PRN:		Course Code:	U01BS001

First Year **B. Tech.** Semester End Examination Winter 2024

Applied Chemistry

Day and Date: Fri 13 DEC 2024 Max Marks: **50**

Time: 10:30AM To 12:30PM Duration: **02** hrs

Instructions:
1) All question are compulsory.
2) Scientific calculator is allowed.
3) Assume suitable data wherever necessary.

		Marks	Bloom's Level	CO
Q.1	**Attempt the following questions.**			
a)	What are the different impurities present in the water?	**02**	**1**	**1**
b)	Give the causes of corrosion.	**02**	**1**	**2**
c)	What is conducting polymer? Write any two applications of conducting polymer.	**02**	**2**	**3**
d)	Give the flow chart of the extraction of the metal from ore.	**02**	**1**	**3**
e)	What is fuel? Give the types of fuel.	**02**	**1**	**4**
Q.2	**Attempt any two questions from the following.**			
a)	Explain the purification of water by the ion-exchange process.	**05**	**2**	**1**
b)	What is the hardness of water? Explain types of hardness.	**05**	**2**	**1**
c)	A sample of water on analysis was found to contain the following impurities; $Ca(HCO_3)_2$ = 81 mg/lit $Mg(HCO_3)_2$ = 14.6 mg/lit $MgSO_4$ = 24 mg/lit $CaCl_2$ = 22.2 mg/lit Calculate temporary, permanent and total hardness of water sample in ppm.	**05**	**3**	**1**
Q.3	**Attempt any two questions from the following.**			
a)	Explain the factors affecting the rate of corrosion.	**05**	**3**	**2**
b)	Explain the tinning process for the prevention of corrosion.	**05**	**2**	**2**
c)	What is corrosion? Explain the dry corrosion.	**05**	**2**	**2**

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Q.4 Attempt any two questions from the following.

a)	Give the preparation, properties and application of the phenol-formaldehyde resin.	**05**	**3**	**3**
b)	Explain the manufacturing process of *Portland* cement.	**05**	**2**	**3**
c)	Following observations were recorded in *Bomb* calorimeter experiment. Weight of coal burnt = 1.1 gm. Mass of water in calorimeter = 2.46 kg. Water equivalent of calorimeter = 550 gm. Observed rise in temperature = 2.51^0C. Cooling correction = 0.043^0C. Acid Correction = 60 Cal. Fuse wire correction= 4.0 cal. Specific heat of water= 4.18kJ.kg^{-1} $^0C^{-1}$ Calculate the calorific value of the fuel.	**05**	**3**	**4**

Q.5 Attempt any two questions from the following.

a)	What is alloy? What are the purposes of making alloy?	**05**	**2**	**3**
b)	Differentiate calcination and roasting process of concentration of ore.	**05**	**2**	**3**
c)	Explain principle, construction and working of the *Boy's* calorimeter.	**05**	**3**	**4**

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