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B.M.S COLLEGE FOR WOMEN, AUTONOMOUS
BENGALURU – 560004
SEMESTER END EXAMINATION – SEPTEMBER-2023

B.Sc. in Microbiology – 2nd Semester

MICROBIAL BIOCHEMISTRY AND PHYSIOLOGY
(NEP Scheme 2021-22 Onwards F+R)

Course Code: MB2DSC02

Duration: 2 ½ Hours

QP Code: 2020

Max marks: 60

Instructions: 1. Answer all the sections.
2. Draw diagrams wherever necessary.

SECTION-A

I. Answer all the questions. Each question carries TWO Marks. (5X2=10)

1. The bond present between two amino acids is a peptide bond. Explain its formation.
2. Differentiate between acidophiles and alkaliphiles with examples
3. Explain the role of liposomes in membrane transport in microbes.
4. Mention two differences between polar and non-polar covalent bonds.
5. Define free energy and mention its significance

SECTION-B

II. Answer any FOUR of the following questions. Each question carries FIVE Marks. (4X5=20)

6. Explain the influence of oxygen concentration on the growth of microbes
7. Classify the organisms based on the nutritional requirements
8. Explain the three-dimensional configuration of proteins
9. Brief about Reductive TCA pathway and mention its significance
10. Derive the Henderson-Hasselbalch equation.
11. Brief about Electron Transport Chain in Microbes with its importance

SECTION-C

III. Answer any TWO of the following questions. Each question carries TEN Marks. (2X10=20)

12. List out the methods for the measurement of microbial growth.
13. Explain in detail the types of cellular transport found in microbes.
14. “Water is a universal solvent” justify.
15. Explain in details Calvin’s cycle

SECTION-D

IV. Answer all Multiple Choice Questions (MCQs).

(10X1=10)

16. A substrate that releases hydrogen ions when dissolved in water is

- a. Buffers
- b. Bases
- c. Acids
- d. Ions

17. Solvents are derived from the processing of crops are called.....

- a. Red solvent
- b. Green solvent
- c. Inorganic solvent
- d. None of the above

18. Which of the following procedures uses a photocell to measure the absorbance of culture to regulate the flow of media

- a. Coulter Counter
- b. Hemostat
- c. Petroff-Hausser chamber
- d. Turbidostat

19. Substrate level phosphorylation is found in

- a. CODH pathway
- b. Glycolysis
- c. Calvin cycle
- d. None of the above

20. CODH refers to

- a. Carbon oxygen dihydrogen
- b. Carbon dioxide dihydrogen
- c. Carbon monoxide dehydrogenase
- d. Carbon dioxide dehydrogenase

21. Reductive TCA pathway fixes

- a. Nitrogen
- b. CO
- c. CO₂
- d. ATP

22. In a crystal, covalent molecules are held together by

- a. Dipole-dipole attraction
- b. Hydrogen Bonds
- c. Vander-Waals force
- d. Electrostatic force of attraction

23. Saturated fats are a type of fat wherein the fatty acids possess

- a. Coordinate covalent bonds
- b. Triple bonds
- c. Double bonds
- d. Single bonds

24. Carrier proteins take part in

- a. Water transport
- b. Active transport of ions
- c. Passive transport of ions
- d. None of these

25. In which growth phase bacterial population achieve zero growth?

- a. Log phase
- b. Lag phase
- c. Stationery phase
- d. None of the above.
