(c) Calculate the change in the Gibbs free energy for a reaction at 25 °C with (-20000 J/mol) and (-0.50 KJ/mol-K) values for change in enthalpy and change in entropy, respectively. 5

6. (a) Discuss the different levels of organization in living systems. 5

(b) Which is more abundant in the human body collagen or albumin? State the structural and functional features of both. 6

(c) Give one word for : 4

(i) Most abundant element in living organisms

(ii) A reaction that releases energy

(iii) Enzymes that act upon nucleic acids

(iv) A solution in which a somatic cell will lyse.

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[This question paper contains 4 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : **5693 I**

Unique Paper Code : 3184002001 / 3184002007

Name of the Paper : GE : Biochemical Basis of Life

Name of the Course : **Common Program Group (B.Sc. (H) Bio-medical Sciences) (NEP-UGCF)**

Semester : VI

Time : 3 Hours ***Maximum Marks : 90***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Question **No.1** is compulsory.

(c) Attempt **five** questions in **all**.

(c) Subparts of the questions should be attempted together.

(d) Draw illustrations or diagrams wherever necessary.

1. (a) Define 2×4=8

(i) Macromolecules.

(ii) Anaerobic organism

(iii) Open system

(iv) Chemoautotrophs

(b) Differentiate between 3×4=12

(i) Amylases and lipases

(ii) Enthalpy and entropy

(iii) Prokaryotes and eukaryotes

(iv) Organic and inorganic compounds

(c) State **True** or **False**. Justify your answer. 2.5×4=10

(i) Dalton is the unit for atomic mass

(ii) Cholesterol is a neutral fat

(iii) Osmotic pressure is a colligative property

(iv) The unit. "Angstrom, Å" can be used to measure large distances

2. Write short notes on

(a) Storage polysaccharides 5

(b) Functional diversity in protein biopolymers 5

(c) Subcellular organization in eukaryotic cells 5

3. (a) Name, and describe the experimental set-up with the help of a suitable labelled diagram that proved the hypothesis of "Primordial soup" formation in the Earth's early oceans. Discuss how it helped us in understanding the origin of life. 9

(b) What are energy-coupling reactions? What is their significance in metabolism? Discuss how ATP is the energy currency of the cell. 6

4. (a) Life would not be possible without water. Justify the statement by discussing the properties of water that make it highly suitable for sustaining life. 9

(b) What are trace elements? Discuss the significance of iodine, copper, manganese and zinc in biological systems. 6

5. (a) Discuss the significance of weak interactions such as hydrogen bonds, van der Waals forces, and hydrophobic interactions in biological systems by giving suitable examples. 6

(b) What properties of triglycerides make them an efficient source of energy? Describe the structure of a triacylglycerol molecule. 4