D1BCH2502

Name: .....

Reg. No.: .....

FIRST SEMESTER FYUGP EXAMINATION NOVEMBER 2025

(Regular/Improvement/Supplementary)

MINOR

CHE1MN107: BASIC ORGANIC AND INORGANIC CHEMISTRY

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

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

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

No.	Question	M	BL	CO
1.	Write the mathematical expression for Heisenberg's uncertainty principle and mention its significance.	3	3	CO1
2.	Which is larger: Cl or Cl^-? Justify your answer.	3	4	CO3
3.	Among the atoms represented by the following electronic configurations, which would have the highest electron affinity: $1s^2\ 2s^2\ 2p^6$;$1s^2\ 2s^2\ 2p^6 3s^1$;$1s^2\ 2s^2\ 2p^6 3s^2$ Explain.	3	5	CO3
4.	What is meant by nucleophilic substitution reactions in alkyl halides?	3	2	CO4
5.	What is Wurtz reaction? Explain Wurtz reaction with a suitable example.	3	2	CO5
6.	How is it proved that the chlorination of methane occurs via free radical mechanism?	3	5	CO5
7.	What is Clemmensen reduction reaction?	3	2	CO5
8.	Write one example each for the metal hydride reduction reactions of aldehydes and ketones.	3	3	CO5
9.	How can nitrobenzene be converted to aniline?	3	3	CO5
10.	How can phenol be obtained from aniline?	3	5	CO5

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

No.	Question	M	BL	CO
11.	Explain the bonding in methane and ethylene based on orbital hybridisation.	6	2	CO2
12.	Write a short note on intermolecular and intramolecular hydrogen bond with example.	6	5	CO2
13.	Explain the factors that influence electron gain enthalpy of an element.	6	3	CO3
14.	What are carbanions? Discuss the formation, structure and stability of carbanions.	6	3	CO4
15.	Explain the aromaticity of (i) cyclopropenyl cation and (ii) naphthalene on the basis of Huckel's rule.	6	5	CO4
16.	Explain the reaction of methane with chlorine in the presence of light and give its mechanism.	6	2	CO5
17.	Using appropriate carbonyl compounds and Grignard reagents, give the synthesis of the following alcohols: (i) Butan-1-ol (ii) 2-Methylpropanol (iii) Butan-2-ol	6	5	CO5
18.	Giving the structural changes, explain how methyl orange acts as an indicator in acid-base titrations.	6	3	CO5

Section C: Answer any one question. Each carries 10 marks. (1 x 10 = 10 marks)

No.	Question	M	BL	CO
19.	a) Derive the de-Broglie relation and point out its significance. b) Point out the differences between electromagnetic waves and matter waves.	10	2	CO1
20.	Discuss various types of nucleophilic substitution reactions of alkyl halides with suitable examples. Explain relative reactivities of 1^0, 2^0, and 3^0 alkyl halides in S_N1 and S_N2 reactions.	10	3	CO4