Question Paper

Exam Date & Time: 06-May-2023 (09:30 AM - 12:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
END SEMESTER THEORY EXAMINATION - MAY 2023
II SEMESTER B.Sc (Applied Sciences) in Engg.

Chemistry [ICH 121]

Marks: 50 **Duration: 180 mins.**

Answer all the questions.

Missing data, if any, may be suitably assumed

1)			What is a galvanic and electrolytic cell? Explain with example.	(3)
	A)	I		
		II	Find the molar concentration of sodium hydroxide if 20 grams of it are present in 5 liters of a solution.	(2)
	B)	I	What is Born-Haber cycle? How can we obtain lattice energy of a solid with its help?	(3)
		II	What is meant by geometrical/Cis-trans isomerism? Explain with an example.	(2)
2)			The free energy change (ΔG) accompanying a given process is - 85.77 kJ at 25^{o}C and -83.68 kJ at 35^{o}C. Calculate the change in enthalpy (ΔH) for the process at 30^{o} C.	(3)
	A)	I		
		II	What is meant by a reaction of second order? Derive an expression for rate constant of second order reaction involving one reactant only.	(2)
	B)	I	Explain with the following with a suitable example (a)Homolytic fission (b) Heterolytic fission	(3)
		II	What is $sp^3 d^2$ hybridization? Discuss the shape of sulphur hexafluoride (SF_6).	(2)
3)			10 moles of HI were produced by the interaction of 15 moles of H_2 and 5.2 moles of I_2 vapour at 444^0 C. Calculate the equilibrium constant.	(3)
	A)	I		
		II	Derive an expression for the electrode potential of a glass electrode.	(2)
	B)	I	Give main points of Valence Shell Electron Pair Repulsion Theory (VSEPR). Explain NH_3 involve kind of sp^3 hybridization, but the bond	(3)