FIRST SEMESTER FYUGP EXAMINATION NOVEMBER 2024
MINOR
CHE1MN 108   BASIC ORGANIC AND BIO-INORGANIC CHEMISTRY

Time : 2 Hrs   **Maximum Marks : 70**

BL - Bloom's Taxonomy Level (1 to 6)   CO - Course Outcome

	Section A			Ceiling Marks : 24
	Answer all questions. Each carries 3 marks.			

No.	Question	M	BL	CO
1.	Define the term orbital. How is orbit different from orbital?	3	2	CO1
2.	Which has a higher first ionization enthalpy: nitrogen or oxygen? Justify	3	4	CO3
3.	Which has a higher ionization enthalpy — Mg or Al? Why?	3	5	CO3
4.	Dichloroacetic acid is a stronger acid than acetic acid. Justify it.	3	3	CO5
5.	What happens when methane reacts with excess of chlorine in the presence of UV light?	3	2	CO6
6.	Give products in the reactions of propyne with the following reagents: (i) H_2/Pd; (ii) dil.H_2SO_4 in presence of $HgSO_4$.	3	5	CO6
7.	Give any one method for the preparation of alkane from carbonyl compounds.	3	2	CO6
8.	Comment on the rate of reactivity of aldehydes and ketones towards nucleophilic addition reactions.	3	3	CO6
9.	What is esterification reaction? Give an example.	3	2	CO6
10.	Which is more basic – methylamine or ammonia? Why?	3	4	CO6

	Section B			Ceiling Marks : 36
	Answer all questions. Each question carries 6 marks.			

No.	Question	M	BL	CO
11.	Mention the general characteristics of covalent compounds. Mention two limitations of VBT.	6	3	CO2
12.	Calculate the lattice energy of sodium chloride (NaCl) from the following data: Madelung constant = 1.75;Equilibrium internuclear distance=0.28 nm; Born exponent=9; electronic charge = 1.6022 x 10^{-19} C; εo=8.854 x 10^{-12} $C^2m^{-1}J^{-1}$.	6	5	CO2
13.	Explain the irregularities observed in the variation of electron affinity along the second period.	6	2	CO3
14.	Write a short note on chelation therapy.	6	2	CO4
15.	How the metal ion enables the bio-catalytic activity in the metalloenzyme?	6	3	CO4
16.	Among alcohol and phenol, which is more acidic? Why?	6	5	CO6

17.	Explain the nucleophilic addition reaction in an aldehyde and ketones with (a) H_2O, (b) HCN (c) CH_3MgBr	6	5	CO6
18.	Explain the order of basicity in methylamine, dimethylamine and trimethylamine.	6	4	CO6

Section C
Answer any 1 question. Each carries 10 marks. (1x10=10 marks)

No.	Question	M	BL	CO
19.	(a) State and explain Heisenberg's uncertainty principle and mention its significance. (b) Calculate the uncertainty in the velocity of a particle of mass 1 x 10^{-6} kg whose uncertainty in position is 9.54 angstroms	10	3	CO1
20.	What are reaction intermediates? Discuss the formation, structure and stability of any two reaction intermediates.	10	2	CO5

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