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Fourth Semester Examination, May-2017

M.Sc. CHEMISTRY

Paper - II

BIOPHYSICAL CHEMISTRY

Time : 3 Hrs. **Max.Marks : 80**

Note :Section 'A', consists of 10 very short answer type questions, all of which are compulsory and should be attempted first. Section 'B' consists of four short answer type questions with internal options. Section 'C' consists of four long answer type questions with internal choice.

Section-'A'

$\Delta S < 0$

Answer the following very short-answer-type questions in one or two sentences. **(2x10=20)**

Q-1. What are neurons?

Q-2. Define cell membrane.

Q-3. What are ion-sulphur proteins? Give one example.

Q-4. Give five examples of metalloproteins.

Q-5. Differentiate between exergonic and endergonic processes based on free energy concept.

Q-6. What is the value of pH required for highly charged ATP molecule?

Q-7. What is condition for spontaneity if $\Delta H < 0$ and ?

Q-8. Differentiate between osmosis and diffusion.

Q-9. Define "membrane potential" and "membrane equilibrium".

P.T.O.

Q-10. Explain "Osmotic equilibrium" and "Sedimentation equilibrium".

Section-'B'

Answer the following short-answer-type questions with word limit 200-250. **(5x4=20)**

Q-1. Explain structure and functions of cell membrane. Discuss Na^+/K^+ pump.

OR

How does ions transport through cell membrane?

Q-2. Give a brief account on biological nitrogen fixation.

OR

How do cytochromes involve in electron transport process?

Q-3. How does biological energy transformation obey laws of thermodynamics?

OR

Explain the role of ATP in biological systems.

Q-4. Explain the following :

i) Root mean square end-to-end distance

ii) Most probable end-to-end distance

OR

What are forces involved in biological interactions?

Section-'C'

Answer the following long-answer-type questions with word limit 400-450. **(10x4=40)**

Q-1. What is nerve? How it is used in nerve conduction?

OR

Describe structure and function of hemoglobin.

Q-2. Discuss the structure and functions of metalloproteins in electron transfer processes.

OR

Discuss spectroscopic evidences regarding function of nitrogenase.

Q-3. How do metal complexes involve in transmission of energy? Explain role of chlorphylls in energy transmission.

OR

Explain the central role of ATP-ADP system. Give principle of the common intermediate in energy coupling.

Q-4. Discuss various types of binding processes in biological systems.

OR

What is muscular contraction? Discuss its molecular mechanism, energy sources and molecular components.

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