TED (21) -1004
(Revision- 2021)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE – NOVEMBER -2021.

APPLIED CHEMISTRY

(Maximum Marks : 75) [Time : 3 hours]

PART–A

I. Answer **all** the following questions in one word or sentence.

(9 x 1 = 9 marks)

		Module Outcome	Cognitive level
1	Define orbital.	M 1.02	U
2	Which type of bonding is present in hydrogen molecule?	M 1.03	U
3	Give the relation between pH and pOH.	M2.02	R
4	Which is the indicator used for the titration of oxalic acid X potassium hydroxide?	M2.01	U
5	Removal of pathogenic germs from drinking water is called…...	M2.04	R
6	Which type of glass is used for making laboratory wares?	M3.01	R
7	……. is an example of a thermosetting polymer.	M3.02	R
8	Define oxidation according to electronic concept.	M4.01	R
9	Give an example for an antirust solution.	M4.05	R

PART B

II. Answer **any Eight** questions from the following.

(8 x 3 = 24)

		Module Outcome	Cognitive level
1	Calculate the uncertainty in the position of an electron, if the uncertainty in velocity is 4.3×10^{2} ms^{-1} ($h=6.625\times10^{-34}$ $kgm^{2}s^{-1}$, mass of electron = 9.1×10^{-31} kg)	M 1.02	U
2	Define ionic bond. Explain ionic bonding in NaCl	M 1.03	U
3	Define ionic product of water. Give its mathematical expression.	M2.02	R
4	Calculate the pH of 10^{-3}M HCl.	M2.02	A
5	A solution is prepared by dissolving 2.8 g of KOH in water to give 500 ml of the solution. Calculate the molarity of the solution (Molecular mass of KOH=56).	M2.01	A

6	Define alloys. Give the components of (i)Brass (ii)Solder	M3.01	R
7	What are homopolymers and copolymers? Give one example for each.	M3.02	R
8	Define vulcanisation. Give any two advantages of vulcanized runner.	M3.02	R
9	Distinguish between metallic and electrolytic conductors.	M4.03	R
10	What is a fuel cell? Give one example.	M4.04	R

PART C

III. Answer **all** questions from the following. **(6 x 7 = 42marks**

		Module Outcome	Cognitive level
1	What are the postulates of Bohr atom model? Give any two limitations of Bohr's model of atom.	M 1.01	R
	OR		
2	(a) State Aufbau principle. (2 marks) (b) Write down the electronic configuration of Aluminium and give the values of four quantum numbers of 3p electron in Aluminium. (5 marks)	M 1.02	U
3	(a) What do you understand by the following in a volumetric analysis? (i) standard solution (ii) end point (4 marks) (b) 20 ml.of sodium hydroxide solution was neutralized by 18ml. of an acid of normality 0.1. Find the normality of the base. (3 marks)	M2.01	A
	OR		
4	(a) Define buffer solution. Give an example for an acidic and basic buffer. (3 marks) (b) Give any four applications of pH. (4 marks)	M2.02	U

5	Give the reason for hardness of water. Explain ion exchange method for removal of hardness of water.	M2.03	U
	OR		
6	What is potable water? Explain the steps involved in making potable water.	M 2.04	U
7	What are refractory materials? Give an example. Give any four characteristics of refractory materials.	M3.01	R
	OR		
8	What are nanomaterials? Give an example for a two-dimensional nanomaterial. Give any five applications of nanomaterials.	M3.03	U
9	Define electrolysis. Write down procedure for electroplating a mild steel spoon with nickel.	M4.03	U
	OR		
10	(a) Give the electrode reactions and net reaction in Daniel cell. (3 marks) (b) A cell is constructed using zinc and silver electrodes ($E^o_{Zn^{2+}/Zn}$ = -0.76V, $E^o_{Ag^+/Ag}$ = +0.80V). Identify the anode and cathode and calculate the emf. (4 marks)	M4.04	U
11	(a) State Faraday's second law of electrolysis. Give its mathematical expression and explain the terms. (3 marks) (b) Two electrolytic cells containing silver nitrate solution and copper sulphate solution are connected in series. A steady current was passed through them till 1.078 g of Ag was deposited. Calculate the mass of copper deposited. (Equivalent mass of copper = 31.75 and Equivalent mass of silver = 107.8). (4 marks)	M4.02	A
	OR		
12	Define corrosion. Explain various methods of barrier protection of corrosion.	M4.05	U

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