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Total Pages : 3

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May-2026

B.Sc. (Life Science) II SEMESTER

Conceptual Organic Chemistry-II (NBLS-MIC-201)

Time: 3 Hours **Max. Marks:75**

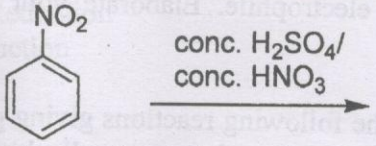
Instructions: **1.** *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*

2. *Answer any four questions from Part -B in detail.*

3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART -A

Q1 (a) Write down the major product of the following reaction; (1.5)



(b) Halogens are deactivating but still ortho/para directing groups towards aromatic electrophilic substitution reactions. Explain. (1.5)

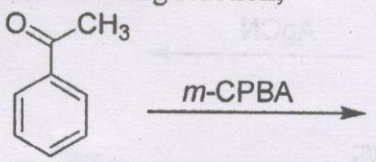
(c) Write down the product formed when ethanol is reacted with thionyl chloride ($SOCl_2$). (1.5)

(d) What do you understand by leaving group ability? Explain giving suitable example. (1.5)

(e) Write down the product formed when phenol is treated with methyl iodide in presence of anhydrous $AlCl_3$. (1.5)

(f) Which of the following compounds will give iodoform test positive? (1.5)
(i) acetone, (ii) methonol, (iii) isopropyl alcohol, (iv) Benzaldehyde

(g) Write down the product of the following reaction; (1.5)



(h) Write down the Tollen's reagent. How can it be used to differentiate aldehydes and ketones? (1.5)

(i) Discuss oxidation of diols with periodic acid. (1.5)

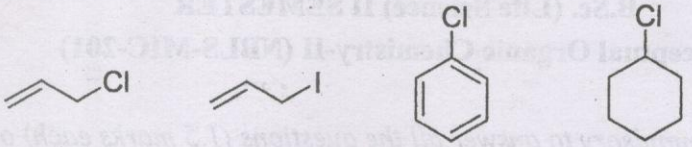
(j) What is Hofmann's Elimination product? What conditions favors Hofmann's elimination? (1.5)

PART -B

Q2 (a) Explain the mechanism of free radical substitution reactions in alkanes citing suitable example. (5)

(b) Write down the differences between S_N1 and S_N2 reaction. (5)

(c) Arrange the following compounds in increasing order of their reactivity towards nucleophilic substitution reactions. Justify your answer as well. (5)

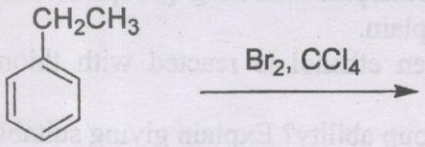


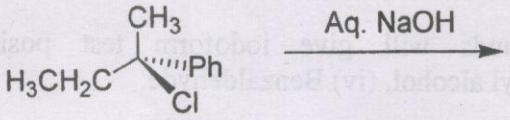
(i) (ii) (iii) (iv)

Q3 (a) Explain the role of solvent in different types of nucleophilic substitution reactions. (5)

(b) Discuss the effect of the nature of substituents on the reactivity of aromatic rings towards electrophilic substitution reactions, and explain their influence on the orientation of the incoming electrophile. Elaborate your answer giving suitable examples. (10)

Q4 Write down the products of the following reactions giving plausible mechanism for each. Also mention the stereochemistry wherever applicable. (5x3)

(i) 

(ii) 

(iii) 

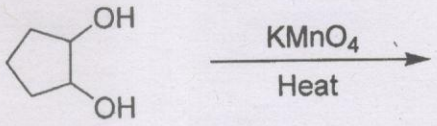
Q5 (a) Briefly explain the followings; (5x2)

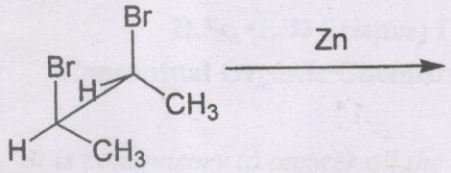
(i) Saytzeff's rule

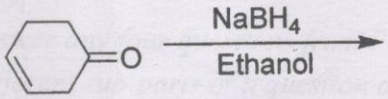
(ii) Oppenauer oxidation

(b) Discuss the effect of nature of substrate on E1 and E2 reactions. (5)

Q6 Write down the products of the following reactions giving plausible mechanism for each; (5x3)

(i) 

(ii) 

(iii) 

Q7 Explain the following name reactions giving suitable example. Also draw suitable mechanism for each. (5x3)

(i) Baeyer-Villiger oxidation
(ii) Wolff-Kishner Reduction
(iii) Rosenmund reduction