

[4]

SECTION 'C' 4 × 10 = 40

Long Answer questions (Word limit 400-450 words.)

UNIT-I

- Q. 1. Explain S_NAr and benzyne mechanism of Aromatic nucleophilic substitution reaction.

OR

Explain the following-

- (a) Ambident nucleophile (b) Sommelet Hauser Reaction

UNIT-II

- Q. 2. Explain the following -
(a) Arenium ion mechanism (b) Diazonium coupling reaction

OR

Write a note on quantitative treatment of reactivity in substrates and electrophiles.

UNIT-III

- Q. 3. Write a note on bromonium ion as intermediate in stereo selective synthesis.

OR

Explain the following -

- (a) Regio and chemo selectivity in addition reactions.
(b) Michael reaction

UNIT-IV

- Q. 4. Give the mechanism and applications of the following reaction -
(a) Aldol condensation (b) Stobbe reaction

OR

Write the mechanism and synthesis of olefins from carbonyl compounds by Wittig reaction.

-----xxx-----

[1]

ROLL NO.....

CHE. 202/21
II SEMESTER EXAMINATION, 2021
M.Sc. (CHEMISTRY)
PAPER-II
REACTION MECHANISMS

TIME: 3 HOURS

MAX.- 80

MIN.- 16

Note: The question paper consists of three sections A, B & C. All questions are compulsory.

Section A- Attempt all multiple choice questions.

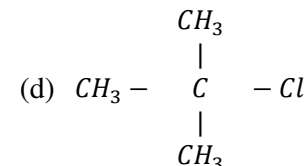
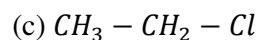
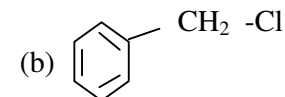
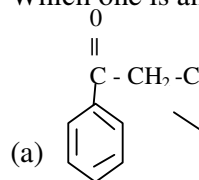
Section B- Attempt one question from each unit.

Section C- Attempt one question from each unit.

SECTION 'A' 2 × 8 = 16

Multiple Choice Questions

- Reaction rate is not affected by concentration and nature of the nucleophile in-
(a) S_N1 (b) S_N2 (c) S_Ni (d) None of these
- Which one is an excellent substrate for S_N2 reaction-



[2]

3. In nitration of benzene ring using *conc. H₂SO₄* and *conc. HNO₃* the role of *HNO₃* is
- (a) Acid (b) Base
(c) A Reducing agent (d) An oxidizing agent
4. The function of anhydrous *AlCl₃* in the Friedel-Crafts reaction is -
- (a) To absorb water (b) To produce nucleophile
(c) To produce electrophile (d) To absorb HCl
5. Boron atom adds to the carbon-carbon double bond predominantly to
- (a) The more substituted carbon atom
(b) The less substituted carbon atom
(c) Does not add to the carbon atom
(d) None of these is correct
6. Michael acceptor is a-
- (a) Saturated compound
(b) β, γ - unsaturated compound
(c) α, β - unsaturated compound
(d) None of these
7. Knoevenagel reaction involves the interaction of an aromatic aldehyde and an active methylene compound in the presence of an amine like -
- (a) Aniline (b) Methyl amine (c) Ethyl amine (d) Piperidine
8. An α, β - unsaturated aldehyde reacts with a Grignard's reagent by mostly-
- (a) 1, 4- addition (b) 1, 3 - addition
(c) 1, 2 - addition (d) None of these

[3]

SECTION 'B'
Short Answer Type Questions (Word 4 × 6 = 24 words.)

UNIT-I

- Q. 1. Explain nucleophilic substitution at a vinylic carbon.

OR

Explain phase transfer catalysis.

UNIT-II

- Q. 2. Explain why chlorobenzene is far less reactive than aniline in electrophilic substitution though chlorine and nitrogen have almost the same electronegativity.

OR

Explain SE² mechanism.

UNIT-III

- Q. 3. Explain hydroboration in carbon-carbon multiple bond.

OR

Discuss the stereochemical aspects of nucleophilic addition reaction giving suitable examples.

UNIT-IV

- Q. 4. Write a note on use of metal hydrides in the reduction of organic compounds having carbon hetero multiple bond.

OR

Complete the following reaction and propose a mechanism -

