

# **KAMARAJ COLLEGE (Autonomous)**

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

THOOTHUKUDI – 628 003

**(6 Pages)**

**Reg. No: .....**

**Question Code No : 25001508**

**Sub Code : 24UMMB11**

**UG Degree - End Semester Examinations, November 2025**

**First Semester**

**B.Sc. MICROBIOLOGY**

**Fundamentals of Microbiology and Microbial Diversity**

**(For those who joined in July 2024 onwards)**

**Time : 3 Hours**

**Maximum : 75 Marks**

**PART – A ( $10 \times 1 = 10$  Marks)**

**Answer ALL Questions**

**Choose the correct answer:**

1. The scientist who is associated with 5 Kingdom concept is\_\_\_\_\_.  
(a) Alexander Fleming                      (b) Whittaker  
(c) Edward Jenner                          (d) Joseph Lister
2. An ecological niche includes all of the following except:

- (a) The resources a species utilizes
  - (b) The reproductive habits of a species
  - (c) The interactions a species has with other organisms
  - (d) The atmospheric pressure of the habitat
3. Which of the following statement is incorrect regarding phycobilisomes?
- (a) Phycobilisomes (PBSs) are large, light-harvesting protein complexes found in cyanobacteria and red algae that enhance photosynthesis by absorbing light wavelengths not efficiently absorbed by chlorophyll
  - (b) These complexes consist of phycobiliproteins (water-soluble pigments) and linker proteins, organized into a core and radiating rods.
  - (c) PBSs absorb light in the 500–650 nm range and transfer the energy to chlorophyll, increasing the organism's overall light absorption capacity and allowing it to thrive in various light conditions.
  - (d) Which is associated with nitrogen fixation
4. Neurodegenerative diseases such as mad cow and Kuru diseases are caused by infectious particles known as\_\_\_\_\_

- (a) Coronavirus (b) *Virioids*  
(c) *Retrovirus* (d) *Prions*
5. Which of the following is a common enriched medium is used to culture fastidious bacteria?
- (a) MacConkey Agar (b) Mannitol salt agar  
(c) Chocolate agar (d) Nutrient agar
6. Which type of microorganisms is typically grown on nutrient agar?
- (a) Fastidious microorganisms (b) Nonfastidious microorganisms  
(c) Anaerobic bacteria (d) Parasites
7. The purpose of secondary filter in fluorescence spectroscopy is
- (a) Allows only excitation radiation  
(b) Allows only emission radiation  
(c) Allows only excitation and emission radiation  
(d) Allows only transmitted radiation
8. Malachite green is used to study
- (a) *E.coli* (b) *Proteus vulgaris*  
(c) *Bacillus cereus* (d) *Enterobacter aerogenes*
9. The primary antiseptic agent in dettol products is:
- (a) Tetracycline (b) Codeine

(c) Choloroxylenol

(d) Paracetamol

10. *E. coli* is considered a good indicator of what type of contamination?

(a) Chemical pollution

(b) Microbial contamination

(c) Faecal pollution

(d) Radioactive contamination

**PART – B (5 X 5 = 25 Marks)**

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

**Answer should not exceed 250 words.**

11. (a) Give an account on 8 kingdom concept.

**(OR)**

(b) Write a detailed note on *Eubacteria*?

12. (a) Document the characters of microalgae.

**(OR)**

(b) What do you know about virioids?

13. (a) How do we produce pure culture?

**(OR)**

(b) Write a brief note on binary fission.

14. (a) Explain illustratively about a bright field microscope.

**(OR)**

(b) Illustrate the principle and applications of phase contrast microscopy.

15. (a) Expose the principle and application of membrane filtration technique.

**(OR)**

(b) Why do we use UV in microbiology labs?

**PART – C (5 X 8 = 40 Marks)**

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

**Answer should not exceed 500 words.**

16. (a) Discuss in detail about Archaeobacteria.

**(OR)**

(b) What is biodiversity? Showcase the techniques associated with its conservation.

17. (a) Portray the types, structure and functions of flagella with neat sketches.

**(OR)**

(b) Document the features of *Saccharomyces cerevisiae* with neat diagrams.

18. (a) Write an essay on the diverse types of media used in microbiology lab.

**(OR)**

- (b) Record different types of methods involved in anaerobe cultivation.

19. (a) Add a note on the principle, applications and limitations of SEM.

**(OR)**

- (b) Describe in detail about Gram's staining with supportive sketches.

20. (a) Record in detail about the uses, principle, applications and limitations of moist heat sterilization method commonly used.

**(OR)**

- (b) Define and differentiate antiseptic from disinfectants with examples.