



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 (Old)

Semester – II

Day and Date: Monday

End Semester Examination (ESE)

Time:

Max Marks: 100

27-05-2019

10:30 to 1:30 pm
4m

- 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
Q1	a)	[8]	CO1
	A sample of Water on analysis was found to contain the following impurities;		
	Ca(HCO ₃) ₂ = 22 ppm		
	Mg(HCO ₃) ₂ = 37 ppm		
	CaCl ₂ = 12 ppm		
	CaSO ₄ = 32 ppm		
	MgCl ₂ = 11 ppm		
	Calculate temporary, permanent and total hardness of water sample in mg/lit. Report your answer in degree Clark.		
	b)	[10]	
	i)		CO1
	ii)		CO1
	iii)		CO1
	Solve any TWO of the following		
	i) What is hardness of water? Explain in detail.		
	ii) List different impurities present in natural water.		
	iii) Discuss ion exchange process for treatment of hard water.		
Q2	a)	[6]	CO2
	What is cathodic protection? Explain sacrificial anode and impressed current methods.		
	b)	[10]	
	Solve any TWO of the following		
	i)		CO2
	ii)		CO2
	iii)		CO2
	What are the different factors affecting the rate of corrosion.		
	Define electrochemical corrosion. Explain oxygen absorption mechanism with example.		
	Discuss the material selection and design in controlling corrosion.		
Q3		[16]	
	a)		CO3
	Give preparation, properties and applications of urea Formaldehyde resin		
	b)		CO3
	Distinguish between Thermoplastic and Thermosetting plastics.		
	c)		CO3
	Explain manufacturing of Portland cement.		
	d)		CO3
	What are conducting polymer? Explain.		

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- e) What is refractory? Give the classification of refractories. CO3
- Q4** a) Define alloy. Explain the purpose of making alloy. [8] CO4
- b) Solve any **TWO** of the following [10]
- i) Discuss the process of Calcination and Rosting of ore. 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 HCV & LCV of the fuel. The fuel contains 2.8% hydrogen. [6] CO5
- Weight of coal burnt=0.90 gm
 Mass of water in calorimeter = 2500 gm
 Water equivalent of calorimeter = 550 gm
 Observed rise in temperature = 1.91°C
 Cooling correction = 0.027°C
 Fuse wire correction= 12 Cal
 Acid Correction = 59.0 Cal.
- b) Solve any **TWO** of the following [10]
- 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]
- 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

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