

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SECOND SEMESTER EXAMINATION, AUGUST 2021

FIRST YEAR [BATCH 2020-23]

MICROBIOLOGY (GENERAL)

Date : 14/08/2021

Time : 11.00 am - 1.00 pm

Paper : II

Full Marks : 50

1. Answer **any ten** questions of the following : [10×1]
- Define the term 'disinfectant' and 'bacteriostasis'.
 - What is 'Tyndallization'?
 - What is 'lyophilization'?
 - Give an example of terminal electron acceptor during fermentation.
 - What is TPP?
 - What do you mean by endotoxin?
 - What is a phagolysosome?
 - Name a bacterium that we eat.
 - Cite an example of a food processing method where fermentation of milk is employed.
 - Name the microorganisms used for the production of i) amylase ii) vinegar.
 - What is fermentor?
 - Give example of one single stranded DNA and double stranded RNA containing virus.
 - What are chemoautotrophs?
 - What are nitrifying bacteria? Give example.
 - What are temperate phage?

Answer **any four** questions of the following : [4×10]

2. a) What is the site of glycolysis in a bacterial cell? What is the net yield of ATP during glycolysis from 1 molecule of glucose?
- b) Show the energy-requiring reactions during glycolysis.
- c) Anaerobic respiration is energetically less efficient than aerobic respiration- explain. [2+4+4]
3. a) Define normal flora.
- b) Write down the importance of human microbiome.
- c) What do you mean by opportunistic pathogen? [2+4+4]
4. a) Why is moist heat more effective than dry heat for the destruction of microorganisms?
- b) Mention important differences between 'sterilization' and 'pasteurization'.
- c) The mechanism of antimicrobial action caused by desiccation is similar to that caused by plasmolysis. Explain why?
- d) Briefly discuss the mode of action and practical application of ethylene oxide for the destruction of microorganisms. [2+3+2+(2+1)]
5. a) Define 'thermal death time' and 'decimal reduction time'.
- b) Compare vegetative cells of bacteria with bacterial spores in terms of resistance to heat. What is thought to account for the difference?

- c) Describe the mode of action and practical application of chlorine for the destruction of microorganisms.
- d) What is 'cold sterilization'? [2+3+(2+1)+2]
6. a) What are the difference between food poisoning and food borne infection?
- b) What do you mean by ripening of cheese?
- c) Which is more likely to be recovered from a jar of pickles? Fungi or bacteria—why?
- d) What is putrefaction?
- e) What is botulism? Name the causative agent of botulism. [2+2+2+2+2]
7. a) What are the difference between batch fermentation and continuous fermentation?
- b) Why antibiotics are known as secondary metabolites?
- c) Mention at least two uses of – i) Ethanol, ii) Vinegar.
- d) What do you mean by solid state fermentation? [3+2+(1.5+1.5)+2]
8. Explain the molecular mechanism of reverse transcriptase enzyme found in retroviruses. What are the functions of gag and pol gene? [7+3]
9. Differentiate between oxygenic and anoxygenic photosynthesis process in detail. What are the various steps followed by influenza virus to produce systemic infection? [7+3]

_____ × _____