



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 154304**

Roll No.

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**B. Tech.**

(SEM. III) (ODD SEM.) THEORY  
EXAMINATION, 2014-15

**BIOCHEMISTRY**

Time : 3 Hours]

[Total Marks : 100

- Note :**
- 1) Attempt all questions.
  - 2) All questions carry equal marks.

**1** Attempt any **four** parts of the following : **5×4=20**

- a) Explain significance of biological buffers in human body
- b) How Henderson- Hasei Baich Equation is important for understanding buffer action and acid base balance in blood and tissues of vertebrates.
- c) Write a short note on phosphate buffer.
- d) What is pH when 100 ml 0.1 N NaOH is added to 50 ml of 0.1 M acetic acid if pKa for acetic acid is 4.76.
- e) Write a short note on Zwitter ions.

- 2 Attempt any **two** parts of the following : **10×2=20**
- Write short note on :
    - Pentose phosphate pathway (PPP)
    - TCA cycle.
  - Oxidative Phosphorylation and ATP synthesis are tightly coupled reaction. Justify your answer with the help of suitable reason and diagram.
  - With the help of suitable examples, illustrate the importance of carbohydrates. What disorders of metabolism are related to carbohydrate metabolism?
- 3 Attempt any **four** parts of the following : **5×4=20**
- Beta oxidation and its significance.
  - Fatty acid and lipids as structural entity.
  - Diseases due to defective lipid metabolism.
  - Formation and utilization of ketone bodies.
  - Transport of fatty acid through membrane.
  - Role of cholesterol in maintaining integrity of cell membrane.
- 4 Attempt any **two** parts of the following : **10×2=20**
- Explain the different levels of protein organization with the significance of Ramachandran Plot.
  - Explain the biosynthesis of protein with the help of diagrammatic presentation.
  - Write a short note on any **two** :
    - Urea cycle
    - Citric acid cycle
    - Diseases/disorder of amino acids metabolism

- 5 Attempt any **two** parts of the following : **10×2=20**
- Purines and pyrimidines contribute to structure and function of cell machinery. Illustrate the statement with the help of suitable examples.
  - Describe the biosynthetic process involved in vitamin synthesis. Also mention regulation of events in vitamin anabolism.
  - Describe the process of pyrimidine degradation. What are the outcomes of faulty pyrimidine catabolism?