

Printed Pages : 2



EBT-303

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

PAPER ID : 154309

Roll No.

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B. Tech.(SEM. III) (ODD SEM.) THEORY
EXAMINATION, 2014-15**MOLECULAR DYNAMICS & BIOENERGETICS**

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 the energy cycle in biological systems.
- b) Write a short note on energy conversion.
- c) Describe photosystem I and II. Give an overview of photosynthesis in plants.
- d) Write structure and properties of ATP.
- e) Differentiate between cyclic photophosphorylation and non-cyclic photophosphorylation

2. Attempt any **two** parts of the following : **10×2=20**

- a) Define Biomembranes. What are the different models used for explaining the structure of biomembranes? Explain their salient features.

- b) Discuss various molecular models plasma membrane that have been proposed. Do you think Singer's model of fluid-mosaic model membrane is the most convincing?
 - c) Write a short note on any two :
 - i) Signal transduction
 - ii) Organization of transport activity in cell
 - iii) Glucose and amino acid transport.
- 3** Attempt any **two** parts of the following : **10×2=20**
- a) Define and classify metabolism. Explain the two different energy conserving pathways in brief.
 - b) Explain the process of nitrogen fixation. Explain nitrogenase complex and its importance in nitrogen fixation.
 - c) Explain the pathway of pyrimidine degradation.
- 4** Write short notes on any **four** : **5×4=20**
- a) Thermodynamic efficiency of growth
 - b) Yield coefficient
 - c) Heat evolution in aerobic cultures
 - d) Oxygen consumption in aerobic cultures
 - e) Energy coupling (ATP & NADH).
- 5** Attempt any **two** parts of the following : **10×2=20**
- a) Citric acid cycle operates under aerobic conditions. Explain.
 - b) Explain the regulatory control among Glycolysis.
 - c) Write short notes on any two
 - i) P:O ratio
 - ii) Respiratory inhibitors
 - iii) Role of electron transport.