Sanjay Ghodawat University, Kolhapur | 2018-19

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017 | 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 – II**
Day and Date: Monday 27-05-2019	**End Semester Examination (ESE)**	**Time:** 10.30 to 1.30 pm am **Max Marks: 100**

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

			Blooms level	Marks	COs
Q1		Solve the following questions			
	a)	On analysis, a water sample was found to contain the following impurities	L3	[5]	CO1

Impurities	Amount in mg/lit
Calcium Bicarbonate	81
Carbon Dioxide	48.8
Calcium Sulphate	54
Magnesium Sulphate	67.7

Calculate non-carbonate hardness of water sample in **Degree Clerk**

OR

			Blooms level	Marks	COs
	a)	On analysis, a water sample was found to contain the following salts	L3	[5]	CO1

Salts	Amount in mg/lit
Magnesium Bicarbonate	78.4
Calcium Bicarbonate	72.2
Sodium Chloride	33.3
Calcium Chloride	55.5

Calculate carbonate and total hardness of water sample in **ppm**.

			Blooms level	Marks	COs
	b)	Write informative note on alkalinity of water.	L2	[5]	CO1
		OR			
	b)	What are types of hardness of water? Explain different units of hardness of water.	L2	[5]	CO1
Q2		Solve the following questions			
	a)	Enlist various metallic coating methods. Explain galvanization process with a suitable diagram to prevent corrosion.	L1	[5]	CO2
		OR			
	a)	How will you protect the metallic material from corrosion by proper design & material selection?	L1	[5]	CO2
	b)	Write reactions involved oxygen absorption mechanism in wet corrosion.	L2	[5]	CO2

OR

ESE

Page 1/2

b)		Explain the factors related to surrounding environment influencing on the rate of corrosion.	L2	[5]	CO2

Q3 Solve any **TWO** of the following [10]

a)	Write compound constituents with their functions of Portland cement.	L2		CO3
b)	What is refractory? Give the classification of refractories.	L1		CO3
c)	Explain properties and application of Bakelite resin.	L1		CO3

Q4

a)		Explain different varieties of brass with suitable composition and uses.	L1	[5]	CO4
b)		Solve any **ONE** of the following		[5]	
	i)	Explain composition, properties and application of medium carbon steel.	L1		CO4
	ii)	Explain the gravity separation process with suitable diagram.	L2		CO4

Q5

a)	The following observations were recorded in bomb calorimeter experiment.	L2	[10]	CO5

Weight of fuel sample = 0.75 gm
Weight of water & water equivalent of calorimeter = 3.1Kg
Correction due to sulphuric acid = 47.0 Cal.
Observed rise in temperature = 4.7^0C
Cooling correction = 0.05^0C
Fuse wire correction=23 Cal
Correction due to nitric acid = 33.0 Cal.
Calculate the higher and lower calorific value of the fuel in **Joule**, if the fuel contains 5 % hydrogen.

b)		Solve any **FOUR** of the following questions		[20]	
	i)	How will you measure calorific value of volatile liquid fuel?	L2		CO5
	ii)	Explain different characteristics of good fuel.	L1		CO5
	iii)	What are advantages and disadvantages of liquid fuel over solid fuel?	L1		CO5
	iv)	Explain classification of chemical fuel with suitable examples.	L1		
	v)	Explain proximate and ultimate analysis of coal.	L2		

Q6

a)		Explain schematics and working of a single beam spectrophotometer. How it can be used to determine the unknown concentration of solution?	L3	[10]	
b)		Solve any **FOUR** of the following		[20]	
	i)	Explain the construction and working of glass electrode.	L1		CO6
	ii)	Write informative note on potentiometric titration.	L1		CO6
	iii)	State and derive an equation for Lambert's law.	L2		CO6
	iv)	Enlist advantages of instrumental method of analysis.	L1		CO6
	v)	Write informative note on gravimetric analysis.	L1		CO6

ESE

Page 2/2