

ARS – Main: Descriptive-Previous Questions - Agricultural Microbiology (2011)

Question number 1 is compulsory

1. Louis Pasteur is known as “father of microbiology”. Justify
2. Give six distinctive characters of prokaryotes, eukaryotes and archaeobacteria.
3. What are bacteriophages and plasmids? Discuss their role in recombinant DNA technology? (Refer: Cloning Vector, Plasmid as cloning vector)
4. What do you mean by “nitrification” and “denitrification”? Explain their ecological significance in nature?
5. What is fermented milk? Name the various kinds of fermented milk and the steps involved in cheese manufacture.
6. a) What are bio insecticide and why *Bacillus thuringiensis* has proved to be most effective bioinsecticide? b) What strategies may be followed to improve its efficiency as bio-insecticide?
7. Explain the role of shunt in Hexose Monophosphate Pathway. Discuss in detail HMP pathway in bacterial system.
8. Discuss various immunological methods used in the detection of microorganisms in food?
9. List different methods to measure microbial growth. Discuss any two methods in detail with merits and demerits?
10. Phosphorus is abundant but remains mostly fixed in soil. What are the conditions that favour phosphorus availability and how microbes help in the process?
11. What are antibiotics? Explain various methods of their mode of action.
12. What is composting? What are the benefits and risks involved in the use of composts?
13. Differentiate between BOD and COD. Why significant reduction in BOD is essential in waste water treatment?
14. Write short notes on any four
  - a. Biofilm
  - b. Biofuel
  - c. Biosensors
  - d. Bioremediation
  - e. Bioaccumulation of pesticides

15. Why do some bacteria prefer Entner Deudroff Pathway? Give a detailed account of ED pathway with key enzymes and reactions involved.