

END SEMESTER EXAMINATION, APRIL-2022

Course Name: Engineering Chemistry, Course Code: 201GEL106

Day and Date: Monday, 11/04/2022

Time: 10 am to 1.00 pm

Seat No:

Max. Marks- 100

Instructions:

- Question No. 1 is compulsory.
- Figure to the right indicate full marks.

BT	CO's	Q. No.			Marks
		Q.1	Attempt the following		40
L3	1	a	1	A water sample was found to contain following salts in mg/lit, Determine its temporary, permanent and total hardness in ppm i) $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ ppm}$ ii) $\text{Mg}(\text{HCO}_3)_2 = 29.2 \text{ ppm}$ iii) $\text{CaSO}_4 = 136 \text{ ppm}$	6
L2			2	Describe in detail formation, causes, disadvantages and prevention of sludge.	4
L2	1,2	b	1	Explain in brief Ion exchange process for treatment of hard water	3
			2	Explain Chromatography and its classification	3
			3	Write a short note on Lambert's Law.	4
L2	2	c	1	Explain working of Gas liquid chromatography with diagram.	5
			2	Write a short note on Epoxy Resins	5
L2	3	d	1	Discuss in detail thermoplastic polymers.	5
			2	Explain composition, properties and uses of GRP	5
		Q.2	Attempt the following.		20
L3	3	a	1	The following data was obtained in a Boys calorimeter experiment i) Volume of gas used 0.12 m^3 ii) Weight of water heated 27 kg iii) Temperature of inlet water 25.7°C iv) Temperature of outlet water 40.2°C v) Weight of steam condensed 0.025 kg Calculate higher and lower calorific value of the fuel (Heat liberated in condensing water vapors and cooling the condensate is 570 kcal/kg)	6
L2	3	b	2	Discuss various Characteristics of good fuel.	7
L2	3	c	3	Explain principle, advantages and disadvantages of fuel cells	7
				OR	
				Explain Fuel cells. Give its classification	
		Q.3	Attempt the following.		20
L2	4	a		Describe nanomaterials with its Classification.	5
L2	4	b		Discuss properties and applications of Fullerenes.	5
L2	4	c		Explain Nanowires in brief.	5

L2	4	d		Explain Graphite as nanomaterial. OR Write a short note on carbon nanotubes.	5
		Q.4	Attempt the following.		20
L2	4	a		Discuss in brief Batteries and its classification?	4
L2	4	b		Describe in detail alkaline storage battery. OR Compare between primary cell and secondary cell.	4
L2	4	c		Describe construction, working and applications of Carbon Zinc cell.	6
L2	4	d		Explain Green Chemistry? Give five Principles of Green Chemistry. OR Discuss in detail construction, working and applications of rechargeable lithium-ion batteries.	6
