**19002221**

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**Reg. No.....**

**Name.....**

# M.Sc. DEGREE (C.S.S.) EXAMINATION, NOVEMBER 2019

**Third Semester**

Faculty of Science

Branch III—Chemistry

CH3C10/AN3C10—ORGANIC SYNTHESES

(Common to M.Sc. Analytical Chemistry and Chemistry)

[2012—2018 Admissions]

Time : Three Hours Maximum Weight : 30

## Section A

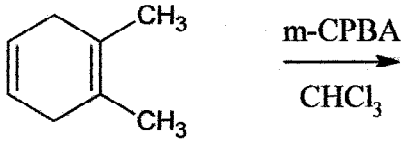
*Answer any* **ten** *questions.*
*Each question carries a weight of* 1.

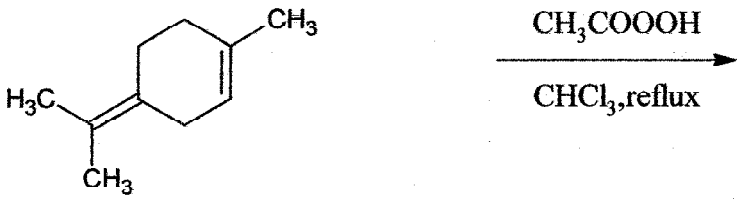
1. What are the reagents used in Sharpless asymmetric epoxidation reaction ? Give an example.

2. Explain the use of Baker's yeast in organic synthesis using a suitable example.

3. Give the structure of DCC. What is its use? What is the driving force for the reactivity of this reagent ?

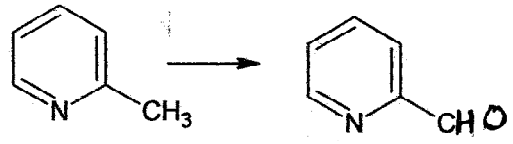
4. Write down the products formed in the following reactions :

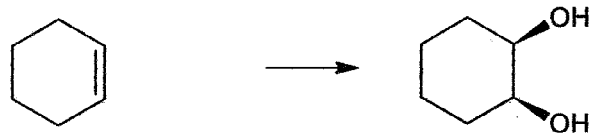
(a) 


(b) 

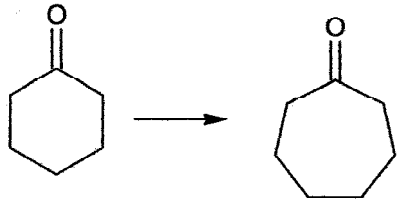

**Turn over**

5. How the following conversions are carried out ? Give the reagent and solvent of choice.

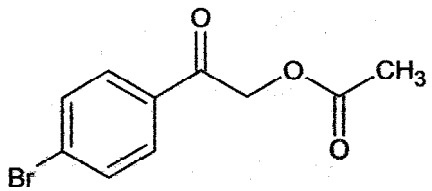
(a) 

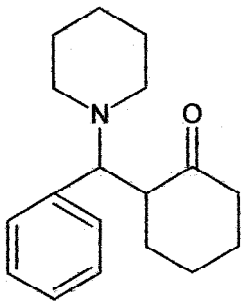

(b) 


6. What are Oxetanes? How they are synthesised ?
7. How the following change is brought out ? State the reagents and name the reaction used.




8. What is meant by chemo and regio selective protection ? Explain taking examples.
9. Give two important uses of Trimethylsilyl chloride in organic synthesis.
10. Give the retro synthetic analysis of the following molecules.

(a) 


(b) 


11. What are 'Unpolung equivalent' ? Explain using suitable example.
12. Give the important steps in the biosynthesis of glucose.
13. Explain the terms Biogenesis and Biomimetic synthesis.

(10 × 1 = 10)

## Section B

*Answer any* **five** *questions.*
*Each question carries a weight of* 2.

14. Give the biomimetic synthesis of Spatreine.
15. Explain the term enantio selective synthesis using synthesis of Longifolene as an example.
16. Explain Peterson olefination. Compare it with Wittig reaction.
17. Name two protecting groups each for : (a) Hydroxyl group ; (b) Carbonyl group. Explain their method of protection and deprotection.
18. Give one important chemical synthesis each of : (a) Thiophene ; and (2) Imidazole.
19. Give two methods each for synthesising : (a) Three membered rings ; and (b) Five membered rings.
20. Give the mechanism of the following reactions using suitable examples : (a) Sonogashira coupling and (b) Ullmann coupling.
21. What is Birch reduction? Give the mechanism of the reaction. What are its uses in organic synthesis ?

(5 × 2 = 10)

## Section C

*Answer any* **two** *questions.*
*Each question carries a weight of* 5.

22. Discuss briefly on the metal based oxidations useful for the synthesis of :
    (a) Alcohols. (b) Epoxides.
    (c) Diols. (d) Carbonyl compounds.
23. Write briefly on the biosynthesis of Morphine.
24. Write notes on : (a) Bergman cyclisation ; and (b) Nazarov cyclisation.
25. Explain the solid phase peptide synthesis using a suitable example.

(2 × 5 = 10)