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SEMESTER END THEORY EXAMINATION

B.Sc. Agriculture (Hons.)

MODEL ANSWER

Semester	:	**III(New)**	**Term**	:	I	**Academic Year**	:	2021-22
Course No.	:	**ENTO-232**	**Title**	:	Insect Ecology and Integrated Pest Management			
Credits	:	(1+1)						
Day & Date	:	**28.11.2021**	**Time**	:	1.00 Hr	**Total Marks**	:	40

Note : 1) Solve ANY FOUR questions from SECTION-A
2) Solve ANY SIX questions from SECTION-B
3) ALL questions from SECTION-C are compulsory
4) Send the PDF file of answer sheet to the email id of respective course teacher

SECTION-A

(Write the answers in 4-5 sentences only. Each question carries 4 marks)

Q.1 What is HPR? Enlist different mechanisms of HPR and describe any one of them.

Ans. - Definition of HPR (2 marks)

(Host plant resistance refers to the heritable qualities of a cultivar to counteract he activities insects so as to cause minimum per cent reduction in yield as compared 2 to other cultivars of the same species under similar conditions – By Dhaliwal et al. 1993)

- Mechanisms of HPR (a. Antixenosis, b. Antibiosis and c. Tolerance) **(1 mark)**

- Brief description on any one the above mechanism (1 mark)

Antixenosis: (Non preference, Undesirability ie. Avoidance by insects): refers to the resistance mechanism employed by the host plant to deter or reduce colonization by insects. The plant may deter the insect from colonization, feeding, oviposition or seeking the shelter.

• **Antibiosis :** (Unsuitability: Chemical constituents, affecting the biology of insects)Refers to the adverse effect of host plant on the biology of insects and their progeny infesting.

• **Tolerance :** (Withstanding insect attack)Refers to the ability of the host plant to withstand an insect population sufficient to damage severely the susceptible plants.

Q.2 **Classify the insecticides based on mode of entry with suitable example.(4mark)**

Ans.: Brief descriptionon a. Stomach poison (eg. Malathion), b. Contact poison (eg. Fenvalerate), c. Fumigant (eg. Aluminium phosphide), d. Systemic poison (eg. Dimethoate)

Q.3 Enlist various biotic and abiotic factors of environment and explain the effects of temperature on insects

Ans: - Biotic factors: ---- (1 mark)

a. Food (Qualitative and Quantitative aspects of food), b. Competition (Intraspecific and Interspecific interactions), c. Role of Natural enemies

- Abiotic factors: ----- (1 mark)

a. Temperature, b. Humidity, c. Light, d. Rainfall, e. Atmospheric pressure, f. Wind / air currents, g. Topography, h. Soil type

- Effect of temperature on insect: --- (2 marks)

(Brief explanation on points like effect on growth and development, fecundity, no. of generations, dispersal etc with suitable examples)

Q.4 **Differentiate between Agro ecosystem and Natural ecosystem.**

Agro ecosystem	Natural ecosystem
1. Short duration, many times only 3 to 4 months or a year	1. Long duration, many times only 50 year or more
2. Discontinuous in space and time	2. Continuous in space and time
3. Very much influenced by variation in weather	3. More stability, less influence of changed weather
4. They are artificially created and their continuity depends on man's desire	4. They are naturally created and self perpetuating
5. The vegetation is not naturally selected but often introduced monocultures of limited genotypes	5. The vegetation is naturally growing with diverse range of genotypes
6. Pest outbreaks are more common	6. Pest outbreaks are rare

Q.5 What is IPM? State various advantages of IPM.

Ans. - **Definition of IPM (2 marks)**

(It is a pest management system that, in the context 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 populations at levels below those causing economic injury - By FAO, 1967)

– Advantages of IPM (Brief explanation on following points viz., **(2 marks)**

a. Sustainability, b. Economics, c. Health, d. Environmental quality, e. Social and political stability, f. Local knowledge and g. Export of agricultural commodities)

b.

SECTION-B

(Write the answers in one sentence only. Each question carries 2 marks)

Q.6 **Define the following terms**

a) Ecology
Science dealing with the relationship of organism to their environment OR Study of structure and functions in nature.

b) Miticide
Chemical used to control mites

c) Systemic insecticide
Are those on being applied to plant through root, stem, leaves get absorbed and translocated to various parts of the plant rendering them toxic to insects

d) Regular pest
These are the pest which occur most frequently on a crop and have close association with the crop

e) Economic Injury Level
The lowest population density that will cause 3 economic damage or a critical density where the loss caused by the pest equals the cost of control measures

f) LD50
It is the amount of toxicant (lethal dose) required to kill 50%of the test population and usually expressed in terms of mg/ kg body weight.

g) Endemic pest
The pest which occurs regularly and confined mostly to a particular area or locality is referred as endemic pest.

SECTION-C				
(Choose the correct option. Each question carry 1 mark)				
Q.7	**1)** Insecticidal act was passed in-----			
	a)	1967	**b)**	**1968**
	c)	1986	d)	None of above
	2) Atropine is a			
	a)	Repellent	b)	Antifeedant
	c)	**Antidote**	d)	Pheromone
	3) Use of resistant varieties in the IPM is an example of			
	a)	Biological control	b)	Mechanical control
	c)	Physical control	**d)**	**Cultural control**
	4) Red colour triangle on insecticide container represent			
	a)	**Extremely toxic**	b)	Highly toxic
	c)	Moderately toxic	d)	Slightly toxic
	5) Which of the following is egg parasitoid			
	a)	**Trichogramma chilonis**	b)	LBB
	c)	Mantid	d)	All of above
	6) Lady bird beetle is -----			
	a)	Pest	b)	Parasite
	c)	**Predator**	d)	None of these
	7) Pest causing crop loss above 10 per cent is known as			
	a)	Minor pest	**b)**	**Major pest**
	c)	Negligible pest	d)	None of these
	8) Which insecticide is used as seed treatment for management of sucking pest in cotton			
	a)	**Imidacloprid**	b)	NSKE
	c)	Fenvalerate	d)	Diazinon
	9) Who is the father of Host Plant Resistance ?			
	a)	E.F. Knipling	b)	Rachael Carson
	c)	**Painter**	d)	Earnest Haeckel
	10) Clipping/destruction of infested shoot with the hands is which type of pest management ?			
	a)	Cultural control	b)	Physical control
	c)	Chemical control	**d)**	**Mechanical control**
	11) Sun drying of grains is _____method of pest control			
	a)	**Physical**	b)	Mechanical
	c)	Chemical	d)	Legal
	12) Which lure is used in pheromone trap for monitoring Pink bollworm in cotton			
	a)	Leucilure	b)	Hexalure
	c)	Vitalure	**d)**	**Gossyplure**