

(FOR THE CANDIDATES ADMITTED

SUBJECT CODE **23PCY102**

DURING THE ACADEMIC YEAR 2023 ONLY)

REG.NO. :

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

**END-OF-SEMESTER EXAMINATIONS: NOVEMBER 2023**

**M.Sc CHEMISTRY**

**MAXIMUM MARKS: 75**

**SEMESTER:I**

**TIME : 3 HOURS**

**ORGANIC CHEMISTRY-I ORGANIC REACTION MECHANISMS**

**SECTION – A**

**(10 X 1 = 10 MARKS)**

**ANSWER THE FOLLOWING QUESTIONS.**

**(K1)**

- The bond length of C-C bonds in benzene is  
(a) 110 pm                      (b) 156 pm                      (c) 121 pm                      (d) 139 pm
- The rate determining step in electrophilic substitution reaction is \_\_\_\_\_  
(a) Generation of electrophile                      (b) All of the mentioned  
(c) Formation of product                      (d) Attack by an electrophilic reagent on benzene ring
- The rate of nucleophilic substitution reactions is higher in the presence of which of the following?  
(a) Electron releasing groups                      (b) Electron withdrawing groups  
(c) Both electron-withdrawing and releasing groups                      (d) Neutral molecules
- The electrophilic addition of hydrohalic acids like hydrogen chloride or hydrogen bromide to alkenes to yield the corresponding haloalkanes is known as  
a) Micheal reaction                      b) Mannich reaction  
c) Hydrohalagenation reaction                      d) Cine substitution
- Which of the following order is incorrect for the rate of E2 reaction?  
a) 5-Bromocycloheptene > 4-Bromocycloheptene  
b) 2-Bromo- I -phenylbutane > 3-Bromo- I-phenylbutane  
c) 3-Bromocyclohexene > Bromocyclohexane  
d) 3-Bromo-2-methylpentane > 2-Bromo-4-methylpentane

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

**(K2)**

- Write an example of a quasi-aromatic compound.
- Give the conversion of Bischler- Napieralski reaction
- Write the Friedel crafts alkylation:
- What is benzoin reaction?
- Explain nitrenes.

**(CONTD .... 2)**

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**SECTION – B****(5 X 5 = 25 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(K3)**

11. a) Write note on Hückel molecular orbital theory for aromaticity (HMO).  
(OR)  
b) Give an account of Isotopic labeling.
12. a) Illustrate with suitable reaction mechanism of Gattermann-Koch reaction.  
(OR)  
b) Explain the Diazonium coupling reaction.
13. a) Write the reaction and mechanism of Rosenmund Reactions.  
(OR)  
b) Describe an account of neighboring group participation reaction.
14. a) Summarize the mechanism of Claisen condensation reaction.  
(OR)  
b) Explain the reactions of the following i) Grignard reactions, ii) Dieckmann reactions
15. a) Write the difference between eliminations, substitution reactions.  
(OR)  
b) Explain the Cope elimination reactions.

**SECTION – C****(5 X 8 = 40 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(K4 (Or) K5)**

16. a) Discuss the aromaticity of azulenes and anulenes.  
(OR)  
b) Write a note on isotope effect and Hammett and Taft equation.
17. a) Propose the suitable reaction and mechanism of Houben-Hoesch reaction  
(OR)  
b) Discuss the Factors affecting reactivity in aliphatic electrophilic substitution (SE) reactions.
18. a) Explain benzyne mechanism and Chichibabin reaction.  
(OR)  
b) Examine the kinetics and reactions of  $S_N1$  reactions.
19. a) Take a note on Darzen, and Wittig reaction.  
(OR)  
b) Explain the following reactions i) Mannich reaction, ii) Meerwein-Ponndorf-Verley reduction,
20. a) Explain with suitable reaction and mechanism of Hofmann and Saytzeff's rules.  
(OR)  
b) Discuss the structure, generation and reactions of carbenes.

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