.  $4+4+7+5=20$
7. Write short notes on:  $5 \times 4 = 20$   
(a) Green gland  
(b) Book lung  
(c) Social organisation in termites  
(d) Significance of the organ of Bojanus in molluscs.
8. Comment on:  $5 \times 4 = 20$   
(a) Evolutionary position of sphenodon  
(b) Mechanism of echolocation in bats  
(c) Accessory respiratory structure in *Clarius* sp.  
(d) Types of poison in snakes

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## Group-C

Answer *any four* questions.

20×4=80

9. (a) What is biological species?  
(b) Mention the merits and demerits of biological species concept.  
(c) Comment on the role of pre-mating isolation on speciation.  
(d) What is ring species? Give example. 2+(4+4)+7+3=20
10. (a) What do you understand by megadiversity countries and biodiversity hotspots?  
(b) Name two biodiversity hotspots in India.  
(c) State the difference between lectotype and neotype.  
(d) Distinguish between the concept of hypervolume and realized niche. 6+2+(4+4)+4=20
11. (a) What is ecological pyramid?  
(b) When does an ecological pyramid get inverted?  
(c) Elucidate the different phases of S-shaped population growth form citing an animal population model.  
(d) “Energy flow in an ecosystem maintains the second law of thermodynamics”— Explain.  
(e) “The more the stratification in a community, the more the species richness”— Explain. 2+3+5+5+5=20
12. (a) Comment on photochemical smog and mention its impact on human health.  
(b) Mention the salient recommendations of the Kyoto Protocol.  
(c) State the cause of ocean acidification.  
(d) Explain altruism and reciprocal altruism.  
(e) State Hamilton’s rule on the coefficient of relatedness (r). 4+4+5+4+3=20
13. Write short notes on: 5×4=20
- (a) Application of Chi-square  
(b) Man–animal conflict with reference to elephant  
(c) Project tiger  
(d) Greenhouse effect

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14. Compare the following:

5×4=20

- (a) Autotrophic and Heterotrophic successions
  - (b) National park and Biosphere reserve
  - (c) Sympatric species and Allopatric species
  - (d) *In-situ* and *ex-situ* conservation
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