Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S1 (R,S) Examination December 2025 (2024 Scheme)

Course Code: GXCYT122

Course Name: CHEMISTRY FOR INFORMATION SCIENCE / ELECTRICAL SCIENCE

Max. Marks: 60 **Duration: 2 hours 30 minutes**

PART A

(Answer all questions. Each question carries 3 marks)

		CO	Marks
1	Write any three applications of electrochemical series with suitable examples.	CO1	(3)
2	Point out the advantages of electroless plating over electroplating.	CO1	(3)
3	What is fire retardant polymers? Give two examples.	CO2	(3)
4	Explain the sol-gel method for the synthesis of nanomaterials.	CO2	(3)
5	Predict the possible electronic transitions in the following molecules? Which among the following molecules give $n \rightarrow \pi^*$ transition? Give reason. a) Ethane b) Ethanol c) Ethyl acetate	CO3	(3)
6	Demonstrate the IR activity of CO_2. What are the specific vibrational modes involved?	CO3	(3)
7	Write any three sustainable development goals.	CO4	(3)
8	Calculate the carbonate and noncarbonate hardness of the water sample containing 80mg/L of $Ca(HCO_3)_2$, 70 mg/L of $Mg(HCO_3)_2$, 48 mg/L of $MgCl_2$ and 30 mg/L of $CaSO_4$.	CO4	(3)

PART B

(Answer any one full question from each module, each question carries 9 marks)

Module -1

			CO	Marks
9	a)	Explain the construction and working of Li ion cell?	CO1	(5)
	b)	Explain the determination of standard electrode potential of Zn using calomel electrode as the reference electrode.	CO1	(4)

10	a)	With the help of a neat labelled diagram give the construction and working of H_2-O_2 fuel cell.	CO1	(5)
	b)	Explain the electrochemical mechanism of corrosion of iron in presence of sufficient amount of oxygen in alkaline medium.	CO1	(4)

Module -2

11	a)	Explain the construction and working of dye sensitised solar cells (DSSCs).	CO2	(6)
	b)	What is the difference between carbon nanotubes and graphene? List out any two applications of graphene.	CO2	(3)
12	a)	Describe how nanomaterials are classified based on dimension.	CO2	(6)
	b)	Explain the chemical method for the synthesis of polyaniline.	CO2	(3)

Module -3

13	a)	Describe the instrumentation and working of dielectric thermal analysis (DETA).	CO3	(6)
	b)	State the law governing absorption of light by an absorbing solution. Give its graphical representation.	CO3	(3)
14	a)	Illustrate the possible electronic transitions in organic molecules, along with relevant examples.	CO3	(6)
	b)	List any three applications of scanning electron microscopy.	CO3	(3)

Module -4

15	a)	What is break point of chlorination? Write any two advantages of chlorination.	CO4	(3)
	b)	How do chlorofluorocarbon contribute to ozone depletion?	CO4	(3)
	c)	Mention the benefits of recycling and recovery of e-waste.	CO4	(3)
16	a)	Explain the trickling filter method in sewage treatment with a neat labelled sketch.	CO4	(5)
	b)	Explain the method for desalination of water by reverse osmosis.	CO4	(4)

***