

**F 7070**

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Reg. No.....

Name.....

**M.Sc. DEGREE (CSS) EXAMINATION, JANUARY 2014**

**Third Semester**

Faculty of Science

Branch III—Chemistry

**AN 3C 10/CH 3C 10—ORGANIC SYNTHESIS**

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

Time : Three Hours

Maximum Weight : 30

**Section A**

Answer any **ten** questions.

Each question carries a weight of 1.

1. Give the mechanism of the following reaction  
 $\text{RCH}_2\text{OH}$  treated with  $(\text{COCl}_2)_2$  DMSO ;  $\text{Et}_3\text{N}$  ;  $\text{CH}_2\text{Cl}_2$  to give  $\text{RCHO}$ .
2. What is Henry reaction ? Explain its mechanism.
3. Suggest *two* methods for epoxidation of alkenes.
4. Explain MPV reduction. Give *one* application.
5. What is Nazarov cyclisation ? Give one example.
6. What are chemo selective and regio selective protection and deprotection ?
7. Give *one* example for Ireland method.
8. Give one method for the synthesis of (a) Imidazole ; (b) Furan ; (c) Thiophene
9. Give one synthetic application of DCC inorganic synthesis.
10. What is allylic oxidation ? Give an example.
11. Give the names and structures of two protecting groups for the carbonyl group.
12. What is Negishi Sonogashira cross coupling ? Explain with a suitable example.
13. Give *one* example each for manganese and lead based oxidation of alkenes to carbonyl compounds.

(10 × 1 = 10)

Turn over

**Section B**

*Answer any five question.*

*Each question carries a weight of 2.*

14. Explain the enatio selective synthesis of Longifolene.
15. Give the photochemical approaches for the synthesis of Oxetanes.
16. Explain the basic principles of biosynthesis of alkaloids.
17. Write a note on the biomimetic synthesis of progesterone.
18. Explain the mechanism of (a) Heck ; (b) Stelle ; (c) Suzuki cross couplings.
19. What are the important strategies of functional group transportation ?
20. Explain the mechanism of Baeyer Villiger Oxidation. Give a suitable example.
21. Write a note on Denijenov reaction.

(5 × 2 = 10)

**Section C**

*Answer any two questions.*

*Each question carries a weight of 5.*

22. Give an account of the application of hydride transfer reagents in organic synthesis with special reference to (a)  $\text{LiAlH}_4$  (b) DIBAL-H ; (c)  $\text{NaBH}_4$  ; (d) Red-Al.
23. (a) Compare the Prevost and Woodward hydroxylations  
(b) Briefly explain the synthetic utility of Wacker process in organic synthesis
24. Discuss the basic principles of retro synthetic analysis. Explain one group and two group C-C disconnections
25. Write the mechanism of the following reactions (a) Noyori reaction ; (b) Ritter reaction  
(c) Wohl-Zeigler reaction ; (d) Tebbe olefination.

(2 × 5 = 10)