LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – **NOVEMBER 2016**

CH 2502/CH 2504/CH 2500 – HYDROCARBONS AND STEREOCHEMISTRY

Date: 12-11-2016 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

PART- A

Answer **ALL** questions (10x2 = 20 marks)

1. Define bond energy.
2. Write the IUPAC name of Isohexane and Neopentane.
3. What do you mean by cracking?
4. What happens when salts of fatty acids are electrolysed?
5. Identify X and Y
   (i) $CH_3 CH= CH_2 + HBr \xrightarrow{\text{----------}} X$
   (ii) $CH_3 CH= CH_2 + HBr \xrightarrow[H_2O_2]{\text{----------}} Y$
6. How will you prepare acetylene from calcium carbide?
7. Convert phenol into benzene.
8. What happens when naphthalene is treated with ozone?
9. Define torsional strain.
10. Write the E and Z isomers of 2-butene.

PART- B

Answer any **EIGHT** questions (8x5 = 40 marks)

11. Explain inductive effect with an example.
12. State and explain the aromaticity of anthracene using Huckel's rule.
13. Write notes on
    (i) Wurtz reaction
    (ii) Dieckmann cyclisation (1.5+2+1.5)
    (iii) Aromatisation
14. What happens when methane reacts with Chlorine in sunlight? Explain its mechanism. (2+3)
15. State and explain Saytzeff's rule.
16. "Conjugated dienes are more stable than isolated dienes." Explain.
17. Starting from acetylene how will you prepare
    (i) Benzene
    (ii) Glyoxal (1.5+2+1.5)
    (iii) Propyne
18. Discuss the mechanism of nitration of benzene.
19. What is the action of naphthalene with
    (i) H_2 (3)
    (ii) $KMnO_4$ (2)
20. Explain 1,2 and 1,3 interactions in disubtituted cyclohexanes with an example.
21. Discuss the conformational analysis of n-butane.
22. Describe any two methods of distinguishing geometrical isomers.

PART- C

Answer any **FOUR** questions (4x10 = 40 marks)

23. (i) Write short notes on mesomeric and hyperconjugation effects with examples. (5)
    (ii) Explain the geometry of methane using hybridization. (5)

24. State and explain Bayer's strain theory.

25. (i) How does ethylene react with diborane? Explain its mechanism. (2+ 3)

    (ii) Write notes on (1.5 + 1.5 + 2)
    a. Diel's Alder addition
    b. Ozonolysis
    c. Ziegler – Natta catalysed polymerization

26. (i) Explain the mechanism involved in the addition of water to acetylene. (5)

    (ii)Give a brief account on the preparation of benzene from coal tar. (5)

27. (i) What is Friedel Craft's reaction? Explain the mechanism of Friedel Craft's alkylation reaction. (2+3)

    (ii) Explain the molecular orbital structure of benzene. (5)

28. Enumerate the conformation and stability of cyclohexane.

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