LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

U.G. DEGREE EXAMINATION – **ALLIED**

SECOND SEMESTER – **NOVEMBER 2024**

UCH 2303 – CHEMISTRY FOR PHYSICS

Date: 18-11-2024 Dept. No. Max. : 100 Marks

Time: 09:00 am-12:00 pm

	SECTION A - K1 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
1.	**Define the following**	
a)	Molality	
b)	Coordination compounds	
c)	Common ion effect	
d)	Grotthus – Drapper Law	
e)	Polymers	
2.	**Match the following**	
a)	Mole fraction -- Embrittlement	
b)	Central metal atom -- Increases rate of a reaction	
c)	Lewis base -- No unit	
d)	Temperature -- Accepts electrons	
e)	Hardness -- Donates electrons	
	SECTION A - K2 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
3.	**True or False**	
a)	ppm is parts per million.	
b)	EBT is an example of metal ion indicator.	
c)	The electrolyte used in lead acid battery is sulphuric acid.	
d)	The chemical reaction triggered when light energy is absorbed by a molecule is equilibrium reaction.	
e)	Permanent hardness is due to the presence of sulphates of sodium.	
4.	**Fill in the blanks**	
a)	---------- refers to the closeness of the measurement from the standard value.	
b)	The coordination number of the complex $[PdCl_4]^{2-}$ is ----------.	
c)	The solubility product of water is ----------.	
d)	The reactions depending upon temperature are called ----------reactions.	
e)	Bakelite is an example of ---------- polymer.	
	SECTION B - K3 (CO2)	
Answer any TWO of the following		**(2 x 10 = 20)**
5.	What is a primary standard solution? Mention its characteristics, citing an example.	
6.	Discuss the various types of ligands with examples.	
7.	a) Identify the differences between electrolytic cell and electrochemical cell. b) Compile the rules for representing an electrochemical cell.	(5+5)

8.	What is a first order reaction? Derive the rate expression for the same.

SECTION C – K4 (CO3)

Answer any TWO of the following	**(2 x 10 = 20)**
9.	Illustrate the safety methods of handling of chemicals in a chemical laboratory.
10.	Specify the applications of coordination complexes.
11.	Draw the Jablonski diagram and explain the photophysical processes.
12.	a) Compare thermal and photochemical reactions. (5) b) How will you purify water using reverse osmosis process? Explain. (5)

SECTION D – K5 (CO4)

Answer any ONE of the following	**(1 x 20 = 20)**
13.	a) Elaborate the types of errors with suitable examples. (10) b) Discuss the Werner's theory of coordination complexes. (10)
14.	a) Explain Lithium-ion battery with a neat diagram. (10) b) Summarize any two methods of determining order of a reaction. (10)

SECTION E – K6 (CO5)

Answer any ONE of the following	**(1 x 20 = 20)**
15.	a) Explain the different methods of expressing concentration of solutions. (10) b) Predict the magnetic nature, geometry and hybridisation using VBT for the following complexes. (10) (i) $K_4[Fe(CN)_6]$ (ii) $[CoF_6]^{3-}$.
16.	a) Enumerate the factors affecting the rate of a reaction. (10) b) Point out the differences between thermoplastics and thermosetting plastics. (10)
