Printed F	Page:-	Subject Code:- AAS0202	
		Roll. No:	
NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA			
(An Autonomous Institute Affiliated to AKTU, Lucknow)			
B.Tech			
SEM: CARRY OVER THEORY EXAMINATION - MAY 2023			
	Subject: Enginee	ering Chemistry	
Time: 3	3 Hours	Max. Marks: 1	00
General	Instructions:		
IMP: Veri	ify that you have received the question pa	per with the correct course, code, branch etc.	
1. This Qu	uestion paper comprises of three Sect	ions -A, B, & C. It consists of Multiple Cho	oice
Questions	s (MCQ's) & Subjective type questions.		
2. Maxim	um marks for each question are indicated	d on right -hand side of each question.	
3. Illustra	ite your answers with neat sketches where	ever necessary.	
4. Assume	e suitable data if necessary.		
5. Prefera	ably, write the answers in sequential orde	r.	,
6. NO Sh	eet should be left blank. Any writte	n material after a blank sheet will not	be
evaluatea	лспескеа.	0	
	SECTIO		20
1. Attem	pt all parts:-		
1-a.	The liquid lubricants stick due to the	property. (CO1)	1
	(a) Surface tension		
	(b) Viscosity		
	(c) Temperature coefficient		
	(d) Mass of the liquid		
1-b.	Which of the following is NOT Seconda	ary Fuel? (CO1)	1
	(a) Petrol		
	(b) Diesel		
	(c) Natural Gas		
	(d) Kerosene		
1-c.	In a single-component system, if degree of phases that can so exist (CO_{2})	ee of freedom is zero, maximum number	1
	or phases that can co-exist $(CO 2)$		

1

- (a) 0
- (b) 1

- (c) 2
- (d) 3
- 1-d. The presence of bicarbonates of calcium and magnesium cause (CO 2)
 - (a) Temporary Hardness
 - (b) Permanent hardness
 - (c) Total hardness
 - (d) none of these
- 1-e. The gas used to inflate Air Bag is (CO 3)
 - (a) Air
 - (b) Oxygen
 - (c) Helium
 - (d) Nitrogen
- 1-f. Which among following can NOT be used for Sacrificial Coating of Iron? (CO3)
 - (a) Zinc
 - (b) Magnesium
 - (c) Silver
 - (d) Aluminium
- 1-g. Soda bottles are made up of (CO 4)
 - (a) Polyethylene Terephthalate
 - (b) Polyester
 - (c) Polystyrene
 - (d) Poly Styrene Butadiene
- 1-h. If the arrangement of functional groups on carbon chain is alternating. It is 1 called (CO 4)
 - (a) isotactic
 - (b) syndiotactic
 - (c) atactic
 - (d) tacticity
- 1-i. Schottky defect is observed in crystals when _____. (CO 5)

1

1

1

- (a) some cations move from their lattice site to interstitial sites.
- (b) some lattice sites are occupied by electrons
- (c) the equal number of cations and anions are missing from the lattice
- (d) some impurity is present in the lattice

1-j. In IR spectroscopy, the vibration between atoms is caused by which of the 1 following? (CO 5)

2

2

30

50

10

- (a) The overall molecular weight of the molecule
- (b) Dipole moments between atoms
- (c) The movement of electrons to higher energy levels
- (d) The number of protons in a nucleus

2. Attempt all parts:-

- 2.a. Give the formula to calculate % of C & H by ultimate analysis. (CO1)
- 2.b. Why Zeolite process is called Permutit Process? (CO 2)
- 2.c. What is Hot dipping? (CO 3)
- 2.d. Why is bakelite used in electrical appliences ? (CO4)
- 2.e. Give two examples of Chromophore. (CO 5)

SECTION B

3. Answer any five of the following:-

- 3-a.What is basic principle of Bomb Calorimeter? With the help of a neat diagram6explain its working and corrections.(CO1)
- 3-b. Explain how BSES standards are playing important role to minimize air 6 pollution? (CO1)
- 3-c. State the phase rule and discuss phase rule for water system. (CO 2) 6
- 3-d. Calculate temporary hardness and total hardness of a sample of water 6 containing: $Mg(HCO_3)_2 = 7.5 mg/L$; $Ca(HCO_3)_2 = 16 mg/L$; $MgCl_2 = 9 mg/L$; CaSO 4 = 13.6 mg/L (CO 2)
- 3.e. What is fuel cell? Describe H₂-O₂ Fuel Cell in brief. (CO3)
 3.f. Give the preparation, properties and application of following polymers: Buna-S, 6
- Terylene, Nylon 6. (CO4)
- 3.g. How many molecular vibration are found in linear and non-linear molecules? 6 Give types of Bending vibrations in IR spectroscopy. (CO 5)

SECTION C

4. Answer any one of the following:-

- 4-a. What is rank of coal? Describe proximate and ultimate analysis of coal. (CO1) 10
- 4-b. What are Lubricants? Give their mechanism. (CO1)

5. Answer any <u>one</u> of the following:-

5-a. Discuss the Ion-Exchange or deionization or demineralization process for the 10

treatment of hard water with its advantages and disadvantages. (CO2)

5-b. A water sample was found to contains the following salts in mg/l: $CaSO_4 = 20.4$, 10 MgCl₂ = 9.5 and HCl = 7.3 Calculate the quantity of lime (85% pure) and soda (80% pure) required for softening 80,000 litres of water. What would be the total cost of chemicals if lime and soda are Rs. 9 and Rs. 35 per Kg? (CO 2)

6. Answer any <u>one</u> of the following:-

- 6-a. What is corrosion? Explain electrochemical theory of corrosion. (CO3) 10
- 6-b. What do you mean by battery. Give reactions of charging and discharging of 10 lead storage battery. (CO 3)

7. Answer any one of the following:-

- 7-a. Describe in brief about conducting and biodegradable polymers with their 10 applications. (CO4)
- 7-b. Give the example of some polymeric composite materials with their 10 commercial application (CO 4)

8. Answer any one of the following:-

- 8-a. What is lambert-beer's law? Describe the various electronic transition in the UV 10 Spectroscopy. (CO 5)
- 8-b. How can you distinguish CH₃CH₂CH₂CHO from (CH₃)₂CH CHO by NMR 10 spectroscopy? (CO 5)