



# 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 – I

29 Nov 2017

End Semester Examination

Time: 3 Hrs, Max Marks: 100

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

		Marks	COs
<b>Q1</b>	a)	[8]	CO1
	A sample of Water on analysis was found to contain the following impurities; $\text{Ca}(\text{HCO}_3)_2 = 27 \text{ ppm}$ $\text{Mg}(\text{HCO}_3)_2 = 40 \text{ ppm}$ $\text{CaCl}_2 = 21 \text{ ppm}$ $\text{CaSO}_4 = 21 \text{ ppm}$ Calculate temporary, permanent and total hardness of water sample in ppm.		
	b)	[10]	
	i) Explain Chloride Content in water? Explain in detail.		CO1
	ii) What are the different impurities present in natural water?		CO1
	iii) Explain ion exchange process for treatment of hard water.		CO1
<b>Q2</b>	a)	[6]	CO2
	What is hot dipping? Explain process of galvanizing with schematic diagram.		
	b)	[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
<b>Q3</b>		[16]	
	a)		CO3
	Give preparation, properties and applications of urea Formaldehyde resin		
	b)		CO3
	Distinguish between Thermoplastic and Thermosetting plastics.		
	c)		CO3
	What is the composition of Portland cement?		
	d)		CO3
	Enlist the applications of conducting polymer.		

- 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) Define alloy. Give the classification of alloy with example of each. 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 contains 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 =  $2.41^{\circ}\text{C}$   
 Cooling correction =  $0.035^{\circ}\text{C}$   
 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) Explain Gross calorific value and net calorific value of fuel. 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) What are the advantages and disadvantages of Glass electrode? CO6
- e) Write a note on potentiometric titration. CO6

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