**I. Fill in blanks**

1. Example of a foreign pest is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Apple wooly aphid could be controlled by release of parasitoid
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ pest occur throughout the year in a crop
4. Example of bioluminescence insects are \_\_\_\_\_\_\_\_
5. DPPQS was established in the year\_\_\_\_\_\_\_\_\_\_ location\_\_\_\_\_\_\_
6. The silent spring book was written by\_\_\_\_\_\_\_\_\_\_
7. Alley ways used to manage \_\_\_\_\_ pest in paddy
8. Lowest population at which pest will cause economic damage is called as\_\_\_\_\_\_\_
9. The aim of IPM is to keep the pest population below the \_\_\_\_\_\_\_\_ level
10. \_\_\_\_\_\_\_\_\_\_\_\_\_ refers to lack of infestation or injury to the host plant because of transitory circumstances like incomplete infestation.
11. Sterile male technique developed by\_\_\_\_\_\_\_\_\_\_\_\_
12. Bagging of fruits recommended for \_\_\_\_\_\_\_\_\_\_ pest in citrus
13. Change of banana cultivation from perennial to annual reduces the infestation of \_\_\_\_\_\_\_\_\_\_\_
14. The term ecology was given by\_\_\_\_\_\_\_\_\_\_
15. Maximum reproductive power concept was given by\_\_\_\_\_\_\_
16. In India DIP ACT was passed in the year \_
17. Trap crop for *Helicoverpa armigera*\_\_\_\_\_\_\_\_
18. Early planting of paddy in *kharif*minimizes infestation of\_\_\_\_\_\_\_\_
19. \_\_\_\_\_\_\_\_\_\_\_\_\_ refers to temporarily increased resistance in host plant by changing water or nutrient status.
20. Who is the father of Host plant resistance \_\_\_\_\_\_\_\_\_\_\_

**ANSWERS**

1. Diamond back moth
2. *Aphelinus mali*
3. Persistant pest
4. Glow worms
5. 1946,faridabad
6. Rachel carson
7. Brown plant hopper
8. EIL
9. ETL
10. host escape
11. knippling
12. fruit sucking moth
13. Banana rhizome weevil
14. Heckel
15. Chapman
16. 1914
17. Marigold
18. Stem borer
19. Induced resistance
20. R.H. Painter

**II) SHORT ANSWERS**

1.Define **Parasitoid?**

An insect parasite of arthropod is parasitic only in immature stages, destroysits host in the process of development and free living as an adult or Parasitoid is an insect that feeds on the body of another insect or arthropod during the larval stage of the their life cycle and adult is a free-living insect, no longer dependent on the host.

**2. Define Biotic potential ?**

The extent to which a species can multiply in a given period of time if no adverse factors interfere is called its **‘Biotic potential’** which is also known as **‘Maximum reproductive power’**.

3.Define**Regular pest**?

Occur most frequently (regularly) in a crop and have close

association with that particular crop. Eg: Chilli Thrips *Scirtothrips dorsalis* ,Brinjal shoot and fruit borer, *Leucinodes orbonalis*

4. Define **Occasional pests**?

1. Here a close association with a particular crop is absent and they occur infrequently. Eg: Rice case worm, *Nymphula depuctalis* castor slug caterpillar, *Parasa lepida* , mango stem borer, *Batocera rufamaculata*

5. Define **Economic Injury Level (EIL)**

Lowest population at which the pest will causeeconomic damage

6. What is **Inoculative releases**?

 Large number of individuals are released only once during theseason and natural enemies are expected to reproduce and increase its population for that growing season. Hence control is expected from the progeny and subsequent generations and not from the release itself.

7. Define**Inundative releases**?

It involves mass multiplication and periodic release of naturalenemies when pest populations approach damaging levels. Natural enemies are not expected to reproduce and increase innumbers. Control is achieved through the released individuals and additional releases are only made when pest populations approach damaging levels.

16. Define **Simple parasitism ?**

Irrespective of number of eggs laid the parasitoid attacks thehost only once. Eg. *Apanteles taragamae* on the larvae of *Opisina arenosella*, *Goniozus nephantids*

1. 17. Define **Super parasitism ?**

Phenomenon of parasitization of an individual host by morelarvae of single species that can mature in the host. Eg. *Apanteles glomeratus* on *Pieris brassica, Trichospilus pupivora* on *Opisina arenosella*.

1. **18.What is Apple Factor**
2. An Apple of the genus, *Malus* yields phenolic substance, phlorizin which stimulates probing in the apple feeding aphids (*Aphis poni*) but acts as a feeding deterrent for the non- apple feeding aphids (*Myzuspersicae*).

19.Define **Phytotoxicity?**

The application of pesticides or insecticides on plants is intended tocontrol the pests without causing adverse or harmful effects to plants.

1. Define **Antibiosis?**

Antibiosis refers to the adverse effect of host plant on the insect due to the presence of some toxic substances or absence of required nutritional components. Such plants are said to exhibit antibiosis

21. Define Pest surveillance?

Pest surveillance is the systematic monitoring of biotic and abiotic factors of the crop ecosystem in order to predict the pest outbreak or it is the study of the ecology of the pest which provides the necessary information to determine the feasibility of a pest management programme.

**Difference (2\*1.5)**

1. Innoculative vs innundative
2. Host Finding vs Host recognition
3. Parasite vs Predator
4. Vertical vs Horizontal
5. LD50 vs LT50 value
6. Dust vs Wettable Powder

**Long questions**

1. **Classification of insecticides on the basis of different categories, examples?**
2. **DDT AND BHC**
3. **Synthetic Pyrethroids**
4. **Mechanisms of Host Plant Resistance (HPR) ?**
5. **Describe mechanism of Host Plant Resistance (HPR)? Explain about the host plant selection process by an insect?**
6. **Classify parasite based on food habit? Briefly explain about different kinds of parasitism with suitable examples?**
7. **Define IPM? Concepts of IPM? Write down some limitation of IPM ?**
8. **Write down the different techniques in biological control?**
9. **Explain different types of Insect resistance to insecticides. Write down different Mechanism of Insect resistance?**
10. **Classify insecticides on the basis of mode of action and based on the toxicity ?**