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1 (Sem-4/FYUGP) MIC 41 MN/(A)

2026

MICROBIOLOGY

(Minor)

SET-A

Paper : MIC4400504MN

(Bacteriology)

Full Marks : 45

Time : 2 hours

*The figures in the margin indicate
full marks for the questions.*

SET-A

1. Answer the following questions : 1×5=5

(a) The outer membrane of Gram-negative bacteria contains :

- (i) Peptidoglycan
- (ii) Lipopolysaccharide
- (iii) Cellulose
- (iv) Chitin

(b) The most commonly used method for obtaining pure bacterial culture is :

- (i) Pour Plate method
- (ii) Streak Plate method
- (iii) Spread Plate method
- (iv) Serial Dilution method

(c) The process of killing microorganisms using moist heat under pressure is called :

- (i) Pasteurization
- (ii) Autoclaving

(iii) Boiling

(iv) Incineration

(d) The most common method of reproduction in bacteria is :

(i) Budding

(ii) Binary fission

(iii) Fragmentation

(iv) Spore formation

(e) The molecule most widely used as an evolutionary chronometer in bacteria is :

(i) DNA Polymerase

(ii) 16S rRNA

(iii) tRNA

(iv) Bacterial DNA

2. Answer **any five** of the following questions :

2×5=10

- (a) What are L-forms of bacteria ?
- (b) Mention *two* functions of bacterial cell membrane.
- (c) What are Plasmids and why are they important ?
- (d) Compare low G+C Gram-positive bacteria and high G+C Gram-positive bacteria.
- (e) Write *two* differences between Archaeobacteria and Eubacteria.
- (f) Write *two* methods of preservation of microbial cultures.
- (g) Define asexual reproduction in bacteria.
- (h) Differentiate between Disinfectants and Antiseptics.

(i) Define culture media and give examples.

(j) Describe one method used to cultivate anaerobic bacteria.

3. Answer **any four** of the following questions :

5×4=20

(a) Write a note on the general characteristics and ecological importance of Cyanobacteria.

(b) Describe the physical methods of microbial control.

(c) Explain and differentiate between Archaeal and bacterial cell membrane.

(d) Explain the different types of culture media used in Microbiology Laboratories.

(e) Describe the structure of bacterial cell and its components.

(f) Describe the principle and application of fluorescence microscopy.

(g) Compare Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM).

Answer **any one** of the following questions :

10×1=10

(a) Describe the major groups of Proteobacteria with their general characteristics and examples.

(b) Describe the process of Endospore formation (Sporulation) with a suitable diagram and how it contributes to resistance and pathogenicity.

(c) Describe the cultivation of Anaerobic bacteria and the approaches used to access non-culturable microorganisms.

(d) Discuss the nutritional requirements of microorganisms and the classification of microorganisms based on nutritional types.
