Exam. Code : 103201
Subject Code : 1255

B.A./B.Sc. 1st Semester

CHEMISTRY (Organic Chemistry)—I

Time Allowed—3 Hours] [Maximum Marks—35

Note :— Attempt **five** questions in all, selecting at least **one** question from each Section. The **fifth** question may be attempted from any Section. All questions carry equal marks.

SECTION—A

1. (a) *Ortho*-dichlorobenzene has a dipole moment of 2.5 D while *para*-dichlorobenzene has a zero dipole moment, explain. 3

   (b) What are different types of Carbenes ? Discuss their relative stability. 4

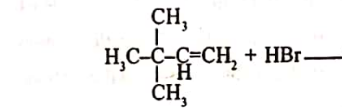
2. (a) What are Carbanions ? Discuss the orbital structure of a Carbanion. 4

   (b) What is Hyperconjugation ? Discuss with suitable examples. 3

SECTION—B

3. (a) Chlorination of n-Butane in the presence of light gives a mixture of 72% of 2-chlorobutane and 28% of 1-chlorobutane while bromination gives 98% of 2-bromobutane and 2% of 1-bromobutane. Explain. 5

(b) Complete the following reaction with suitable mechanism :



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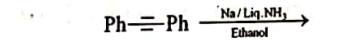
4. (a) Complete the following reaction with suitable mechanism :



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(b) How will you convert acetylene to 2-pentanone ? 3

SECTION—C

5. Discuss Baeyer's strain theory. How it is used to explain the reactivity of cyclopropane and cyclobutane rings ? Also discuss its limitations. 7

6. Explain in detail various differences between S_N1 and S_N2 reactions. 7

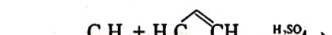
SECTION—D

7. (a) Explain what are non-aromatic compounds ? Give two examples. 4

   (b) Poly-substitution products are observed in Friedel-Craft's alkylation but not in Friedel-Craft acylation when the electrophilic reagent is present in excess. How do you explain this ? 3

8. (a) Chlorination of nitrobenzene gives m-nitrochlorobenzene while nitration of chlorobenzene gives 2, 4-dinitrochlorobenzene, why ? 4

   (b) Complete the following reaction with suitable mechanism :



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