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

PAPER ID : 1237 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. III) ODD SEMESTER THEORY EXAMINATION 2013-14

MOLECULAR DYNAMICS AND BIOENERGETICS

Time : 3 Hours *Total Marks : 100*

Note :— Attempt all Sections.

SECTION–A

1. Attempt all parts : (2×10=20)

   (a) Discuss Law of Thermodynamics with Gibb's Free Energy.

   (b) What do you understand by Chemical Neurotransmitter ?

   (c) What are the various functions of Cell Membrane ?

   (d) What do you understand by the term Bioenergetics ? Discuss Energetics of Glycolysis.

   (e) Write a note on "Amino Acid Pool" of body.

   (f) How disposal of ammonia occurs in living organisms ?

   (g) What is Salvage Pathway ?

   (h) Write down various functions of nucleotide molecules.

(i) Write down single letter code for :

(i) Histidine

(ii) Glutamate

(iii) Aspartate

(iv) Tryptophan.

(j) Discuss Yield Coefficients.

SECTION–B

2. Attempt any **six** : **(5×6=30)**

(a) Write an account of high energy compounds in metabolism.

(b) Discuss Stoichiometry and Energetic Analysis of Cell Growth.

(c) Describe the components of ETC and discuss oxidation of NADH.

(d) Write short notes on :

(i) P:O Ratio

(ii) Cytochromes.

(e) Discuss degree of reduction concept in detail.

(f) Transamination is the most important reaction of Amino Acid Metabolism. Prove it.

(g) Describe reactions of Krebs Cycle.

(h) Differentiate between Endocytosis and Exocytosis.

SECTION–C

3. Attempt any **five** : **(5×10=50)**

(a) Discuss oxygen consumption and heat evolution in aerobic cultures and thermodynamic efficiency of growth.

(b) Discuss general aspects of Amino Acid Metabolism in detail.

(c) Write notes on :

(i) Entropy

(ii) Na^+/K^+ Pump.

(d) Discuss synthesis and degradation of Pyrimidine.

(e) Explain photosynthesis on the basis of "Z"-Scheme and differentiate between C4 and C3 type of Anatomy.

(f) What do you understand by cell movement ? Also discuss structure and organization of Actin filament and its association with plasma membrane ?