

Maharashtra Institute of Technology, Aurangabad

(An Autonomous Institute)

END SEMESTER EXAMINATION

First Year B.Tech (All) -April/May 2022

Course Code : BSC103

Course Name : Open Elective – Engg. Chemistry

Duration : 2 Hrs

Max. Marks : 50

Date : 13/04/2022

Instructions :

i) All questions are compulsory

ii) Assume suitable data wherever necessary and clearly state it

iii) Figures to the right indicate full marks

Q.1	Solve/Answer any Five (Marks 10)	Marks	CO	BL	PO	PI
a)	Distinguish between thermoplastics and thermosetting polymers	2	1	2	1	
b)	Discuss the causes of scale formation in boiler	2	1	2	1	
c)	Differentiate between Gross Calorific value and Net Calorific value of fuel	2	3	2	1,12	
d)	Define i) Calcination ii) Roasting	2	1	1	1	
e)	Define Acid Value of a lubricant and write its significance.	2	2	2	1,12	
f)	Define corrosion and enlist different corrosion testing methods	2	2	3	1,2,12	
Q.2						
a)	Draw neat, labelled diagram of Ultra filtration process.	2	3	3	1,12	
b)	Calculate temporary, permanent and total hardness of a sample of water containing: $Mg(HCO_3)_2=7.5$ mg/l, $Ca(HCO_3)_2=8.1$ mg/l, $MgCl_2=2.0$ mg/l, $MgSO_4=12.0$ mg/l, $CaSO_4=13.6$ mg/l, $Mg(NO_3)_2=14.8$ ppm	6	4	3	1.2	
Q.3						
a)	Explain proximate analysis of coal with its importance.	4	4	3	1.12	
b)	Explain alkaline fuel cell (AFC). What are the properties and applications of alkaline fuel cell (AFC)?	4	4	3	1,12	
Q.4						
a)	Explain the principle and working of Redwood Viscometer with neat, labelled diagram.	4	4	3	1,12	
b)	Describe smelting method	4	4	3	1,12	
Q.5						
a)	Explain the mechanism of wet corrosion with neat, labelled diagram.	4	4	3	1,12	

b)	How will you Prepare nano materials by Laser method? Explain with suitable diagram	4	2	2	1,2,12	
	OR					
Q.5						
a)	What is sacrificial anodic protection? Explain with neat, labelled diagram	3	4	3	1,12	
b)	A lubricating oil has the same viscosity as standard naphthenic and paraffinic type oils at 2100F. Their viscosity at 1000F are 350 SUS, 480 SUS and 230 SUS respectively. Find the viscosity of the oil.	2	4	3	1,12	
c)	Discuss the properties and uses of ethylene glycol as coolant and antifreeze.	3	3	2	1,2,12	
Q.6						
a)	Explain the principle and working of Ion exchange process of water purification.	4	2	2	1,2,12	
b)	What are the Silicon carbide material? Give its applications and properties as reinforcement material.	4	3	2	1,2,12	
	OR					
Q.6						
a)	Explain the following i) Properties and applications of CNG ii) 3D printing	6	3	2	1,2,12	
b)	Write the significance of Flash and fire point of lubricant.	2	2	2	1,2,12	