

(7 pages)

Reg. No. :

Code No.: 7824

Sub. Code: WMBM 12

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023.

First Semester

Microbiology — Core

MICROBIAL PHYSIOLOGY

(For those who joined in July 2023 onward)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. The organism which utilize CO_2 as sole carbon source are known as _____.
(a) Chemotrops
(b) Lithotrophs
(c) Autotrops
(d) Heterotrops

6. In which phase of growth curve, number of cells dividing is equal to number of cells dying
(a) Log phase (b) Death phase
(c) Lag phase (d) Stationery phase
7. The unicellular algae include the _____.
(a) Chlamydiae (b) Eukaryotes
(c) Cyanobacteria (d) Diatoms
8. Unicellular algae are important in the natural environment because they _____.
(a) Cause human disease
(b) Perform photosynthesis and produce oxygen
(c) Perform respiration and produce carbon dioxide
(d) Are natural parasites of fungi
9. An important single celled green alga widely used in research is _____.
(a) Chlamydomonas (b) Chlamydia
(c) Chlorophyta (d) Corynebacterium
10. Those bacteria designated microaerophilic are distinguished by their ability to grow.
(a) In high concentrations of salt
(b) In low concentrations of oxygen
(c) Without ATP or glucose
(d) Only in the presence of viruses

Page 3

Code No. : 7824

2. Which organism can utilize over 100 compounds as carbon source and that's why useful in bioremediation of polluted environment.
(a) Pseudomonas aeruginosa
(b) Pseudomonas fluorescense
(c) Burkholderia capacia
(d) Bacillus megatarium
3. Which micronutrients required for nitrogen fixation _____?
(a) Manganese (b) Molybdenum
(c) Iron (d) Copper
4. Which of the following is used to grow bacterial cultures continuously?
(a) Chemostat
(b) Coulter chamber
(c) Hemostat
(d) Petroff - Hausser chamber
5. The total biomass of an organism will be determined by the nutrient present in the lowest concentration relative to the organism's requirements is known as _____.
(a) Liebig's law of the minimum
(b) Shelford's law of tolerance
(c) Quorum sensing
(d) Heisenberg's principle of uncertainty.

Page 2

Code No. : 7824

11. In the prokaryotic cell, DNA is found in the _____.
(a) Cell membrane and golgi body
(b) Chromosome and plasmid
(c) Flagellum and cilium
(d) Cell wall and cell membrane
12. The fluid mosaic model describe the _____.
(a) Chromosomal material of prokaryotes
(b) Structure of the flagellum in eukaryotes
(c) Structure of the capsule in prokaryotes
(d) Structure of the cell membrane in prokaryotes
13. Barophilic microorganisms are those microorganisms able to grow _____.
(a) at cold temperature
(b) at high pressure
(c) at high temperature
(d) at high pH value
14. Those bacteria that live at pH levels from 5 to 8.5 are known as _____.
(a) Thermophiles (b) Mosophiles
(c) Neutrophiles (d) Capnophiles

Page 4

Code No. : 7824

[P.T.O.]



15. Micro organisms that survive in moisture - free environments do so because they _____.
- (a) Form spores only
 - (b) Metabolize glucose molecules
 - (c) Have no cell membrane
 - (d) Have no chromosomes

PART B — (5 × 4 = 20 marks)

Answer ALL questions, Choosing either (a) or (b).

16. (a) Are there any causes in which molecules move against the concentration gradient when crossing the cell membrane?
- Or
- (b) How do substances move across the cell membranes in prokaryotic cell?
17. (a) What are some different patterns that microorganisms undergo during cell division?
- Or
- (b) Which every phases do a population of microorganisms pass through after they have been introduced into a fresh culture medium?
18. (a) What occurs after glycolysis?
- Or
- (b) How does acetyl CoA function in the Krebs cycle?

Page 5 Code No. : 7824

19. (a) Is oxygen the only substance that can be used as an electron acceptor in energy metabolism?

Or

- (b) What are some examples of molecules that can be used as electron acceptors in anaerobic metabolism?

20. (a) What pathways exist for the synthesis of carbohydrate molecule?

Or

- (b) What Chemistry does photosynthesis involve?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

21. (a) How do chemotrophs get their energy?

Or

- (b) Discuss in detail about facilitated diffusion.

22. (a) What is bacterial growth curve? Why do we do bacterial growth curves?

Or

- (b) Discuss about the method and applications of synchronous culture.

Page 6 Code No. : 7824

23. (a) Focus on Pasteur effect in fermentation and write about the cause of the Pasteur effect?

Or

- (b) How is ATP synthesized in bacteria?

24. (a) Discuss about gluconeogenesis and its function.

Or

- (b) Write a detail notes on purine and pyrimidine biosynthesis.

25. (a) Differentiate cyclic and non cyclic electron transport chain.

Or

- (b) Explain about anoxygenic cycle of photosynthesis.

Page 7 Code No. : 7824

