



# Sanjay Ghodawat University, Kolhapur

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

2018-19

EXM/P/09/01

Year and Program: 2018-19

School of Technology

Department of FY B.Tech

Course Code: FYT103

Course Title: Applied Chemistry

Semester – I

Day and Date:

End Semester Examination

Time:

Max Marks: 100

24/11/2018

(ESE)

10:00 am to 1:00 pm

## Instructions:

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary.
- 3) Figures to the right indicate full marks.

		Marks	COs
<b>Q1</b>	a)	[8]	CO1
	A sample of Water on analysis was found to contain the following impurities;		
	Ca Cl <sub>2</sub> = 31 ppm		
	Mg(HCO <sub>3</sub> ) <sub>2</sub> = 29 ppm		
	Mg SO <sub>4</sub> = 22 ppm		
	Ca Cl <sub>2</sub> = 37 ppm		
	Calculate temporary, permanent and total hardness of water sample and convert answers into degree Clark.		
	b)	[10]	
	i) What is acidity of water? Explain in detail.		CO1
	ii) Explain in detail caustic embrittlement.		CO1
	iii) Explain reverse osmosis technique for treatment of hard water.		CO1
<b>Q2</b>	a)	[6]	CO2
	What is hot dipping? Explain process of tinning with schematic diagram.		
	b)	[10]	
	Solve any <b>TWO</b> of the following		
	i) What are the different factors affecting the rate of corrosion.		CO2
	ii) Explain Galvanizing process in details.		CO2
	iii) What is electrochemical corrosion? Discuss hydrogen evolution mechanism with neat labeled diagram.		CO2
<b>Q3</b>		[16]	
	Solve any <b>FOUR</b> of the following		
	a) Give preparation, properties and applications of Phenol Formaldehyde resin.		CO3
	b) Distinguish between Thermoplastic and Thermosetting plastics.		CO3
	c) Write a note on biodegradable polymers.		CO3
	d) Explain the process of manufacturing of Portland cement.		CO3
	e) Write a note on conducting polymer.		CO3
<b>Q4</b>	a)	[8]	CO4
	Define alloy with example. Explain the purpose of making		

alloy.

- b) Solve any **TWO** of the following [10]
- i) Write a difference between calcinations and roasting. CO4
  - ii) Explain the Magnetic separation and gravity separation process used for concentration of ore. CO4
  - iii) Explain composition, properties and application of brass. CO4
- Q5** a) Following observations were recorded in a Boys gas calorimeter experiment. Calculate the gross and net calorific value of the fuel [6] CO5
- Volume of gas used =  $0.12 \text{ m}^3$   
Weight of water heated =  $37.7 \text{ kg}$   
Temperature of inlet water =  $27^\circ \text{C}$   
Temperature of outlet water =  $40^\circ \text{C}$   
Mass of steam condensed =  $0.02 \text{ kg}$
- b) Solve any **TWO** of the following [10]
- i) Explain principle and construction of Bomb 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]
- a) Explain the construction and working of glass electrode with neat labeled diagram. CO5
  - b) Write a note on Atomic absorption spectroscopy. CO5
  - c) State and derive an equation for Beer's law. CO5
  - d) Write a note on potentiometric titration. CO5
  - e) Explain the construction and working of Single beam spectrophotometer.

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