Printed Pages : 2

EBT-303

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

PAPER ID : 154309

Roll No. | | | | | | | | | | |

B. Tech.

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

MOLECULAR DYMAMICS & 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 photophosphoryalation and non-cyclic photophosphoryalation

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.