

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

**N14-116**

**November-2014**

**B.Sc., Sem.-V (CBCS)**

**MI-302 : Microbiology**

**(Bacterial Metabolism)**

**Time : 3 Hours]**

**[Max. Marks : 70**

- Instructions :** (1) All questions carry equal marks.  
(2) Right side indicates marks.  
(3) Draw figure wherever necessary.

1. Answer any **two** : **14**
  - (a) Explain feedback inhibition in branched pathways.
  - (b) Derive Michael is menten equation.
  - (c) Explain energy rich compounds and their role in metabolism.
  - (d) Explain chemiosmotic mechanism of ATP generation.
  
2. Answer any **two** : **14**
  - (a) Explain pentose phosphate pathway for catabolism of glucose.
  - (b) Explain catabolism of amino acids.
  - (c) Describe TCA cycle.
  - (d) Explain  $\beta$ -oxidation pathway.
  
3. Answer any **two** : **14**
  - (a) Explain generation of ATP in chemoautotrophic bacteria.
  - (b) Describe Calvin Benson cycle.
  - (c) Explain photophosphorylation in halobacteria.
  - (d) Explain physiological groups of chemolithotrophs.
  
4. Answer any **two** : **14**
  - (a) Discuss biosynthesis of peptidoglycan.
  - (b) Discuss assimilation of molecular nitrogen.
  - (c) Explain use of auxotrophic mutants for the study of biosynthetic pathways.
  - (d) Explain anaplerotic reactions and their role in biosynthesis.

5. Answer in **one** or **two** sentence :

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- (a) Define acyl carrier protein.
  - (b) What is phosphotidic acid ?
  - (c) Give example of saturated fatty acids.
  - (d) Name the carrier molecules in ETC of phototrophs.
  - (e) Define standard free energy change.
  - (f) Write full name of KDPG.
  - (g) What is Transamination ?
  - (h) What is reverse electron transport chain ?
  - (i) Name chemoautotrophic bacteria.
  - (j) Name photoautotrophic bacteria.
  - (k) Define photophosphorylation.
  - (l) What is stickland reaction ?
  - (m) What is zymogen activation ?
  - (n) Define anaerobic respiration.
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