JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-III Semester (CE)

COURSE CODE (CREDITS):25BIICE314 MAX. MARKS: 15

COURSE NAME: CHEMISTRY

COURSE INSTRUCTORS: Dr. Gopal Singh Bisht MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems. Allowed to use calculator.

Q.No	Question	CO	Marks
Q1	a) pK_a is that pH at which acid is in 50% dissociated form. Explain b) Give an example of intermolecular π-hydrogen bonding by drawing the structure. c) Explain in brief the genesis of hydrophobic interaction. d) What does the + and – signs of wave function imply? e) An aqueous solution of sodium chloride contains 56 g of NaCl per 200 cc of solution at 293K. Express the concentration in molality. (density of solution is 1.17 g/cc.)	CO1	[1x5=5]
Q2	a) How much HCl (aq) form stock is required to prepare 0.15 N, 250 mL HCl solution? If stock HCl solution is 30% pure and have specific gravity of 1.145. b) Compare and Contrast the X-ray diffraction patterns of crystalline and amphorphus solid. Calculate the miller indices of plane which make intercepts 2a, -3b, 2c. c) How much weight of iron and water required for the production of 50 g of hydrogen? (MW of Fe- 55.84) $3Fe + 4H_2O \longrightarrow Fe_3O_4 + 4H_2$	COI	[2x3=6]
Q3.	The diffraction pattern is a product of the unique crystal structure of a material. Justify by giving evidence. **or** Judge whether the pH scale is an absolute measure of acidity and alkalinity, or a relative one. Provide justification with examples.	COIII	[4]