MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION
B.Sc. (Hon.) Agri
MODELANSWER BOOK

Semester : III (New) Academic Year: 2018-19
Course No. : ENTO-232 Title: Insect Ecology and Integrated Pest Management
Credits : 2 (1+1) Total Marks: 40

SECTION 'A'

Q. 1	Define insect ecology. Explain effect of temperature on insect population. Insect ecology- Science which deals with relationship of insects to their environment. Effect of temperature: Upper and lower lethal limit, optimum temperature. Thermal constant, aestivation, hibernation, poikilothermic *etc.*	Mark 1 3
Q. 2	Enlist causes of insect pest outbreak and describe any two. At least 4 causes of pest outbreak from following: 1. Deforestation and bringing the land under cultivation, 2. Intensive and extensive cultivation, 3. Destruction of natural enemies, 4. Introduction of new varieties and corps, 5. Improved agronomic practices. 6. Introduction of new pest in new environments 7. Accidental introduction of pests. 8. Large scale storage of food grains. 9. Resurgence. 10. Resistance to insecticides. *etc.* Description of any two causes of above.	2 2
Q. 3	Describe in brief cultural method of pest management with suitable examples. Manipulation of cultural practices to the disadvantage of pests. Examples - Planting time , use of high seed rate, plant spacing, ploughing, raking up the soil , earthing up, covering exposed potato, weeding, hoeing mix cropping, clean cultivation, use of healthy seed material , resistant varieties, crop rotation, trap cropping, nutrient management *etc.*with examples	4
Q. 4	Classify insecticides on the basis of chemical nature by giving single example of each group A. Inorganic B. Organic insecticides: I. Petroleum based II. Animal origin III. Plant origin:1. Nicotine 2. Pyrethrum 3. Neem 4. Rotenone IV. Synthetic organic insecticides: Organochlorins, Chlorinated hydrocarbons, Cyclodyne compounds, Organophosphates, Carbamates, Synthetic Pryethroids (with single example)	4
Q. 5	Enlist categories of pest and describe any two I. Based on Occurrence: 1. Regular pest 2. Occasional pest 3. Seasonal pest 4. Persistent pest 5. Sporadic pest II. Based on level of infestation: 1. Epidemic pest 2. Endemic pest III. Based on ETL and GEP: 1.Key Pest 2. Major pests 3. Minor pests 4. Sporadic pests 5. Potential pests Description of any two	2 2
Q. 6	Enlist the characteristics of an ideal parasitoid. 1. It should be adoptable to new environmental conditions of locality 2. Able to survive in all habitats of the host 3. Specific to host or have narrow host range 4. High reproductive rate 5. Short life cycle 6. High percentage of females	4

	7. Easy to culture in lab. 8. Free from hyper parasitism 9. Free from multiple parasitism 10. Should bring down the pest population within three years 11. With stand refrigeration 12. With stand competition (at least four characters).	
Q. 7	Define insecticide formulation; enlist its types and describe EC formulation Definition : Incorporation of toxicant into a suitable carrier or solvent and supplementary agents / adjuvants. Types: 1. Dusts 2. Wettable powders (WP) or water dispersible powder(WDP) 3. Granules (G) 4. Emulsifiables concentrates (EC) 5. Solutions 6. Aerosols 7. Fumigants. Description of EC formulation	1 1 2
Q. 8	State first-aid treatments used in early stages of insecticide poisoning cases. 1. Induce vomiting (emesis) 2. Stomach wash 3. Purgation 4. Give activated charcoal to bind with the poison and prevent its absorption. 5. Open all doors and windows to allow fresh air. 6. Artificial respiration 7. It skin is contacted or exposed washing the body with soap. (At least four)	4
Q. 9	Define IPM; enlist its tools and describe importance of IPM. IPM- System that, in the content of associated environment and population dynamics of the pest species, utilizes all suitable techniques and methods in as compatible a manner as possible and maintains pest population at levels below those causing economic injury. Tools- Cultural, mechanical, physical, legal, biological and chemical methods Importance of IPM- To avoid -1. Pesticide resistant biotypes 2. Pest resurgence 3. Pesticide residues 4. Destruction of flora and fauna 5. Hindrance in activity of pollinators 6. Hazards to humans, domestic animals and wild life. 7. Hazards to non target organisms i.e. NE 8. Environmental pollution 9. Biomagnification	1 1 2
Q. 10	Write short notes (any two)	
	a) Environment and its components Environment: Sum of total of all things which surrounds a living organism . List of components of Environment: 1. Abiotic factors- Temperature, Humidity / moisture, Light Rainfall, Wind, Topography , Water current, Soil type, Atmospheric pressure 2. Biotic factors - A. Inter Specific- 1. Food 2. Natural enemies 3. Competition B. Intra-specific - 1. Colonization 2. Aggregation 3. Cannibalism 4. Competition 5. Food	1 1
	b) Concept of balance of life - Defined as the natural tendency of plant and animal population resulting from natural regulative processes in an undisturbed ecosystem (environment) to neither decline in numbers to extinction nor increase to indefinite density. Each species in the community achieves a certain status that becomes fixed for a period of time and is resistant to change which is termed as balance of nature. Few examples.	2
	iii) Mechanism of host plant resistance:1. Antixenosis (Non preference) - Host plant characters responsible for non-preference of the insects for - shelter - oviposition - feeding etc. 2. Antibiosis- Adverse effect of the host plant on the biology (survival, development and reproduction) of insects and their progeny. due to biochemical and biophysical factors present in it. 3. Tolerance- Ability of a plant to grow and yield despite of pest attack.	2

SECTION 'B'

Q. 11	Do as directed.	
	i.	Sun drying of grains is physical method of pest management (Fill in the blank).
	ii.	The 'Insecticide Act' passed in the year 1968 in India (True).
	iii.	Bagging of fruit is (mechanical/physical/cultural) method of pest management. (Select appropriate word). - Mechanical
	iv.	State the function of nozzle. Facilitate dispersion of liquid into spray

Q. 12	Define the following terms.	
	i.	Habitat – The place where organism lives
	ii.	Repellant – Chemicals that induce avoiding (oriented) movements in insects away from their source
	iii.	Antidote – Medicine taken or given to counteract a particular poison
	iv.	Phytotoxicity – Toxic effect of a chemical on plant growth