

Seat No. : \_\_\_\_\_

# NC-110

November-2021

B.Sc., Sem.-V

## CC-302 : Microbiology : (Bacterial Metabolism) (Theory)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :**
- (1) All questions in Section – I carry equal marks.
  - (2) Attempt any **three** questions in Section – I.
  - (3) Section – II is **COMPULSORY**.
  - (4) Draw figures wherever necessary.

### Section – I

1. (A) Explain oxidation reduction (Redox) potential and discuss its role in energy metabolism. 7  
(B) Write a note on energy rich compounds. 7
2. (A) Explain feedback inhibition in branched pathway. 7  
(B) Write a note on NAD/NADP as reducing power. 7
3. (A) Discuss the major features including the unique enzymes, the ATP yields and the metabolic role of the Embden-Meyerhof pathway. 7  
(B) Explain generation of ATP by substrate level phosphorylation. 7
4. (A) Describe stickland reaction and explain its significance. 7  
(B) Write a note on anaerobic respiration. 7
5. (A) Explain physiological groups of chemolithotrophs. 7  
(B) Discuss iron bacteria and their importance. 7
6. (A) Write a note on anoxygenic photosynthetic bacteria. 7  
(B) Explain role of cyclic photophosphorylation in ATP generation. 7

7. (A) Describe anaplerotic reactions and mention its significance. 7  
(B) Explain the process of assimilation of ammonia. 7
8. (A) Discuss gluconeogenesis and write its importance. 7  
(B) Describe biosynthesis of unsaturated fatty acids. 7

### Section – II

9. Give short and specific answers in 1-2 lines only : (any eight) 8
- (1) Define standard free energy change.
  - (2) Write the role of UTP in anabolism.
  - (3) Write Michaelis-Menten equation.
  - (4) What is the application of pulse labelling technique ?
  - (5) Why less ATP is produced by ED pathway as compared to EMP pathway ?
  - (6) Write two major functions of pp pathway.
  - (7) Write full name of KDPG.
  - (8) Name two bacteria that carry out butanediol fermentation.
  - (9) Write function of mono-oxygenase enzyme.
  - (10) Write two names of sulphur oxidizing bacteria.
  - (11) What are antenna pigments ?
  - (12) Name light harvesting pigment in halobacteria.
  - (13) Define precursor.
  - (14) Name components of nitrogenase enzyme system.
  - (15) What are carboxysomes ?
  - (16) What is bactoprenol ?
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