2011

M.Sc.

2nd Semester Examination

ZOOLOGY

PAPER—ZOO-201

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Group—A

(Entomology)

1. Answer any *two* questions of the following : 2×2

(a) Mention different sutures on the head of Insects with a diagram.

(b) What is peretrophic membrane ? Mention its function.

(c) State the objectives of IPM.

(d) Write the relationship of economic threshold level and economic injury level.

2. Answer any *two* questions of the following : 2×4

(a) Give a comparative account of different apterygote insects orders.

(b) Write a short note on the evolutionary significance of modification of wings in insects.

(c) Suggest measures to control stored grain pests.

(d) Highlight merits and demerits of biological control.

3. Answer any *one* question of the following : 1×8

(a) Define bioluminiscence. Enlist different groups of insects manifesting bioluminiscence. Briefly discuss the biochemical mechanism of light production and functional significance of bioluminiscence in insects life. 2+2+(2+2)

(b) Discuss the role of pheromones in reproduction of social insects. Write the function of JH & ecdysone. 5+3

Group—B

(Ecology)

1. Answer *two* questions from the following : 2×2

(a) What is reciprocal predatory cycle ?

(b) What are edge effect and edge species ?

(c) Differentiate between fundamental and realized niche.

(d) Distinguish between r & k strategies.

2. Answer *two* questions from the following : 2×4

(a) Write a note on Gaia hypothesis.

(b) Differentiate between organismic and individualistic concepts of community.

(c) What are Keystone and foundation species ?

(d) What is a niche-preemption hypothesis ? In an unoccupied area availability of resource is 10. If first species preempts 'k' = 0.5, then what fraction of resource will be available to the second species ?

1+3

3. Answer *one* question from the following : 1×8

(a) Discuss Levins model of metapopulation dynamics.

Deduce the equation $P = 1 - \frac{e}{m}$, where 'e' is the probability of extinction of a local population, 'm' is the probability of colonization and P is the equilibrium. 5+3

(b) How stability of an ecosystem is maintained through feedback control? In what way redundancy of components influence ecosystem stability? 6+2