



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

SECOND SEMESTER – APRIL 2017

CH 2504 / CH 2502 - HYDROCARBONS AND STEREOCHEMISTRY

Date: 04-05-2017  
Time: 01:00-04:00

Dept. No.

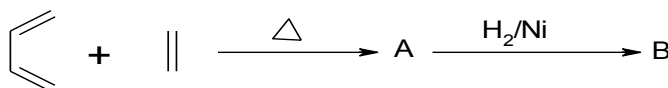
Max. : 100 Marks

**PART-A**

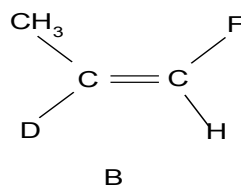
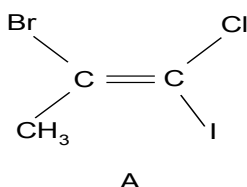
Answer ALL Questions

(10x2=20 marks)

1. What is hybridization?
2. What is steric acceleration? Give an example.
3. Why is cyclohexane more resistant to ring opening than cyclopropane?
4. Give an example for Dieckmann's ring closure reaction.
5. Predict the products 'A' and 'B' in the following reaction.



6. State Saytzeff rule.
7. How will you prepare cumene from benzene?
8. Nitration of nitrobenzene is more difficult than nitration of benzene- Why?
9. What do you mean by torsional strain?
10. Assign E or Z configuration for the following compounds.

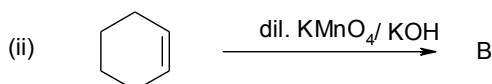
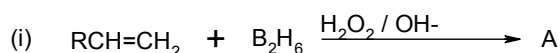


**PART-B**

Answer any EIGHT Questions

(8x5=40 marks)

11. Discuss the hybridization involved in methane molecule.
12. State and explain Huckel's rule with examples.
13. Write the mechanism of chlorination of methane.
14. Write a note on the refining of petroleum.
15. Write the product in the following reactions.



16. 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.
17. How will you synthesize 1,3-Butadiene from 1-Butene?
18. Write the mechanism involved in the nitration of benzene.
19. How naphthalene is synthesized using Haworth's method?
20. Discuss the relative stabilities of chair and boat conformations of cyclohexane.
21. Discuss the conformational analysis of ethane.
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) Write the base catalyzed mechanism of keto-enol tautomerism. (5)  
(b) Explain the concept of resonance taking benzene as a reference compound. (5)
24. Explain the following in detail. (5+5)  
(a) Aromatization (b) Cracking of hydrocarbon
25. Write the mechanism of the following reactions with an example for each (5+5)  
(a) 1, 2 -addition reaction (b) Ziegler-Natta polymerization
26. (a) What is NBS? Explain its usefulness in bromination reaction. (5)  
(b) Explain the mechanism of sulphonation of benzene. (5)
27. Write the products and the reactions of anthracene with the following reagents (5 x 2)  
(a)  $\text{Br}_2/\text{FeBr}_3$  (b)  $\text{HNO}_3/(\text{CH}_3\text{CO})_2\text{O}$  (c)  $\text{Na} / \text{C}_2\text{H}_5\text{OH}$   
(d)  $\text{Na}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4$  (e) Maleic anhydride
28. How will you differentiate geometrical isomers by physical and chemical methods?

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