Printed Pages : 2

BT-306

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

PAPER ID : 154306

Roll No.

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) Describe the structure and action of the Na+/K+ -ATPase

b) Define Biomembranes. What are the different models used for explaining the structure of biomembranes?

c) Explain the role of signal transduction pathway in transport.

d) Differentiate between active transport and passive transport.

e) Write a short note on glucose and amino acid transport.

2 Write short note on any **four** : **5×4=20**

a) Cell crawling
b) Muscle contraction
c) Myosin and cell movement
d) Association of actin filament association with plasma membrane
e) Structure and organization of actin filament.

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

a) Explain the process of nitrogen fixation. Explain nitrogenase complex and its importance in nitrogen fixation.
b) Explain the pathway of pyrimidine degradation.
c) Explain generation and utilization of ATP.

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

a) Write a short note on :
   i) Yield coefficient
   ii) Heat evolution in anaerobic cultures.
b) Derive equation for elemental balance and stochiometry for cell growth in culture system.
c) Give a detailed account of thermodynamic efficiency of growth.

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

a) Explain mechanism of Oxidative Phosphorylation.
b) Give a detailed account of ATP synthetase.
c) Describe the component of ETC and discuss oxidation of NADH.