

2016

Time : 2 hours

Full Marks : 40

The figures in the right-hand margin indicate marks.

*Answer any **four** questions.*

(BIOPHYSICS AND BIOCHEMISTRY)

1. (a) Describe different non-covalent interactions which define native structure of a globular protein. 5
- (b) What is Free Energy Change ? On the basis of free energy change, can it be explained whether a process spontaneous or non-spontaneous, how ? Photosynthesis is an endergonic process, true or false ? 5
2. (a) Describe adsorption and ultrafiltration. 5

- (b) Write four differences between active and passive transport. What is symport ? How does the passive transport change with change in cholesterol fraction in an eukaryotic membrane ? 5
3. (a) What is a Buffer ? Why do you need to maintain the pH of a reaction to get an optimum yield ? Describe Henderson-Hasselbalch equation. 5
- (b) What is the structure of water in bulk ? What are five different properties of water, which are essential to sustain a life on earth ? 5
4. (a) What is Ramchandran Plot ? Which is the order of protein structure mainly described/predicted by Ramchandran Plot ? What is the dihedral angle for parallel β -sheet ? 5
- (b) Describe the role of five different polysaccharides. Why does heparin has helical structure ? 5

5. (a) Describe the classification of enzyme with examples. Write two differences between co-factor and co-enzyme with examples. 5
- (b) What is Michaelis-Menten equation ? 5
6. (a) Describe glyoxylate cycle. 5
- (b) How does proton pump help in generating ATP through F_0F_1 ATP synthase ? 5

