LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

SECOND SEMESTER – NOVEMBER 2016

CH 2506 - CHEMISTRY OF HYDROCARBONS

Date: 12-11-2016   Dept. No.   Max. : 100 Marks
Time: 01:00-04:00

PART – A

Answer all the questions.   (10 x 2 = 20)

1. Write the IUPAC name of

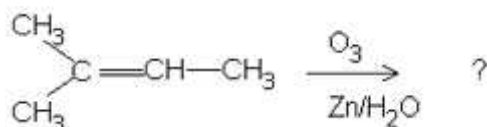   a. $CH_3-CH(CH_3)-CH_2-CHO$ b. $CH_3-CH_2-C(=O)-CH_2-CH_3$

2. What are free radicals? How are they formed?

3. What is catalytic cracking? Name the catalyst used.

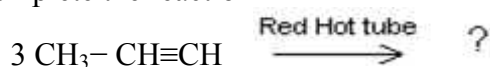4. How is ethane prepared from methyliodide using Wurtz reaction ?

5. Give the product

   $(CH_3)_2C=CH-CH_3 \xrightarrow[Zn/H_2O]{O_3}$?

6. Predict the product of the reaction.

   a. + ⟶ ?

7. Complete the following reaction. $CH \equiv CH + HCN \xrightarrow{Ba(CN)_2}$?

8. Complete the reaction

   $3\ CH_3- CH \equiv CH \xrightarrow{Red\ Hot\ tube}$?

9. Classify the following as ortho, para or meta directors in an aromatic nitration reaction.

   $-OH, -NO_2, -COOH, NH_2$.

10. Name any two polynuclear aromatic compounds. Give its structure.

Part-B

Answer any Eight questions   (8 x 5 = 40)

11. What is hybridization? Explain why four covalent bonds in methane are equivalent.

12. Explain the relative stability of primary, secondary and tertiary carbonium ions.
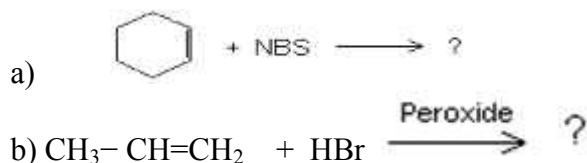
13. Discuss the free radical mechanism of chlorination of methane.

14. How will you synthesize cyclopentane from diethyl adipate using Dieckmann reaction?

15. Illustrate Markovnikov rule with an example.

16. What is hydroboration? Give an example.

17. Complete the reactions.

a)
 + NBS $\longrightarrow$?

b) $CH_3- CH=CH_2$ + HBr $\xrightarrow{\text{Peroxide}}$?

18. Write a note on acidity of 1-Alkynes.
19. a) How will you synthesize 1-butyne from acetylene? (3)
    b) What are the uses of acetylene?   (2)
20. How will you synthesize Naphthalene using Haworth's synthesis?
21. Give the mechanism for sulphonation of benzene.
22. Nitration of benzene is easier than nitration of nitrobenzene – Explain.

PART – C

Answer any four questions.   **(4 x 10 =40)**

23. Write short notes on

   a) Inductive Effect   **(5)**

   b) Hyper Conjugation   **(5)**

24. a) State Huckel's rule. Explain with an example.   **(5)**

   b) Explain keto-enol tautomerism. How does it differ from resonance?   **(4 + 1).**

25. a) Write the structural formula and give IUPAC names for all isomeric alkanes of formula C_5H_{12}.

                                                                         (5)

   b) Discuss the stability of cycloalkanes on the basis of Baeyer's strain theory.   **(5)**

26. a) What happens when 1,3-butadiene is treated with HBr? Give its mechanism.   **(5)**

   b) Explain Zeigler Natta catalysed polymerization.   **(5)**

27. a) How is acetylene prepared in the laboratory?   **(5)**

   b) How will you synthesize Neoprene from acetylene?   **(5)**

28. a) What happens when anthracene is treated with

   i) Sodium dichromate and Sulphuric acid   **(3)**

   ii) Nitric acid and Acetic acid.   **(3)**

   b) What is the product obtained when Naphthalene is reduced with

   a.Na/C_2H_5OH

   b.5H_2/Pt   **(4)**

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