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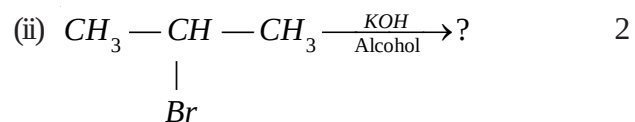
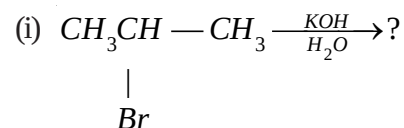
(c) Acetylacetone is more acidic than ethylacetoacetate — Explain. 2

(d) Draw the Hoffmann and Saytzeff transition states for E_2 reaction of $Me_2CH - CMe_2$ in the presence



of $NaOR$. Explain how the 1-alkene/2-alkene ratio changes as the size of R -increases. 4

16. (a) What products will be obtained from the following reactions? Explain.



(b) Sulphonation of naphthalene at $80^\circ C$ yields chiefly 1-naphthalene sulphonic acid whereas sulphonation at $160^\circ C$ or higher yields 2-naphthalene sulphonic acid. Account for the fact with energy profile diagram. 4

(c) What are ΔH° and ΔS° of a reaction? Mention the effects of these two factors on ΔG° and hence the equilibrium of a specific reaction. 4

Total Pages : 4

B.Sc./2nd Sem (H)/CEM/24(CBCS)

2024

2nd Semester Examination

CHEMISTRY (Honours)

Paper : C 4-T

[Organic Chemistry - II]

[CBCS]

Full Marks : 40

Time : Two Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any **five** from the following questions :

2×5=10

1. What is prototropy? Give examples.
2. What do you mean by proton sponge?
3. What do you understand by kinetic isotope effect?
4. What is butane gauche interaction?
5. Write Hammond postulate.
6. What do you understand by NGP?

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7. What is Bredt's rule?
8. What are the conditions for chirality in biphenyl? Give examples.

Group - B

Answer any **four** from the following questions :

5×4=20

9. (a) Although neopentyl bromide is a primary alkyl halide it is very unreactive in S_N2 reactions. — Explain. 3
- (b) Which compound is more reactive towards a nucleophile?
 $CH_2=CHBr$ and $CH_2=CH-CH_2-Br$ 2
10. (a) Draw energy profile diagram relating potential energy to dihedral angle for butane around C_2-C_3 bond. Label and draw Newman projection structure for each maximum and minimum. 3
- (b) What do you mean by buttressing effect? 2
11. (a) Distinguish between Intermolecular reaction and Intramolecular reaction. 3
- (b) Explain the HSAB principle with suitable examples. 2
12. (a) Write short note on valence tautomerism. 2½
- (b) What do you mean by ring chain tautomerism? 2½

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13. (a) Apply Hammond's postulate to decide which reaction is faster?

Addition of HBr to 2-methyl propane or addition of HBr to *trans* 2-butene, assuming the energy difference between the two starting alkenes can be ignored. 2½

- (b) Chlorination of 2-methyl propane established that a tertiary hydrogen is removed 5.2 times faster than each primary hydrogen, though the total chlorination is not very regioselective — explain. 2½

14. (a) Explain the role of crown ethers in nucleophilic substitution reaction. 3
- (b) What do you mean by pyrolytic syn eliminations? Give example. 2

Group - C

Answer any **one** from the following questions :

10×1=10

15. (a) Write down the most stable conformation of 1,2-dibromoethane and ethane-1,2-diol. 2
- (b) Arrange the following ions in order of increasing basicity and nucleophilicity :

$\bar{O}H$, $\bar{O}C_2H_5$, $Me_3C\bar{O}$, $CH_3CO\bar{O}$ 2

P.T.O.