

22P312

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Name: .....

Reg.No: .....

**THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2023**

(CBCSS - PG)

(Regular/Supplementary/Improvement)

**CC19P CHE3 C11 - REAGENTS AND TRANSFORMATIONS IN ORGANIC CHEMISTRY**

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

**Section A**

Answer any *eight* questions. Each question carries 1 weightage.

1. How can you convert 1-methyl cyclohexene into 1-methyl cyclohexanone.
2. Describe Riley reaction. What is its importance?
3. What is Pinacol coupling? Explain with examples.
4. What is hydrogenolysis? Explain
5. What is Gilman's reagent? How does it react with ethyl iodide?
6. Write down the structure of DMAP. Give any one of its synthetic applications.
7. What type of alkenes prefer to undergo cationic polymerisation? Give an example.
8. What is Wolff rearrangement?
9. Pyridine is less reactive towards electrophilic substitution reaction than benzene. Justify your answer.
10. Discuss the basicity of indole.
11. Imidazole is a very weak acid. Justify your answer.
12. What is Curtius rearrangement?

**(8 × 1 = 8 Weightage)**

**Section B**

Answer any *four* questions. Each question carries 3 weightage.

13. Describe in detail oxidative decarboxylation reactions.
14. Give a suitable mechanism for the oxidation of an aldehyde to carboxylic acid with  $\text{KMnO}_4$  in acidic medium
15. What products are obtained by the reduction with  $\text{LiAlH}_4$ ,  $\text{NaBH}_4$  and  $\text{B}_2\text{H}_6$  of the following substrate  
1)  $\text{RCOOH}$  2)  $\text{RCOOC}_2\text{H}_5$  3)  $\text{RCOCl}$  4)  $\text{RCH}_2\text{Br}$  5)  $\text{ArNO}_2$

16. Discuss the application of hydroboration reaction.
17. Give any five uses of Trimethyl silyl chloride in organic synthesis.
18. Using benzyloxy carbonyl chloride as N-protecting agent sketch the synthesis of Gly-Ala
19. Describe the mechanism of Schmidt rearrangement with suitable example.

**(4 × 3 = 12 Weightage)**

### **Section C**

Answer any *two* questions. Each question carries 5 weightage.

20. (a) What is a phase transfer catalyst? Give examples with the role that such a catalyst plays.  
(b) Illustrate the application of phase transfer catalyst by writing equations for the reaction between NaCN and n-C<sub>8</sub>H<sub>17</sub>Cl with the catalyst n-Bu<sub>4</sub>N<sup>+</sup>Cl<sup>-</sup>
21. Discuss the various methods by which the sequence of aminoacids can be determined in a polypeptide chain.
22. Acetophenone oxime (CH<sub>3</sub>, Syn) when subjected to Bechmann rearrangement produce acetanilide, while its geometrical isomer produce N-methyl benzamide, explain with suitable mechanism.
23. Describe the synthesis of uracil and thymine.

**(2 × 5 = 10 Weightage)**

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