KAMARAJ COLLEGE (Autonomous)

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(3 Pages) **Reg. No:……**

Question Code: 26E01603 **Course Code: 24PMMB11**

PG Degree - End Semester Examinations, April 2026

First Semester

M.Sc., MICROBIOLOGY

General Microbiology and Microbial Diversity

(For those who joined in July 2024 onwards)

Time : 3Hours **Maximum : 75 Marks**

PART – A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer :

CO:1 K:1 1. The microscope that uses electrons instead of light is:

(a) Bright field (b) Phase contrast

(c) Electron microscope (d) Fluorescence

CO:1 K:2 2. Micrometry is used to:

(a) Sterilize media (b) Measure microorganisms

(c) Stain bacteria (d) Preserve cultures

CO:2 K:1 3. The most effective method for sterilization is:

(a) Boiling (b) Autoclaving

(c) Filtration (d) UV radiation

CO:2 K:2 4. Which staining differentiates Gram positive and Gram negative bacteria?

(a) Simple stain (b) Gram stain

(c) Capsule stain (d) Flagella stain

CO:3 K:1 5. Chlamydomonas belongs to:

(a) Green algae (b) Brown algae

(c) Red algae (d) Cyanobacteria

CO:3 K:2 6. Nostoc is classified under:

(a) Fungi (b) Cyanobacteria

(c) Protozoa (d) Actinomycetes

CO:4 7. The main component of bacterial cell wall is:

K:1

(a) Cellulose (b) Peptidoglycan

(c) Chitin (d) Glycogen

CO:4 8. During exponential phase, bacteria show:

K:2

(a) No growth (b) Rapid division

(c) Death (d) Sporulation

CO:5 9. Methanogens are commonly found in:

K:1

(a) Aerobic soil (b) Rumen of cattle

(c) Surface water (d) Dry sand

CO:5 10. Halophiles require:

K:2

(a) High temperature (b) High salt concentration

(c) High pressure (d) Low pH

PART – B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

CO:1 11. (a) Illustrate the principle and applications of fluorescence microscopy.

K:3

(OR)

(b) Demonstrate the working principles of SEM and TEM.

CO:2 12. (a) Explain sterilization and disinfection methods.

K:3

(OR)

(b) Demonstrate the application of pure culture techniques in microbiology and explain their importance.

CO:3 13. (a) Illustrate the life cycle of *Chlamydomonas* with suitable diagrams.

K:4

(OR)

(b) Examine the methods involved in isolation and cultivation of algae.

CO:4 14. (a) Illustrate the bacterial growth curve with diagram and interpret each phase.

K:3

(OR)

(b) Examine the structure and functions of bacterial cell wall.

CO:5 15. (a) Examine the classification and applications of thermophiles.

K:4

(OR)

(b) Analyze the osmoadaptation mechanisms in halophiles.

PART – C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 600 words.

CO:1 K:4 16. (a) Analyze the different types of microscopes and evaluate their applications in microbiology.

(OR)

(b) Examine micrometry and justify its significance in microbial measurement.

CO:2 K:4 17. (a) Interpret the principles and significance of differential and special staining techniques in microbiology.

(OR)

(b) Appraise the techniques of culturing anaerobic organisms.

CO:3 K:4 18. (a) Analyze the classification, morphology and economic importance of alage.

(OR)

(b) Differentiate and analyze green, brown and red algae with suitable examples.

CO:4 K:5 19. (a) Evaluate microbial growth kinetics and the factors affecting microbial growth.

(OR)

(b) Interpret and differentiate the morphology and reproduction of fungi and actinomycetes.

CO:5 K:5 20. (a) Appraise microbial biodiversity with special reference to extremophiles.

(OR)

(b) Critically assess the industrial applications of methanogens, alkaliphiles and barophiles.