



Sanjay Ghodawat University, Kolhapur

2017-18

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

FY B Tech

School of Technology

Department: FY B Tech

FYT 103

Applied Chemistry

Semester – II

May 2018

End Semester Examination

Time: 3 Hrs, Max Marks: 100

25th May 2018

Instructions for Students:

2:30 pm to 5:30 pm

- 1) All questions are compulsory.
- 2) Draw neat labeled diagram wherever necessary.
- 3) Figure to the right indicates maximum marks

		Marks	COs
Q1	a) A sample of Water on analysis was found to contain the following impurities; $\text{Ca}(\text{HCO}_3)_2 = 22 \text{ ppm}$ $\text{Mg}(\text{HCO}_3)_2 = 37 \text{ ppm}$ $\text{CaCl}_2 = 12 \text{ ppm}$ $\text{CaSO}_4 = 32 \text{ ppm}$ Calculate temporary, permanent and total hardness of water sample in ppm.	[8]	CO1
	b) Solve any TWO of the following	[10]	
	i) What is hardness of water? Explain in detail.		CO1
	ii) Explain different impurities present in natural water.		CO1
	iii) Explain ion exchange process for treatment of hard water.		CO1
Q2	a) What is cathodic protection? Explain sacrificial anode and impressed current methods.	[6]	CO2
	b) Solve any TWO of the following	[10]	
	i) What are the different factors affecting the rate of corrosion.		CO2
	ii) Define electrochemical corrosion. Explain oxygen absorption mechanism with example.		CO2
	iii) Discuss the material selection and design in controlling corrosion.		CO2
Q3	Solve any FOUR of the following	[16]	
	a) Give preparation, properties and applications of urea Formaldehyde resin		CO3
	b) Distinguish between Thermoplastic and Thermosetting plastics.		CO3
	c) Explain manufacturing of Portland cement.		CO3
	d) What are conducting polymer? Explain.		CO3

- e) What is refractory? Give the classification of refractories. CO3
- Q4** a) Define alloy with example. Explain the purpose of making alloy. [8] CO4
- b) Solve any **TWO** of the following [10] CO4
- i) Explain composition, properties and application of alnico. CO4
- ii) Explain the froth flotation process used for concentration of sulphide ore. CO4
- iii) Explain composition, properties and application of nichrome. CO4
- Q5** a) Following observations were recorded in a bomb calorimeter experiment. Calculate the gross and net calorific value of the fuel with 5.7% hydrogen. [6] CO5
- Weight of coal burnt = 0.90 gm
 Mass of water in calorimeter = 2500 gm
 Water equivalent of calorimeter = 470 gm
 Observed rise in temperature = 2.41°C
 Cooling correction = 0.035°C
 Fuse wire correction = 11.5 Cal
 Acid Correction = 60.0 Cal.
- b) Solve any **TWO** of the following [10] CO5
- i) Explain principle, construction and working of Boy's calorimeter. CO5
- ii) What are the characteristics of good fuel? CO5
- iii) What is coal? Explain different types of coal. CO5
- Q6** Solve any **FOUR** of the following [16] CO6
- a) Explain the construction and working of single beam spectrophotometer. CO6
- b) Write a note on Atomic Absorption Spectroscopy. CO6
- c) State and derive an equation for Beer's law. CO6
- d) Explain construction and working of glass electrode. CO6
- e) Write a note on potentiometric titration. CO6
