

M.Sc.(Ag.) Semester – III Examination, 2014

Plant Protection

Course : AEN–507 (Biological Control of Crop Pest, and Integrated Pest Management)

Time: 3 Hours

Full Marks: 50

Questions are of value as indicated in the margin
Answer **any five** questions

1. Differentiate the following with suitable examples (**any four**): 2.5×4=10
 - (i) Parasite and Predators
 - (ii) Natural control and Biological control
 - (iii) Inundative and Inoculative release of biological agent
 - (iv) Hyper-parasitism and Super-parasitism
 - (v) Microbial and Mycobial control
 - (vi) Vegetative insecticidal proteins (VIPs) and Insecticidal crystal proteins (ICPs)
2. Write short notes of the following (**any four**): 2.5×4=10
 - (i) Regulatory measures for importation of foreign biological agents
 - (ii) Status of biological control of rice pests in India
 - (iii) Deliver systems of *Trichogramma* sp in field condition
 - (iv) Production procedure of *Corcyra cephalonica*
 - (v) Role of *Beauvaria bassiana* in pest management
 - (vi) Mode of action of entomopathogenic fungus or virus
3. How does septicemia and toxemia develop in insect? Mention the mode of action of *Bacillus thuringiensis* (Bt) toxin and its role in plant protection with some classical examples. Also point out the limitations of Bt in pest management. 2+3+3+2=10
4. Mention the attributes of a natural enemy to become an effective tool for IPM. Describe the techniques for implementation of biological control. How noxious weeds can be managed by exploiting natural enemies? What are the limitations of biological control? 2+4+2+2=10
5. What is semiochemicals? How does it differ from pheromones? Mention the different types of pheromones produced by different insect orders along with their purpose and suitable examples. Describe the role of sex pheromones in IPM. 1+1+4+4=10
6. What is IPM? Describe briefly the different tools of IPM with examples. Mention the constraints of its implementation. 1+6+3=10
7. Discuss briefly the role of different biotechnology tools in insect pest management. 10
8. Discuss briefly on the following topic (**any two**): 2×5=10
 - a) Mass production techniques of entomopathogenic fungus
 - b) Mass production techniques of entomopathogenic nematode
 - c) Commercial production of *Cryptolaemus montrouzieri*