National Officers Academy

Mock Exams for CSS-2023

December 2022 (Final Mock)

CHEMISTRY, PAPER-II

TIME ALLOWED: THREE HOURS **PART-I(MCQS): MAXIMUM 30 MINUTES**	**PART-I (MCQS) MAXIMUM MARKS = 20** **PART-II MAXIMUM MARKS = 80**

NOTE:

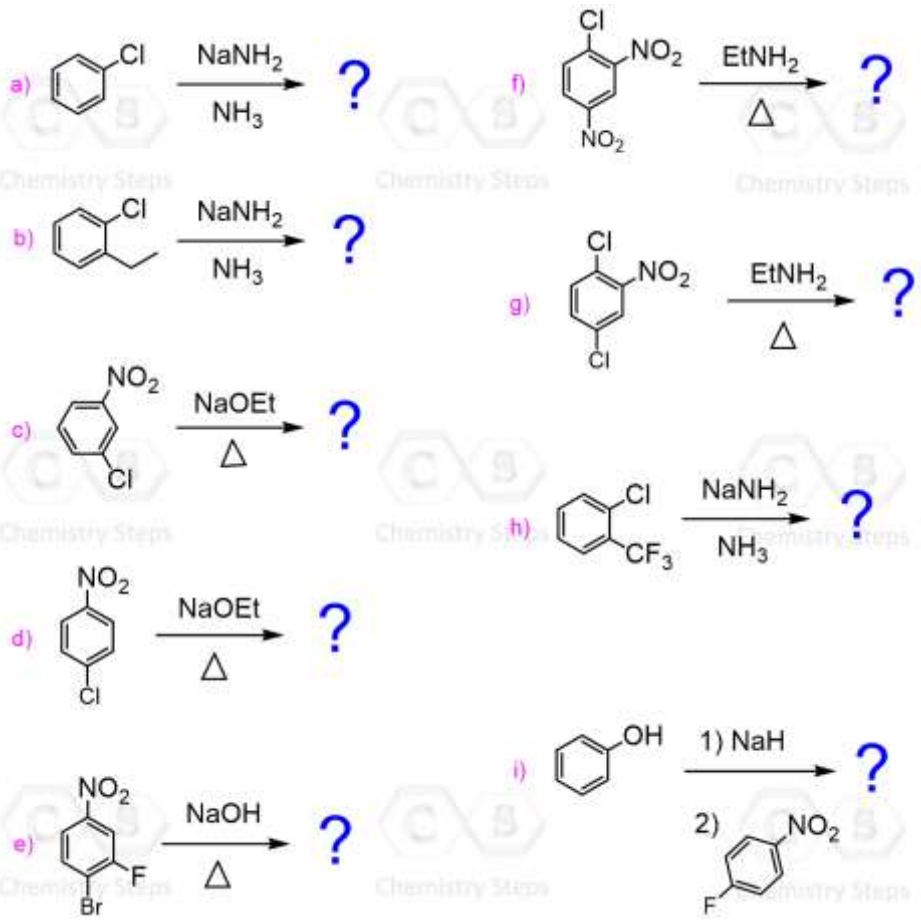
i. **Part-II** is to be attempted on the separate **Answer Book**.
ii. Attempt **ONLY FOUR** questions from **PART-II**. **ALL** questions carry **EQUAL** marks.
iii. Write Q. No. in the Answer Book in accordance with Q. No. in the Q. Paper.
iv. Use of Calculator is allowed.

SUBJECTIVE PART — PART-II

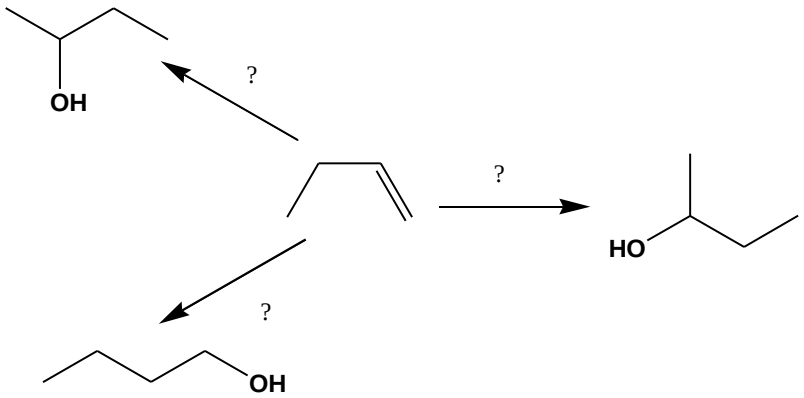
Q.2. Write short notes on the following. (20)

a) Huckel theory b) Markonikov's addition (c) Stereoselectivity (d) Saponification (e) Conformers

Q.3. Compare and contrast nucleophilic substitution reactions and elimination reactions. Also discuss the major products and reaction types of following reactions (20)



Q.4. a) Mention the reagents for following conversions (6)



b) How ethene can be converted into benzene. (4)

c) Write down esterification mechanism starting with Diazomethane. (10)

Q.5. Discuss the underlying principal of UV-Vis spectroscopy.(20)

Q.6. a) Explain stereoisomerism in organic compounds. (10)

b) Draw the structures of the cis-trans isomers for each compound. Label them cis and trans. If no cis-trans isomers exist, write none. (10)

a. 2-bromo-2-pentene
b. 3-hexene
c. 4-methyl-2-pentene
d. 1,1-dibromo-1-butene
e. 2-butenoic acid ($CH_3CH=CHCOOH$)

Q.7. a) Discuss antiaromaticity in organic compounds. How it is different from non-aromatic behaviors? (10)

b) Discuss the products formed when toluene is subjected to (10)

a) Nitration b) chlorination c) oxidation d) hydration

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Best of Luck for CSS-2023