

22P212

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Name: .....

Reg.No: .....

**SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2023**

(CBCSS - PG)

(Regular/Supplementary/Improvement)

**CC19P CHE2 C07 - REACTION MECHANISM 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. What is the order of  $SN^2$  reactivity among methyl halide, primary alkyl halide, secondary alkyl halide and tertiary alkyl halide?
2. Explain mechanistically why an  $SN^1$  reaction follows first order kinetics.
3. Distinguish between singlet and triplet carbenes.
4. State and explain Markovnikov's rule. Illustrate with example.
5. How can be prepared alkyl lithium from alkyl halides?
6. What is ene reaction?
7. Formulate the reaction between 2-methyl but-1,3-diene and acrolein. Predict the regiochemistry.
8. State the Woodward-Hoffmann rules for electrocyclic reactions.
9. What is Norrish type II reaction?
10. What are steroids? Draw the structure of Cholestrol.
11. What is isoprene rule? Explain.
12. Write the mechanism for the dehydrohalogenation of ethyl bromide.

**(8 × 1 = 8 Weightage)**

**Section B**

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

13. When acetolysis of trans-2-acetoxy cyclohexyl tosylate is carried out in the presence of ethanol a cyclic ortho ester is isolated in high yield. Explain.
14. The addition reaction of HBr with propene follows free radical mechanism. Justify this statement with suitable example.
15. Discuss the synthetic uses of Grignard reagent.

16. Discuss the mechanisms of Stobbe condensation.
17. Discuss Norrish type I and Norrish type II reactions.
18. Discuss the photo reduction reaction with mechanism.
19. Explain the structural elucidation of Atropine.

**(4 × 3 = 12 Weightage)**

### **Section C**

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

20. Discuss the reason for the low reactivity of aryl halides towards nucleophilic substitution on the basis of (a) resonance concept (b) hybridization concept
21. Discuss the mechanistic and stereochemical aspects of addition to C=C involving electrophiles.
22. Write the mechanism for: (a) Dieckmann condensation (b) Thorpe condensation (c) Oppenauer oxidation (d) Pinacol reaction (e) Ritter Reaction.
23. Explain (a) Total synthesis of Quinine (b) Classification of terpenoids

**(2 × 5 = 10 Weightage)**

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