(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022-23 ONLY)

SUBJECT CODE 22PCY102

REG.NO.

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : DECEMBER – 2022

M.Sc. – CHEMISTRY **MAXIMUM MARKS: 50**

I SEMESTER **TIME : 3 HOURS**

ORGANIC CHEMISTRY –I- ORGANIC REACTION MECHANISMS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(Objective Questions with four Multiple Choices) **(K1)**

1. [10] annulenes do not show aromatic character because……..
   (a) it does not obey Huckel's rule (b) only benzene derivatives are aromatic
   (c) it is a heterocyclic compound (d) it is not planar

2. Bischler-Napiralski reaction involves…….

   (a) Cyclisation (b) Cyclodehydration (c) Dehydration (d) Elimination

3. An SN2 reaction leads to……

   (a) Inversion of configuration (c) Retention of configuration

   (b) Racemisation (d) Inversion followed by retention

4. Which of the following reactions of addition to the alkenes occurs in the anti manner?

   a) Hydroboration oxidation b) Addition of Br_2 c)Addition of H_2

   b) None of the above.

5. Which of the following statements regarding the E1 mechanism is wrong?

   a) Reactions by the E1 mechanism are unimolecular in the rate-determining step
   b) Reactions by the E1 mechanism are generally first order
   c) Reactions by the E1 mechanism usually occur in one step.
   d) Reactions by the E1 mechanism are multi-step reactions

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. **(K2)**

6. Specify the experiment to access the reaction is inter or intramolecular?
7. Give one strong activating group.
8. What is the poorest leaving groups among the halogens in aliphatic nucleophilic substitution?
9. What is the test for unsaturation of alkenes?
10. Define **β** – elimination reaction.

(CONTD…….2)

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K3)

11. a) Infer Hammett equation from linear free energy relationship.

(OR)

b) Discuss homoaromaticity with example.

12. a) Describe the Friedel Crafts alkylation reaction.

(OR)

b) Show the SE1 and SE2 mechanism.

13. a) Explain the nucleophilic substitution at allylic carbon.

(OR)

b) Discover the mechanism of Williamson reactions.

14. a) Show the Michael addition reaction mechanism involves nucleophilic addition..

(OR)

b) Find the mechanism of Wittig reaction.

15. a) Show the importance of Hofmann and Saytzeff's rules with suitable examples.

(OR)

b) Explain Hofmann degradation.

SECTION – C (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) Analyse the use of Isotopic labeling and cross over experiments with suitable example for adopting mechanisms.

(OR)

b) Summarize the aromaticity of Annulenes.

17. a) Deduce the mechanism of Vilsmeier-Haack reaction and Gattermann-Koch reaction,

(OR)

b) Construct Arenium ion mechanism and outline the importance of orientation and reactivity in mono substituted benzene rings.

18. a) Determine the factors affecting nucleophilic substitution reaction.

(OR)

b) Examine the mechanisms of Von Braun reaction and Chichibabin reaction.

19. a) Examine the products obtain from electrophilic and free radical addition reactions to double and triple bonds.

(OR)

b) Investigate the mechanism of Mannich reaction and Meerwein Pondroff- Verley reduction.

20. a) Analyse the dehydration of alcohols and Cope elimination reaction.

(OR)

b) Summarise the structure, generation and reactions of carbenes.

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