



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

SECOND SEMESTER – APRIL 2016

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

Date: 21-04-2016

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

PART-A

Answer ALL Questions

(10x2=20 marks)

1. State Huckel's rule.
2. What are long lived free radicals? Give an example
3. Why is cyclohexane more resistant to ring opening than cyclopropane?
4. Predict the product in the following reaction.

5. State Hoffmann's rule.
6. What happens when acetylene is treated with $\text{Ni}(\text{CN})_2$ in ether?
7. Nitration of nitrobenzene is more difficult than nitration of benzene- Why?
8. Write the uses of naphthalene.
9. Define the term dihedral angle.
10. Why chair form of cyclohexane is more stable than its boat form?

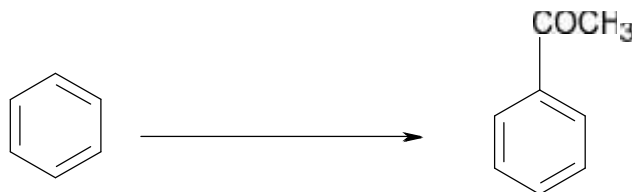
PART-B

Answer any EIGHT Questions

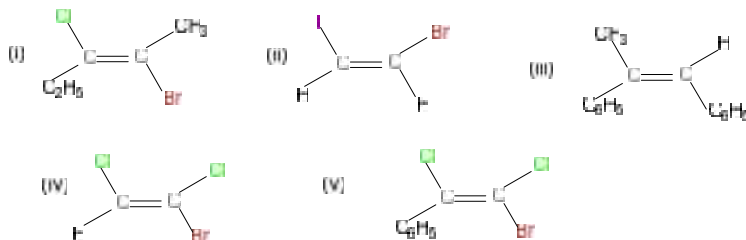
(8x5=40 marks)

11. Discuss the hybridization involved in ethylene molecule.
12. Establish the acid catalyzed mechanism of keto-enol tautomerism.
13. Write the mechanism of chlorination of methane.
14. How will you prepare cyclopentanone using Dieckmann's ring closure reaction?
15. Account for the following:
Addition of HBr to propene (i) in the absence of peroxide yields 2-Bromopropane (ii) in the presence of peroxide yields n-propylbromide.
16. Explain the mechanism of hydroboration oxidation of 2-methylpropene.
17. Write a note on Ziegler – Natta polymerization with an example.
18. How naphthalene is synthesized using Haworth's method?

19. How will you effect the following conversion? Write its mechanism.



20. Give the E/Z notation for the following compounds.



21. Discuss the conformational analysis of n-butane.

22. Write a note on 1, 2 and 1,3 –interactions in substituted cyclohexanes.

PART-C

Answer any FOUR Questions

(4x10=40 marks)

23. a) Arrange the following acids in the increasing order of acidity and explain the reason for your answer. (5)

Monochloro acetic acid, acetic acid, formic acid, propionic acid.

b) What is resonance? Explain its conditions and consequences. (5)

24. Explain the following in detail (5+5)

(a) Refining of petroleum (b) Cracking of hydrocarbon.

25. Write the products and the reactions when 1-Propyne is treated with

a) CH_3COOH b) $\text{H}_2\text{O}/\text{H}^+$ c) BH_3 d) $\text{C}_2\text{H}_5\text{OH}$ e) O_3

26. a) What is NBS? Explain its usefulness in bromination reaction. (5)

b) Write any five important chemical reactions of anthracene. (5)

27. Account for the following: (3+3+4)

a) Only anhydrous AlCl_3 is used in Friedel-Crafts reactions

b) Pulverized AlCl_3 reduces the reaction time rather than bulk amount.

c) Friedel-Crafts alkylation reaction leads to polyalkylation

28. How are the following methods used to distinguish the geometrical isomers? (10)

(a) Melting point (b) Dipole moment (c) Dehydration (d) cyclization (e) Heat of hydrogenation.

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