Name: Enrolment No:	

UPES

End Semester Examination, May 2025

Course: Fundamentals of Analytical Chemistry **Semester: II**

Program: MSc Chemistry **Time : 03 hrs.**

Course Code: CHEM 7066 **Max. Marks: 100**

Instructions: 1. Attempt all questions.
2. Internal choices are given for Q9 & Q11.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Elaborate different regions of electromagnetic spectrum and give their wavelength range.	**4**	**CO1**
Q 2	Differentiate between primary standard and secondary standard solution with examples.	**4**	**CO1**
Q 3	Mention few advantages of chemical separation methods with examples.	**4**	**CO2**
Q 4	Briefly mention the importance of standard deviation and calculate standard deviation of the following data: 1.02, 1.021, 1.0021, 1.00021 and 1.000021	**4**	**CO3**
Q 5	Explore the significance of correlation in analytical data and give formula for calculation of correlation coefficient.	**4**	**CO1**
SECTION B **(4Qx10M= 40 Marks)**			
Q 6	Calculate the molarity of an acetic acid solution if 34.57 ml of this solution is needed to neutralise 25.19 ml of 0.1025 M sodium hydroxide solution. Use necessary stoichiometric reaction.	**10**	**CO2**
Q 7	(A) Explain the principle of electroanalytical techniques and give their classification. (B) Discuss the absorption laws.	**5+5**	**CO1**
Q 8	50 ml of 0.2N HCl is titrated against 0.2 N NaOH. Calculate pH after the addition of (i) 30 ml and (ii) 70 ml of NaOH added.	**10**	**CO2**
Q 9	Give the structure of phenolphthalein indicator and its pH range. Discuss its behavior in acidic and basic medium with equations.	**10**	**CO3**

	OR Briefly give the theory of oxidation-reduction indicators with few examples with necessary equations.		
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	(A) Explain the principle, instrumentation and applications of UV-Visible spectrophotometer with a neat sketch. (B) Specify the types of electronic transitions take place in an atom when it interacts with UV and Visible radiation. Use sketch.	**10+10**	**CO1**
Q 11	Explain in detail the following methods for enhancement of selectivity of EDTA in titration with few examples. (i) pH control (ii) Masking OR Elaborate the basic principle, process, advantages and limitations of paper chromatographic determination of dyes present in mixture.	**20**	**CO3**