

**M.Sc. DEGREE (C.S.S.) EXAMINATION, JANUARY/FEBRUARY 2017****First Semester**

Faculty of Science

Branch : Chemistry

**AN IC 02/API C02/CHI C02/PHI C02/POHI C02—STRUCTURAL AND MOLECULAR  
ORGANIC CHEMISTRY**

(Common to all branches of Chemistry)

[2012 Admission onwards]

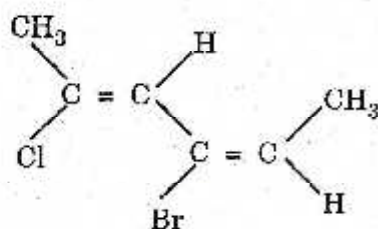
Time : Three Hours

Maximum Weight : 30

**Section A**

*Answer any ten questions.  
Each question carries 1 weight.*

1. What are the factors affecting a covalent bond in organic molecules ?
2. What are annulenes ? Whether annulenes are aromatic or no ? Why ?
3. Explain the mechanism of aromatic electrophilic substitution reaction with suitable example.
4. 1, 2-adduct of 1,3-butadiene is kinetically controlled but 1,4-adduct is thermodynamically controlled ? Explain, why ?
5. Explain Pearson's HSAB concept with example.
6. Give an example of Di- $\pi$  methane rearrangement.
7. What are cyclophanic compounds ? Illustrate with example.
8. Explain prostereoisomerism with example.
9. Assign E-Z notation for



10. Explain the conformations of decabins.
11. Illustrate Hoffmann elimination with example.

Turn over

12. Briefly explain the conformational aspects of semipinacolic deamination.  
 13. Explain the term chirality with suitable example.

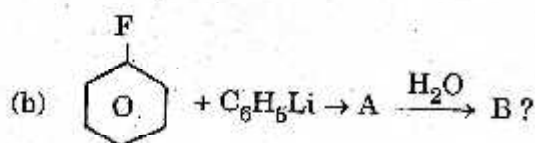
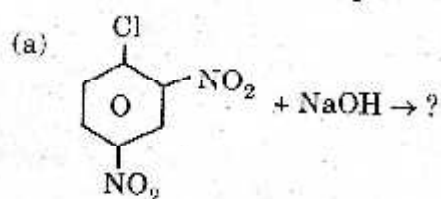
(10 × 1 = 10)

## Section B

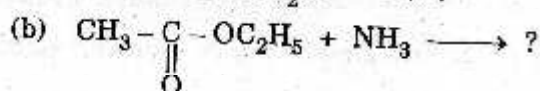
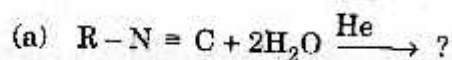
Answer any five questions by attempting not more than three questions from each bunch.  
 Each question carries 2 weight.

## Bunch 1 (Problem type)

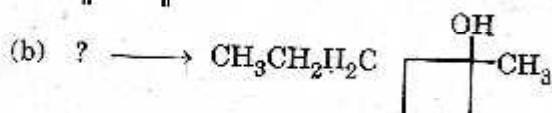
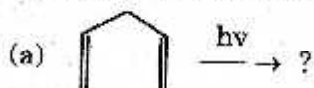
14. Predict the product(s) and explain the mechanism of the following :



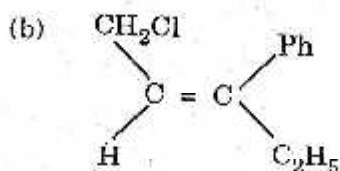
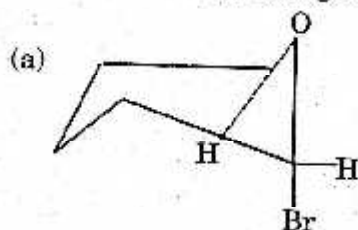
15. Predicts the product(s) and explain the mechanism of the following :



16. Complete the following reaction and explain the mechanism :



17. Indicate the absolute configuration of the following using R, S or Z, E notations :



## Bunch 2 (Short Essay type)

18. Explain the importance of graphene.
19. Write note on photo fries rearrangement.
20. Explain planar and helical chirality with examples.
21. Describe the conformational analysis of cyclic systems.

(5 × 2 = 10)

## Section C

*Answer any two questions.  
Each question carries 5 weight.*

22. Give a detailed account of the mechanism of electrophilic and nucleophilic aromatic substitution reaction with examples.
23. Give an account of the different mechanism of ester hydrolysis with experimental evidences.
24. Write an essay on the rules of R-S and E-Z nomenclature in stereochemistry.
25. Illustrate the conformational studies of (a) Substituted ethane ; (b) Cyclohexane derivatives ; (c) Sucrose.

(2 × 5 = 10)