

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

M.Sc. (BT)-I Semester

COURSE CODE (CREDITS): 20MS1PH111

MAX. MARKS: 35

COURSE NAME: Basics of Chemistry and Physics

COURSE INSTRUCTORS: Dr. Poonam/Dr. Ragini

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

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

Q.No	Question	Marks
Q1	(a). Explain three types of cubic cells.	3
	(b). Tyndall effect is quite strong in lyophobic colloids while in lyophilic colloids it is weak. Explain	2
Q2	(a). Classification based on physical state of dispersed phase and dispersion medium	3
	(b). X rays of wavelength 0.154 nm are diffracted from a crystal at an angle of 20° . Assuming that $n = 1$, what is the distance (in pm) between layers in the crystal?	3
Q3.	(a). Elaborate different types of conductors. How specific conductance is related to equivalent conductance?	3
	(b). Molar conductivity for 0.10 M NaCl is $107 \text{ Scm}^2 \text{ mol}^{-1}$. Calculate the degree of dissociation for the Solution. Given $\lambda_+ = 50.1$, $\lambda_- = 76.4$	3
Q4	(a). Define kinetic and potential energies with formulas, units and proper examples	3
	(b) Explain are X-rays and gamma rays? Discuss their uses also.	2
Q5	(a) Discuss types of diffusion? Why diffusion is important?	3
	(b) Define dynamic and kinematic viscosity with proper formulas and explanation.	2
	(c). How different factors affects viscosity.	2
Q6.	(a) Explain Reynolds number? How different types of flow can be classified on the basis of Reynolds number	2
	(b) Describe wetting of surfaces on the basis of contact angle?	2
	(c) Elucidate criteria for successful adhesion of surfaces?	2