

(6 pages)

Reg. No. : .....

Code No. : 6505

Sub. Code : ZMBM 13

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

First Semester

Microbiology – Core

PHYSIOLOGY AND METABOLISM

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Slime layer is useful for
  - (a) Attachment
  - (b) Biofilm formation
  - (c) To resist desiccation
  - (d) All

2. Regarding Gas vesicles, choose the correct statement (s)

- (a) Few to 100 /cell
- (b) Spindle shaped structure
- (c) Visual under light and electron microscope
- (d) All

3. Siderophores are associated with \_\_\_\_\_ transport

- (a) Glucose
- (b) Amino acids
- (c) Iron
- (d) DPA

4. To produce more ATP, the difference in redox potential between the primary donor and the final electron acceptor should be \_\_\_\_\_

- (a) More
- (b) Low
- (c) Moderate
- (d) Marginally low

5. Final electron acceptor in anaerobes is / are

- (a) Nitrate
- (b) Sulphate
- (c) Both
- (d) Oxygen

6. Bioluminescence is useful for  
 (a) Sexual attraction  
 (b) Threatening enemies  
 (c) Hunting prey  
 (d) All
7. Heterocyst is produced by  
 (a) Cyanobacteria  
 (b) Fungi  
 (c) Arachobacteria  
 (d) Actinomycetes
8. Cofactor in Nitrogenase enzyme is  
 (a) Fe-Nickel (b) Fe-Molybdenum  
 (c) Fe-Aluminium (d) Fe-Cadmium
9. Barophiles are fond of  
 (a) Sugar (b) Pressure  
 (c) Salt (d) Light
10. Helmstetter-Cummings technique is associated with \_\_\_\_\_ culture  
 (a) Synchronous (b) Auxenic  
 (c) Mixed (d) Pure

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PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).  
 Each answer should not exceed 250 words.

11. (a) Explain the properties of F pili.  
 Or  
 (b) Describe the features of nucleoid.
12. (a) Write a note on Group translocation.  
 Or  
 (b) Sketch the features of chemiosmosis theory.
13. (a) Compose the steps in alcohol production.  
 Or  
 (b) Comment on bioluminescence.
14. (a) Quote the features of halobacterial photosynthesis.  
 Or  
 (b) What do you know about *nif* gene?
15. (a) Highlight the events in fed batch culture technique.  
 Or  
 (b) Add a note on spore genes.

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 [P.T.O.]

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).  
Each answer should not exceed 600 words.

16. (a) Indicate the events associated with murcin synthesis with neat diagrams.

Or

- (b) Discuss in detail about archaebacterial cell wall.

17. (a) Describe events in glycolysis and Kerb's cycle along with their biological significance.

Or

- (b) Write an essay on the structure and functions of ETS.

18. (a) Explain in detail about the diverse types of final electron acceptors used in anaerobes.

Or

- (b) How to microbes produce methane? Explain in detail.

19. (a) Mention the properties of bacteriochlorophyll with necessary diagrams.

Or

- (b) Describe the features of nitrogenase and heterocyst.

20. (a) Write a clear note on the process of continuous culture.

Or

- (b) Display the diverse factors affecting microbial distribution and give a special focus on biological factors.