

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

B.Tech-III Semester (Civil)

COURSE CODE (CREDITS): 18B11CE311(3)

MAX. MARKS: 15

COURSE NAME: Chemistry

COURSE INSTRUCTORS: Dr. Poonam Sharma

MAX. TIME: 1 Hour

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*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

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Q1(a). What is an isotherm of adsorption? Specify different applications of adsorption. 2[CO –II]

(b). Intermolecular forces are also important in determining the solubility of a substance. Justify  
2[CO –II]

Q2(a). Why compounds having hydrogen bonding have high melting and boiling points? 2[CO-I]

(b). Ethanol-water mixture exhibit non-ideal behavior. Explain. 2[CO-II]

Q3(a). The wavelengths of first-order X-rays are  $2.20 \text{ \AA}$  at  $27^\circ 8'$ . Find the distance between the adjacent Miller planes. 2[CO-II]

(b). A metal crystallizes into two cubic system-face centred cubic (fcc) and body centred cubic (bcc) whose unit cell lengths are  $3.5$  and  $3.0 \text{ \AA}$  respectively. Calculate the ratio of densities of fcc and bcc. 2[CO-II]

Q4(a). An aqueous solution of HCl is 38% by mass & its density is  $1.19 \text{ gm/ml}$ . Calculate the molality and molarity of solution. 2[CO-II]

(b). How Gold number is important in Colloidal solutions? 1[CO-II]