JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

M.Sc.-Ist Semester (Biotechnology & Microbiology)

COURSE CODE (CREDITS):20MSBT111 (3)   MAX. MARKS: 15

COURSE NAME: **Biochemistry**

COURSE INSTRUCTORS: **Dr. Jitendraa Vashistt**   MAX. TIME: 1 Hour

Note: (a) All questions are compulsory. (b)Marks are indicated against each question in square brackets. (c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

Q1. How do you define a 'buffer' solution? What is the significance of a buffer in biological experiments? Justify your answer with suitable example.   **(3 marks)**

Q2. How do you calculate and prepare the following.   **(3 marks)**
a) A 100 ml solution of 100mM NaOH.
b) H^+ in a solution of 100mM NaOH.
(Given Molecular weight of NaOH = 40 g/mol)

Q3. Explain a classical experiment which laid a foundation of chemical basis of origin of life that simulated the conditions present in the atmosphere of the early, prebiotic earth.   **(3 marks)**

Q4. DNA has an overall negative charge and it needs to be placed in the tight packing in the nucleus of a eukaryotic cell. Which biomolecule and its basic units are usually present in packing of DNA in the nucleus? Justify your answer.   **(3 marks)**

Q5. Define the following in brief.   **(3 marks)**

a) Cohesive and adhesive interaction with respect to water

b) Hydrogen bonding and stability of a biomolecule