FIRST SEMESTER DIPLOMA EXAMINATION IN
ENGINEERING AND TECHNOLOGY
(Common to all Diploma Programmes)

APPLIED CHEMISTRY

MODEL QUESTION PAPER

Time: 3 hours   Maximum Marks: 75

PART A

I. Answer all questions in one word or one sentence. Each question carries one mark.

(9 x 1 = 9 Marks)

1	The space around the nucleus where there is maximum probability of finding electron is called _____	M1.02	U
2	Name the strongest chemical bond.	M1.03	U
3	Identify the solvent present in the aqueous solution of sugar.	M2.01	R
4	Which is the indicator used in HCl X Na_2CO_3	M2.01	U
5	What is the reason behind poor lathering of soap?	M2.03	U
6	What are the components of Brass?	M3.01	U
7	Which type of glass is commonly used for the manufacture of laboratory glassware?	M3.01	U
8	Which are the charge carriers of electrolyte?	M4.02	R
9	Name the type of reaction occurring at anode of an electrochemical cell	M4.01	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks

(8 x 3 = 24 Marks)

1	Write down the de Broglie relation and explain the terms. Calculate the wavelength of a moving ball of mass 1kg moving with a velocity of 100m/s. (h = 6.623 X 10^{-34} Kgm^2S^{-1}	M1.01	A
2	Explain the anomalous behavior of water using hydrogen bonding.	M1.03	U
3	Explain the soda lime process for the removal of temporary hardness of water ?	M2.03	U

4	Calculate the pH of 0.002 M H_2SO_4	M2.02	A
5	Calculate the normality of $KMNO_4$ solution; 100 ml of which contains 1.58 g. (Eq. wt of $KMNO_4$ is 31.6)	M2.01	A
6	Define nanomaterial ?give two examples for nano material .	M3.03	U
7	What is vulcanisation of rubber ?give any two advantages of vulcanised rubber.	M3.02	U
8	Differentiate between thermoplastic and thermosetting plastic.	M3.02	U
9	Differentiate between metallic and electrolytic conductors	M4.01	R
10	Write down anodic, cathodic and overall cell reactions in Daniel cell	M 4.04	U

PART C

Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

III	a) Explain ionic and covalent bonds with one examples each (5 marks)	M 1.03	R
	b) State Pauli exclusion principle. (2 marks)	M 1.02	U
	OR		
IV	What are the main postulates of Bohr's atom model. Give any two merits of Bohr's atom model.	M 1.01	R
V	a) Draw the flow chart for the production of potable water for municipal supply. (5 marks)	M 2.04	U
	b) Give any two disadvantages of using hard water in boilers (2 marks)	M 2.03	U
VI	OR		
	a) Calculate the normality of Hydrochloric acid which contains 2.281g of he acid in 200 ml. Find out the volume of this solution required to neutralize exactly 50 ml of 0.12 N Sodium hydroxide solution. (5 marks)	M 2.01	A
	b) Define Buffer solution. (2 marks)	M 2.02	U
VII	a) Write a note on the application of pH (5 marks)	M 2.02	R
	b) What is the difference between equivalent point and end point of a titration? (2 marks)	M 2.01	U

VIII	OR a) Write a note on disadvantages of hard water in domestic and industrial uses. (4 marks) b) Define ionic product of water? (3 marks)	M 2.03 M 2.02	U U
IX	Explain addition polymerization and condensation polymerization with one example each OR	M 3.02	U
X	What is refractory material? Briefly explain the characteristics and application of refractory material.	M 3.01	U
XI	Define electrolysis. Explain the process of electroplating a steel spoon with Nickel. OR	M 4.03	U
XII	State Faraday's second law? A solution of $Ni(NO_3)_2$ is electrolysed between platinum electrodes using a current of 5.0 ampere for 20 minutes. What mass of nickel will be deposited at the cathode? [Given: At. Mass of Ni = 58.7 g mol-1, IF = 96500 C mol-1]	M 4.02	A
XIII	Briefly explain external corrosion preventive measures OR	M 4.05	U
XIV	What is an electrochemical cell? Write any three differences between galvanic and electrolytic cells.	M 4.03	U