20. (a) By Employing methylation studies, how do you establish the structure of maltose.

Or

(b) Comment on basic structural features of flavones and isoflavones.

Reg. No. : .....

Code No. : 6398 **Sub. Code : HCHM 31**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2014.

Third Semester

Chemistry

ORGANIC CHEMISTRY – III

(For those who joined in July 2012 onwards)

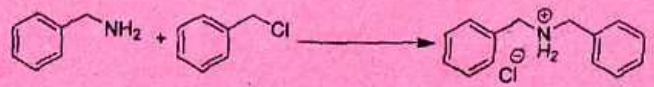
Time : Three hours Maximum : 75 marks

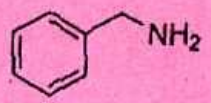
PART A — (10 × 1 = 10 marks)

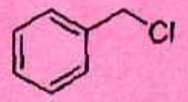
Answer ALL questions.

Choose the correct answer.

1. In the following reaction, which reactant is the nucleophile?



(a) 

(b) 

(c) Both (a) and (b) (d) None of the above

2. The conversion of propene into 1,2-dibromopropane is an example of

(a) Nucliophilic substitution

(b) Elimination

(c) Nucleophilic Addition

(d) Electrophilic substitution

3. Which of the following compounds is least reactive in the nucleophilic aromatic substitution reaction with NaOH?

(a) p-nitrochlorobenzene

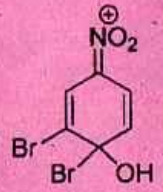
(b) m-nitrochlorobenzene

(c) 2,4-dinitrochlorobenzene

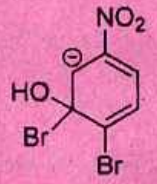
(d) o-nitrochlorobenzene

4. Which of the following is an intermediate of 1,2-dibrorm-4-nitrobenzene is treated with NaOH in a nucleophilic aromatic substitution reaction

(a)

(b) 

(c)

(d) 

5. What intermediate is thought to occur in the elimination-addition nucleophilic aromatic substitution mechanism?

(a) Quinine (b) Radical cation

(c) Radical anion (d) Benzyne

6. $:CCl_2$

(a) is electron rich species

(b) is electron deficient species

(c) is neither rich nor deficient

(d) can behave like lewis acid as well as lewis base

7. What is the correct classification of the following pericyclic reaction?

(a) Sigmatropic reaction

(b) Electrocyclic reaction

(c) Cycloaddition

(d) Both (c) and (d)

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8. What is the correct classification of the following pericyclic reaction?

(a) (4+2) Cycloaddition (b) (2+2) Cycloaddition

(c) (3+1) Cycloaddition (d) None of the above

9. Which statement below is incorrect?

(a) 4-Methylimidazole and 5-methylimidanzole are tautomers

(b) In imidazole, each N atom contributes one electron to the π -system

(c) Oxazole act as diene

(d) Maltose is carbohydrate family

10. When two carbohydrates are epimers:

(a) One is a pyranose, the other a furanose

(b) One is an aldose the other a ketose

(c) They differ in length by one carbon

(d) They differ only in the configuration around one carbon atom.

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

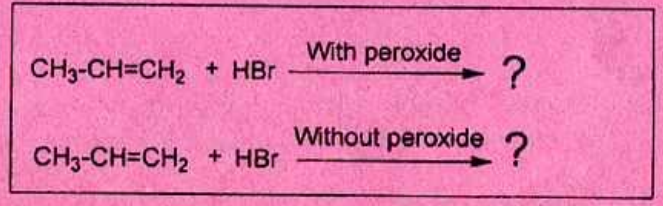
Each answer should not exceed 250 words.

11. (a) What Is ElcB reaction? What are the requirements for the ElcB path? Give mechanism.

Or

(b) Give a complete reaction involving S_{Ni} mechanism.

12. (a) (i) Complete the following of reactions.



(ii) What is Lindlar catalyst? What would happen on treating with acetylene?

Or

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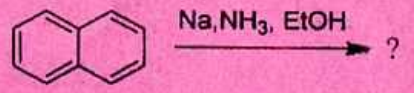
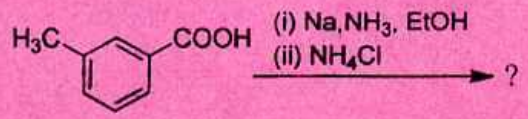
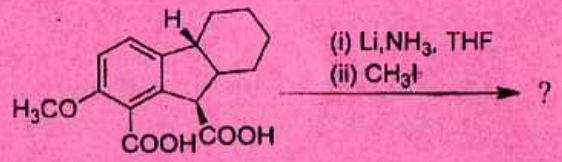
(b) Complete the following of reactions :

(i) 

(ii) 

(iii) 

13. (a) What are nitrenes? Give two methods for their generation.

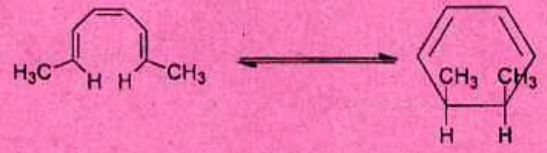
Or

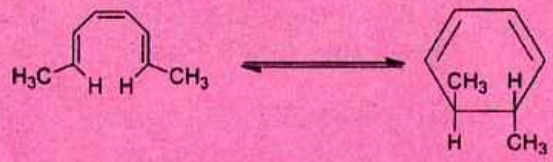
(b) Between allylic cation and propyl cation, which is more stable? Discuss their reasons.

14. (a) Show the conrotatory processes for thermal electrocylic conversion of (2E, 4E) 2,4-hexadiene. Explain why the two processes are equally alike?

Or

(b) Which one of the following electrocyclic reactions should occur readily by a concerted mechanism?

(i) 

(ii) 

15. (a) Show by a reaction that oxazole shows diene behavior.

Or

(b) Give the preparation and properties of imidazole.

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PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

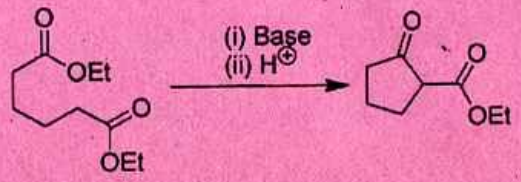
Each answer should not exceed 600 words.

16. (a) Discuss S_N1 and S_N2 reactions with suitable examples. (4 + 4)

Or

(b) Discuss the nucleophilic substitution in an allylic and vinylic system. (4 + 4)

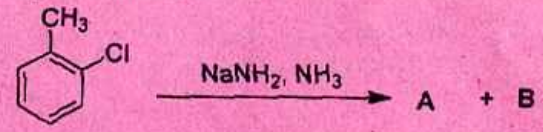
17. (a) (i) Show the mechanism of the following reaction.



(ii) Give any two synthetic applications of Witting reaction.

Or

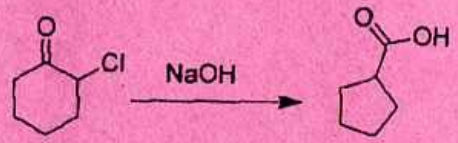
(b) Consider the following reaction; identify the A, B and show through the mechanism how they are formed?



18. (a) Give a brief account on generation and fate of carbenes.

Or

(b) Consider the below reaction; identify the reactive intermediate and give its mechanism.

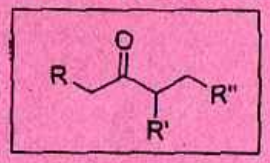


19. (a) Write notes on the following :

(i) Barton reaction

(ii) Paterno-Buchi reaction.

Or

(b) Give mechanism of the Norrish Type I process by using 

as an example.

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