

## Study Questions for exams

**Section 1:** Answer the following questions by true or false.

1. T F Viruses are obligate parasites
2. T F Fungi cause most of the infectious diseases of importance in crop production
3. T F In insects with complete metamorphosis, the young look like small version of the adult
4. T F A pesticide used to control fungi is called miticide
5. T F The use of traps is an example of cultural pest control
6. T F The goal of crop protection is to ensure that no pest is present in agro-ecosystems
7. T F An elicitor is a molecule that stimulate pest defense system while feeding on plant
8. T F Quarantine is not a pest control method because it encourages pest exclusion
9. T F Physical and chemical pest control have similarities in that they both target the pest
10. T F Crop protection is an integral part of crop production

**Section 2:** Answer the following questions:

1. Diseases are caused by organisms called .....
2. List the categories of microorganisms that cause diseases
3. The capability of a pathogen to cause disease is called its.....
4. What is a complete metamorphosis in the lifecycle of an insect
5. Give the five basic strategies in pest control
6. What is a pest? Why do we need to control pests?
7. What is a weed?
8. What is economic injury?
9. What is the difference between damage and injury?
10. Give the corresponding names of pesticides used to manage each of the following pests in crop production: mites, rodents, fungi, insect, nematodes, weeds
11. What does the acronym IPM stand for?
12. Define a trophic system
13. Define pest lifecycle
14. What is the difference between aestivation and overwintering?
15. Define the following terms: pest survival, fecundity and fertility
16. What is a primary producer in a trophic system? Give examples
17. What is the difference between dissemination and seasonal movement?

18. Cite three basic mechanisms of pest dissemination
19. What is the difference between vectoring and phoresis of plant pathogens?
20. Define an invasive pest species and cite two important characteristics for it to reach pest status in a new environment
21. Define the following terms: herbivore, carnivore, monophagous, oligophagous, polyphagous, host, predator
22. Define the concept of DD
23. Define and contrast the terms ectotherm and endotherm?

**Section 3:** Write a brief essay on each of the following topics:

1. Contrast the use of mechanical and cultural pest control
2. Discuss the advantages and disadvantages of the use of economic injury level in pest control
3. Are there any similarities between physical and chemical pest control? Explain your answer.
4. With new pesticides being developed every day, the time will come when there will be no need for pest control because these new pesticides will entirely and permanently solve pest problems. Do you agree with this statement? Explain.
5. Explain why understanding pest biology is key for its management in agro-ecosystems
6. Explain the process by which pests are able to evolve relative to selection pressure
7. Give five reasons supporting the needs for crop protection
8. Discuss the concept of pest tetrahedron
9. What are the different factors determining the pest status of an organism in an environment
10. Discuss the difference between parasite and parasitoid. For pest control purposes which organism will you recommend? Explain.
11. Contrast the role of the third consumer in a food chain involving a crop plant and a weed.
12. What is the difference between *K*-selected and *r*-selected pests? Which one can rapidly reach pest status in an annual crop?
13. What is the difference between cloning and parthenogenesis?
14. Discuss the disadvantages in targeting pests that reproduce asexually in IPM?
15. Can sexual reproduction of pest organisms presents some benefits for their management?
16. What is the difference between univoltine and multivoltine pests?
17. Why is DD important in pest management?
18. Why is temperature so important for the development of insects?
19. In a study, a graduate student observed that the time to complete the immature stage of an insect varies with temperature. He obtained shorter developmental time as the temperature increases. But below a certain temperature, all the insects

die and the graduate student was confused. Can you explain to him/her what was going on?

20. The student further tries to plot a graph between temperature and development rate (calculated as the inverse of development time) and obtained the following equation ( $y = 0.0035x - 0.0256$ ). The fit of the model was also near perfect,  $R^2 = 0.989$ . Based on this information, can you help the student determine the lower developmental threshold?