Paper Code - U117 - 105 B (T1)

Total No. of Questions – [4] Total No. of Printed Pages : 1

G.R. No.	

SEPTEMBER 2017 / IN - SEM (T1)
F. Y. B.TECH. (COMMON) (SEMESTER - I)
COURSE NAME: Engineering Chemistry
(2017 PATTERN)

Time: [1 Hour] [Max. Marks : 30]

(*) Instructions to candidates:
1) **Answer Q.1 OR Q.2, Q.3 OR Q.4**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1)	a)	Solve: i) Explain possible combinations of salts that make water alkaline ii)100 ml water sample requires 4 ml N/50 H_2SO_4 for neutralisation up to phenolphthalein end point. Another 16 ml of the same acid was needed for further titration to methyl orange end point. Determine type and amount of alkalinities.	[6]	[CO1]
	b)	Give principles involved in zeolite treatment and ion exchange treatment. Compare zeolite and ion exchange treatment (4 points of comparison)	[6]	[CO1]
	c)	Explain electrodialysis process with definition, figure and principle	[4]	[CO1]
		OR		
Q.2)	a)	i)Define hardness. Explain types of hardness. ii)25 ml water sample required 17.5ml of 0.02M EDTA for end point where as 25 ml boiled water sample required 9.1 ml of 0.02M EDTA for end point. Calculate total, temporary and permanent hardness	[6]	[CO1]
	b)	Solve i)What is zeolite? Give principle involved in zeolite treatment with reactions. ii) A zeolite bed exhausted by softening 3500 litres of water requires 10 litres of 10% NaCl solution for regeneration. Calculate hardness of water sample.	[6]	[CO1]
	c)	Compare scales and sludges (Give 4 points of comparison)	[4]	[CO1]
Q.3)	a)	Explain potentiometric titration of Ce^{+4} ions with Fe^{+2} ions, giving cell reactions, procedure, calculation of electrode potential before, after and at equivalence point and titration curve.	[6]	[CO2]
	b)	Define and explain with example i)Chromophore ii)Bathochromic shift	[4]	[CO2]
	c)	What is indicator electrode? Draw neat labeled diagram of glass electrode used in pH metry. Give its representation. Give any two advantages of glass electrode.	[4]	[CO2]
		OR		
Q.4)	a)	Explain different types of electronic transitions with example that occur in organic molecules after absorbing UV – Visible radiation	[6]	[CO2]
	b)	Calculate potential of a redox electrode developed when 100 ml of 0.1N Fe^{+2} solution is titrated with i)50 ml of 0.1 N Ce^{+4} solution ii) 100ml of 0.1 N Ce^{+4} solution	[4]	[CO2]
	c)	Define equivalent conductance. Explain titration curve for conductometric titration in case of strong acid verses strong base.	[4]	[CO2]