

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

Paper ID : 154415

Roll No.

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B.TECH.

Theory Examination (Semester-IV) 2015-16

MOLECULAR DYNAMICS & BIOENERGETICS

Time : 3 Hours

Max. Marks : 100

Section-A

Q.1 Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2×10=20)

- (a) Explain the structure of plasma membrane.
- (b) Write about transportation across plasma membrane.
- (c) What do you understand by active transport?
- (d) Explain high energy compound?
- (e) Write down about facilitated diffusion.

- (f) Explain ionophores.
- (g) Discuss about Na⁺/K⁺ pump.
- (h) Write down about ATP synthase.
- (i) Explain extrinsic and intrinsic proteins.
- (j) What is P:O ratio ?

Section-B

Q2. Attempt any five parts. All parts carry equal marks:
(10×5=50)

- (a) Write down about signal transduction. Explain the role of transport in signal transduction.
- (b) Define the process of muscle contractions and show the arrangement of filament in muscle with the help of suitable example.
- (c) Write down the process of biological nitrogen fixation. Define the nitrogenase complex and its importance in nitrogen fixation.

(2)

- (d) Explain the process of transamination and deamination in the metabolism of amino acid.
- (e) Write down the pathway of purine and pyrimidine degradation.
- (f) What do you understand by the energy coupling reaction of ATP and NADH?
- (g) Define the process of pyruvate oxidation.
- (h) When the idoacetate is the potent inhibitor of glyceraldehydes 3-phosphate dehydrogenase? What chemical reaction does occur between idoacetate and the enzyme?

Section-C

Note: Attempt any two questions from this section.

(15×2=30)

- Q3.** Write down the pathway of Glycolysis and Krebs cycle. Explain all the regulatory and energy formation steps for the cycle.

(3)

- Q4. (a) What is the mechanism of Oxidative phosphorylation with the help of all complexes?
- (b) Discuss Q cycle.
- Q5. Explain stoichiometry and energetic analysis of cell growth and product formation.