

**M. Sc. (BIOTECHNOLOGY) EXAMINATION, 2023**

( 1st Year, 2nd Semester )

**MICROBIOLOGY**

**PAPER – 234**

Time : Two hours

Full Marks : 50 (Written 40 + Internal Assessment 10)

**Group – A**

Question number 1 is compulsory and answer **any five** questions from the rest (4 marks each).

1. Answer **any eight** questions from the following : 8×1=8
- i) How does yeast differ from fungi?
  - ii) Name two human diseases that are caused by protozoa.
  - iii) What is the function of bacterial outer membrane?
  - iv) Give two examples of human diseases that are not caused by any microbes.
  - v) Mention the important contribution of Paul Ehrlich.
  - vi) Why bacterial growth stops at the stationary phase?
  - vii) What is the function of clavulanic acid?
  - viii) What are the differences between batch culture and continuous culture?
  - ix) Why is mycoplasma mostly pathogenic?
  - x) What are the difference between penicillin and ampicillin?
  - xi) What is prion? Name one disease that is caused by prion.
  - xii) How does spheroplasts differ from protoplast?
2. Briefly describe the methods to isolate both the bacteria in pure form, from a mixture of Gram negative *Escherichia coli* bacteria with Gram Positive *Bacillus subtilis* bacteria.
3. Briefly describe the WAY pathway of bacterial chemotaxis.
4. Briefly describe the Baltimore classification of virus.
5. How bacterial endospore set the limit of sterilization by autoclaving?
6. What are the desirable properties of an ideal antimicrobial agent?
7. Describe different ways to monitor bacterial growth.
8. What are the special features of Sabouraud's Dextrose agar?
9. What are the important properties of different *Clostridium* Sp?
10. What is Pulse Polio Vaccination?
11. Why are the extreme thermophiles are also barotolerant?

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**Group – B**

Answer *any three* questions.

12. Describe some possible effects of endophytic bacteria on plants. List the differences between endophytes and mycorrhizae. 2+2
13. How does commensalism differ from cooperation and mutualism? Nitrification is a good example of which of the above-mentioned process and why. 2+2
14. Define the different mechanisms of Plant Growth-Promoting Bacteria (PGPB) in sustainable agriculture. 4
15. Explain with examples of the biochemical process carried out by the microorganisms in the carbon cycle. 4
16. Explain Koch's Postulates and give your opinion on their Exceptions in the modern biology of pathogenesis. 4