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GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

M. Sc. (Third Semester) Regular Examinations, December – 2024

22CHPC301 – Analytical Chemistry- I

(M.Sc. Chemistry)

Time: 3 hrs | Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A **(2 x 10 = 20 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	Describe the TGA curve of Calcium oxalate monohydrate.	CO1	K2
b.	Describe the TGA curve of $AgNO_3$ monohydrate.	CO1	K2
c.	Write Ilkovic equation.	CO2	K1
d.	Explain the instrumentation of Amperometry.	CO2	K1
e.	Explain the principle of photo electron spectroscopy.	CO3	K1
f.	Calculate the λ_{min} & λ_{max} region of 70 kv X-raytube.	CO3	K2
g.	Difference between drug and medicine.	CO4	K2
h.	Explain Kjeldahl's method (Determination of Nitrogen)	CO4	K2
i.	Explain Residual Current.	CO2	K1
j.	Write Randles-Sevcik expression.	CO1	K1

PART – B (10 x 5=50 Marks)

Answer ***ANY FIVE*** questions		Marks	CO #	Blooms Level
2. a.	Explain Factors affecting DTA.	5	CO1	K1
b.	If glass transition, melting temperature and crystallization temperature are put all together, how the graph is look like?	5	CO1	K2
3.a.	Write the Principle, components and Instrumentation of Cyclic Voltammetry.	5	CO2	K1
b.	What is Polarography maxima?	5	CO2	K2
4. a.	The utilized reflecting plane of lithium fluoride analysing crystal has an inter planner distance of 2.5 A^0. Calculate the wavelength of the second order diffracted line which has a glancing angle of 60^0.	5	CO3	K2
b.	Derive Bragg's law.	5	CO3	K1
5.a.	A coal having following composition by weight C= 90%, O= 0.3%, N=0.5%, ash=2.5%, S=0.5%. The NCV=8925.28 K cal/K.g calculate % H & GCV.	5	CO4	K2
b.	Explain Eschka method (Determination of Sulphur).	5	CO4	K1
6. a.	Explain Ultimate analysis (C and H).	5	CO4	K1
b.	Explain how to minimize the error.	5	CO4	K1

7.a.	Two analysts done the analysis and standard value is 100, observations are given below. Analyst x: 97, 96, 99, 96 Analyst y: 92, 91, 93, 92 Who has done more precise analysis?	5	CO3	K2
b.	For first order diffraction by a crystal plane having d = 2.3 A° in a solid observed at the angle of 30°. Using the same radiation and first order diffraction, Θ = 60° for another solid. Calculate the d value of second solid.	5	CO3	K2
8. a.	Explain different types of amperometric titration.	5	CO1	K1
b.	Explain the factors affecting TGA curve.	5	CO1	K1