

(7 pages)

Reg. No. :

Code No. : 6861

Sub. Code : KCHM 41

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2018.

Fourth Semester

Chemistry

ORGANIC CHEMISTRY – IV

(For those who joined in July 2016-2017)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. Pschorr reaction follows through _____ intermediate.
- (a) Carbonium ion
(b) Carbanion
(c) Carbene
(d) Free radical

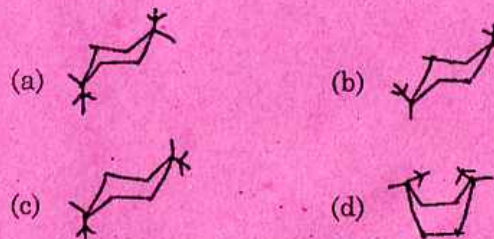
2. The conversion of cyclohexene into bicyclo [4, 1, 0] heptane is an example of _____ reaction.

(a) Shapiro (b) Stobbe
(c) Simmons – Smith (d) Bamford – Stevens

3. The less strained conformer of cyclohexane is _____ form.

(a) Chair (b) Classical boat
(c) Twist boat (d) Half-chair

4. The most preferred conformer of trans -1,4-di-*t*-butyl cyclohexane is



5. Robinson annulation sequence is applicable for _____ system.

(a) enlargement of a ring
(b) contraction of a ring
(c) formation of new ring
(d) both (a) and (b)

Page 2

Code No. : 6861



6. The synthetic equivalent for the synthon C_2H_5 is _____

- (a) CH_3MgBr (b) CH_3Li
(c) $(\text{CH}_3)_2\text{CuLi}$ (d) All of these

7. Iodobenzene reacts with trans-2-butene in presence of Pd as catalyst to give Cis-2-Phenyl-2-butene is an example of _____ reaction.

- (a) Still coupling (b) Suzuki coupling
(c) Heck (d) Negishi

8. Adams Catalyst is _____.

- (a) PtO_2 (b) PdO_2
(c) SeO_2 (d) RuO_2

9. Cholesterol when subjected to catalyst reduction (Pt/H_2) gives _____.

- (a) Cholestane (b) Coprostane
(c) Cholesterol (d) Cholestanone

10. Which among the following is the irradiated product of ergosterol?

- (a) Ergostanol (b) Cholesterol
(c) Tachysterol (d) Stigmasterol

Page 3 Code No. : 6861

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Complete and give the mechanism for the following reaction



Or

(b) What is Wittig reaction? Give its mechanism.

12. (a) Trans decalin is rigid while Cis decalin is flexible in nature. Give reason with an evidence.

Or

(b) The more preferred conformer of cyclohexanone is boat form and not chair form. Give explanation.

13. (a) Explain the role of intermediate in organic synthesis by taking camphor as an example.

Or

(b) How are amino and aldehyde groups protected and deprotected in an organic synthesis? Give an evidence for each groups.

Page 4 Code No. : 6861

[P.T.O.]



14. (a) What is Dess – Martin reagent? Give its special use in organic synthesis.

Or

- (b) Give an account on Suzuki coupling and Heck reactions.

15. (a) Write down the following conversions

- (i) Oestrone $\longrightarrow$ oestriol
- (ii) Oestrone $\longrightarrow$ oestradiol
- (iii) Oestradiol $\longrightarrow$ oestrone

Or

- (b) Write notes on prostaglandins E and F.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Complete and write the mechanism for the following reactions. Give structural formula for reactants and product.



- (ii) Acetophenone + peracid $\longrightarrow$?

Or

- (b) Write notes on Mc Murray coupling and Peterson olifination.

Page 5

Code No. : 6861

17. (a) Trans -1,2 - dimethyl cyclohexane is more stable than its Cis isomer while Cis-1,3 - dimethyl cyclohexane is more stable than its trans isomer. Give explanation.

Or

- (b) (i) Differentiate between conformation and configuration. (2)

- (ii) Meso - 2, 3-dibromobutane undergoes debromination at a faster rate than its active form. Give reason. (4)

- (iii) Write down the most and the least stable conformers of perhydrophenanthrene. (2)

18. (a) Why is convergent scheme of synthesis is superior over linear fashion? Discuss the convergent and linear scheme of synthesis of trihexyl phenyl.

Or

- (b) What is the criteria for a good synthesis? Write down the retero and total synthesis of Cascarillic acid.

Page 6

Code No. : 6861



19. (a) Write any two application for the following reagents.

(i) OsO_4

(ii) DDQ

(iii) DMSO

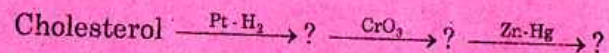
(iv) Organosilanes.

Or

(b) How are the catalysts SmI_2 , RuO_2 , 9-BBN and PtO_2 useful in organic synthesis? Give two applications for each.

20. (a) (i) How will you convert cholesterol into progesterone? (5)

(ii) Complete the following reaction and give structural formula for reactant and product.



Or

(b) Discuss in detail the position of hydroxyl group and double bond in cholesterol.

