(7 pages)

DECEMBER 2014 **P/ID 40124/PCHD**

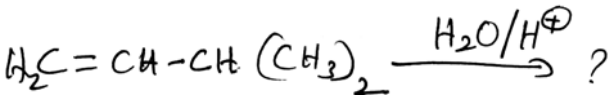
Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give a method of generation of carbene.

2. Predict the product(s) of the following reactions ;

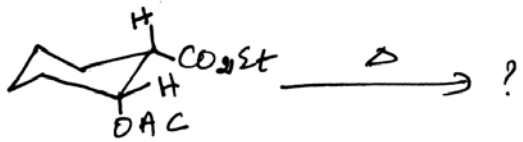


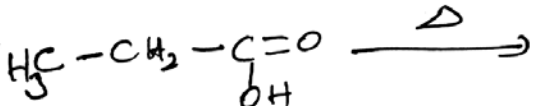
3. Why $CN^{\ominus}$ ion is best suited for Benzoin condensation?

4. State and explain Bredt's rule.

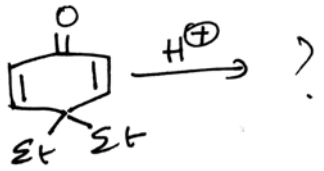
5. Give an example for E1 elimination.

6. Compete the following reactions :

(a) 

(b) 

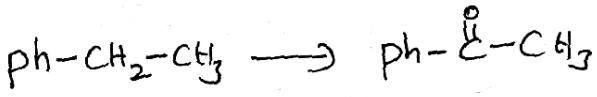
7. Formulate the following and suggest a suitable mechanism.



8. How do you generate nitrenes?

9. What are selactride hydrides?

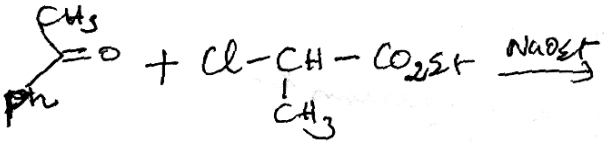
10. Suggest two oxidants for the following conversion :



PART B — (4 × 20 = 80 marks)

11. (a) (i) Discuss the meachnism of stobbe condensation with two exmaples. (6)

(ii) Complete and propose suitable modernism for the following : (6)



(iii) Illustrate the mechanism of Hydroboration with suitable examples? How do you synthesise 2, 3 – dimethyl–2-butanol using the above reaction? (8)

Or

(b) (i) Explain three addition reactions involving carbenes. (6)

(ii) How do you systhesise 2–methyl cyclo–hexanone and 2–methylphenol using Simmon–Smith procedure. (6)

(iii) Describe acid and base catalysed mannich reaction with suitable examples. (8)

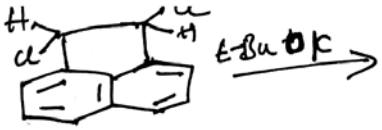
12. (a) (i) Explain Saytzeff rule with suitable examples. (6)

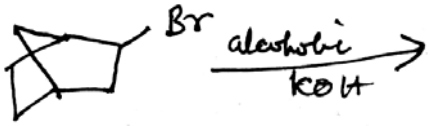
(ii) What is pyrolytic eliminations? How does it differ from other elimination reactions? Explain it with examples. (6)

(iii) Discuss E1–E2–E1CB spectrum of mechanisms. (8)

Or

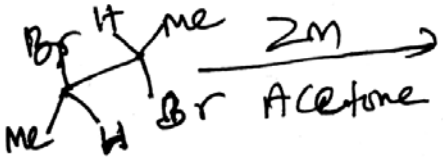
(b) (i) Predict the product(s) and explain the mechanism of the following : (6)

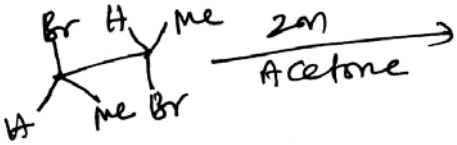
(1) 

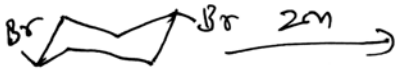
(2) 

(ii) Explain cope elimination with two examples. (6)

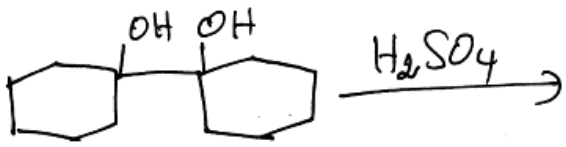
(iii) Provide a mechanism for each of the following reactions : (2 + 3 + 3 = 8)

(1) 

(2) 

(3) 

13. (a) (i) Discuss the mechanism for the following reaction. (6)

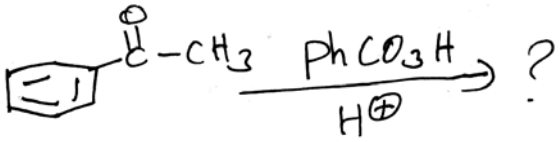


(ii) Explain the mechanism of Steven's rearrangement. (6)

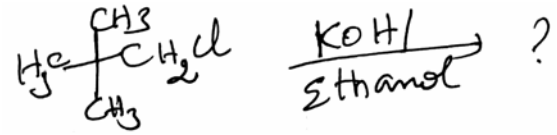
(iii) Describe the mechanism of Favorkshii rearrangement with two examples. (8)

Or

(b) (i) Predict the product and provide suitable mechanism for the following : (6)



(ii) What is Wagner–Meerwein rearrangement? Predict the product and provide suitable mechanism for the following : (6)

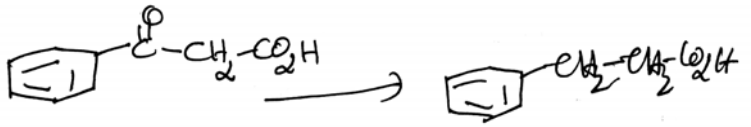


(iii) Write short note on the following : (4 + 4 = 8)

(1) Wolf's rearrangement

(2) Migratory aptitude in rearrangements.

14. (a) (i) Discuss the mechanism and reagents required for the following reactions. (6)



(ii) Explain the selectivity of 4-ter-butyl-cyclohexanone by various reducing reagents. (6)

(iii) Describe the mechanism of the Birch reduction with suitable examples. (8)

Or

(b) (i) Why DMSO with DCC are used as oxidants in the oxidation alcohols? Explain. (6)

(ii) How do you convert 4-Nitroaceto phenone to 4-nitrophenyl methylcarbinol? Provide suitable mechanism. (6)

(iii) Write short note on the following : (4 + 4 = 8)

(1) Oxidation of aryl methanes

(2) Allylic oxidation.

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