FEBRUARY 2018 / IN - SEM (T1)
F. Y. B.TECH. (COMMON) (SEMESTER - II)
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 7.6 ml N/50 H_2SO_4 for neutralisation up to phenolphthalein end point and 15.2 ml of the same acid was needed for methyl orange end point. Determine type and amount of alkalinities.	[6]	[CO1]
	b)	Compare zeolite and ion exchange process (Give 6 points of comparison).	[6]	[CO1]
	c)	Compare scales and sludges (Give 4 points of comparison)	[4]	[CO1]
		OR		
Q.2)	a)	Solve i)What is zeolite? Give principle involved in zeolite treatment with exchange reactions. ii) Zeolite softener was completely exhausted and was regenerated by passing 90 lit. of NaCl solution containing 1200 mg/lit NaCl. How many litres of sample water of hardness 150 ppm can be softened by this softener?	[6]	[CO1]
	b)	Explain determination of total hardness of water by EDTA method. Draw metal EDTA complex. Give chemical reactions involved during titration.	[6]	[CO1]
	c)	Explain how dissolved gases cause boiler corrosion. Explain methods to minimize boiler corrosion due to dissolved gases.	[4]	[CO1]
Q.3)	a)	Explain titration curve for conductometric titration in case of i)strong acid verses strong base ii)strong base verses weak acid	[6]	[CO2]
	b)	Draw block diagram of single beam and double beam spectrometer. Give 4 applications of UV – visible spectrometer	[4]	[CO2]
	c)	Draw glass electrode. Give its representation. Give 2 advantages and 2 disadvantages 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)20 ml of 0.1 N Ce^{+4} solution ii) 100 ml of 0.1 N Ce^{+4} solution	[4]	[CO2]
	c)	Define specific conductance. Explain titration curve for conductometric titration in case of weak base verses strong acid	[4]	[CO2]