Exam. Code : 103201
Subject Code : 1293

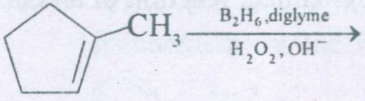
B.A./B.Sc. Semester—I
CHEMISTRY
(Organic Chemistry—I)

Time Allowed—3 Hours] [Maximum Marks—35

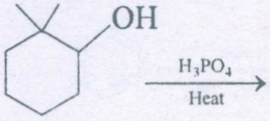
PART—A

Note:—All questions are compulsory and carry equal marks.

1. Cite two examples of nitrene reactive intermediate.
2. Give chemical equation for addition-elimination mechanism.
3. Based on Baeyer's Strain theory predict structure of cyclopropane ring.
4. Among cycloheptatriene and cycloheptatrienyl cation, which is aromatic ?
5. Give chemical equation for Friedel-Crafts reaction.
6. Predict the major product in the following reaction :



7. Predict the major product in the following reaction :



8. Give chemical equation for Kolbe reaction. 1×8=8

PART—B

SECTION—I

Note:— Attempt any **TWO** questions. All questions carry equal marks.

9. Discuss with examples the following concepts :
   (i) Resonance 1
   (ii) Inductive and Electromeric effect 2
   (iii) Hydrogen bonding. 1.5

10. (a) Discuss structure, stability and generation of carbene reactive intermediate. 3
    (b) Discuss reagents in terms of nucleophile and electrophile used in organic reactions. 1.5

11. (a) Discuss the mechanism of free radical halogenation of alkane. 3
    (b) Discuss the mechanism of Corey-House reaction. 1.5

SECTION—II

Note:— Attempt any **TWO** questions. All questions carry equal marks.

12. Explain the following chemical reaction of alkene with mechanism :
    (i) Epoxidation
    (ii) Ozonolysis
    (iii) Hydrogenation. 4.5

13. (a) Discuss the stereochemistry as observed in the case of S_N1 reaction. 1.5

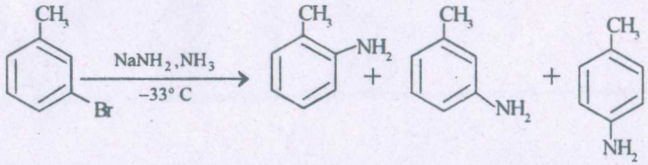
(b) Write the following chemical reactions of alkynes.

(i) Metal-ammonia reduction and

(ii) Hydration (addition of water) 3

14. (a) Discuss S_N2 mechanism of nucleophilic substitution reaction with detailed discussion on stereochemistry and solvent effect. 3

(b) Three regioisomers (o, m and p) were formed when m-bromotoluene treated with sodium amide. Give suitable explanation.



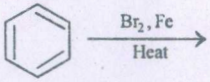
1.5

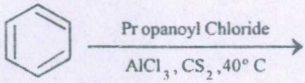
SECTION—III

Note:— Attempt any **TWO** questions. All questions carry equal marks.

15. (a) Discuss the limitation of Baeyer's strain theory. 1.5

(b) Write the plausible product(s) with complete mechanism for the following reaction :





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16. By taking suitable examples, discuss in detail the effect of substituents (activating and deactivating) in electrophilic aromatic substitution reaction. 4.5

17. Using benzene and any other necessary organic and inorganic reagents suggest method for synthesis of isobutylbenzene and benzene sulfonic acid with complete mechanism. 2.5,2