

2021

ZOOLOGY — HONOURS

Paper : DSE-A-2

(Biology of Insects)

Full Marks : 50

The figures in the margin indicate full marks.

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

Answer *any ten* questions.

1. Write a short note on different types of haemocytes found in insects with diagram. 3+2
2. What are neurosecretory cells in insects? Mention the function of hormones secreted by corpora allata and prothoracic gland. 1+2+2
3. Write short notes on raptorial and natatorial appendage types in insects with examples. 2½+2½
4. Draw an ultrastructure of insect compound eye and mention the function of rhabdome. 4+1
5. Based on mouthpart structures how do you differentiate lepidopteran, dipteran and orthopteran insects? 5
6. Mention two insect-borne diseases. Discuss how insects mediate such diseases. Mention one clinical treatment of each disease. 1+3+1
7. Antenna structures are diverse in insect communities. How antenna structure could be useful in insect classification? — Discuss. 5
8. Do you consider housefly, mayfly and dragonfly belong to same group of insects? With logical interpretation explain your answer. 5
9. What do you mean by eusociality and at what point it is different from pseudosociality? Discuss 'colony optimization' theory in social insects. 2+3
10. Draw a schematic structure of stomatogastric nervous system of an insect with proper labelling. What are its functions? 4+1
11. What is peritrophic membrane? Where do you found that and what are its functions? If it is damaged or lost somehow— what will happen? 1+1+1½+1½
12. Draw a comparative schematic diagram of genital structures for both male and female insects. Why genital structures are considered as taxonomic tool? 3½+1½

Please Turn Over

13. How aquatic insects respire? — Discuss citing with suitable examples. Draw a labelled schematic diagram of insect spiracle. 3+2
 14. In a termite colony (mould) how temperature is regulated? — Discuss with special emphasizing the role of CO₂ in such thermal regulation. 5
 15. With a flow diagram discuss the life cycle stages (with its respective hosts) of dengue pathogen. Why sometimes it is fatal and how clinically it can be treated? 3+2
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