

Seat No. : _____

NC-103

December-2015

B.Sc., Sem.-V

Core Course-302 : Microbiology

(Bacterial Metabolism)

Time : 3 Hours]

[Max. Marks : 70

- Instructions :**
- (1) All questions carry equal marks.
 - (2) Figures at right side indicate the marks.
 - (3) Draw the figures wherever necessary.
 - (4) Mention answer number clearly in the margin.

1. Answer the following (Any **two**) : **14**
 - (a) Define: Zymogen. Explain role of zymogens activation in metabolic regulation.
 - (b) State Lineweaver Burk equation. Draw L.B. plot and give its significance.
 - (c) Draw typical respiratory electron transport chain. Explain its role in ATP generation.
 - (d) Explain oxidation reduction (Redox) potential and discuss its role in energy metabolism.

2. Describe the following (Any **two**) : **14**
 - (a) E.M.P. pathway and its significance.
 - (b) Anabolic role of Tricarboxylic acid (T.C.A.) cycle.
 - (c) Catabolism of Fatty acids through Beta oxidation.
 - (d) Role of deamination, decarboxylation and transamination in amino acid catabolism.

3. Explain the following (Any **two**) : **14**
 - (a) Physiological groups of chemolithotrophs.
 - (b) Role of Cyclic Photophosphorylation in ATP generation.
 - (c) Generation of ATP and reducing power in chemoautotrophs.
 - (d) Role of Calvin Benson cycle in CO₂ fixation.

4. Describe the following (Any **two**) : **14**
- (a) Reducing power and its role in bacterial metabolism.
 - (b) Assimilation of ammonia at its low and high concentration.
 - (c) Biosynthesis of cell wall Peptidoglycan.
 - (d) Use of radio isotopes and pulse labeling technique in elucidating biosynthetic pathways.

5. Answer in one or **two** sentences : **14**
- (a) State Michaelis-Menten equation.
 - (b) What is precursor activation ?
 - (c) State second law of Thermodynamics.
 - (d) Name two energy rich compounds other than Nucleoside Triphosphates (NTPS).
 - (e) What is transamination ?
 - (f) Name two unique key enzymes of Glyoxalate bypass.
 - (g) Give full name of E.D. pathway.
 - (h) Name species of Chemolithotrophic bacteria that can oxidize both iron and sulfur.
 - (i) Write full name of NADP.
 - (j) Define: Photophosphorylation.
 - (k) Name pathway for CO₂ fixation other than Calvin cycle.
 - (l) Name precursor metabolites that are intermediates of T.C.A. cycle.
 - (m) What is radioisotope ?
 - (n) Define : Polynucleotide.
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