Roll No. _____ **Code No. Q-4308**

SECOND SEMESTER EXAMINATION 2021-22

M.Sc. - CHEMISTRY

Paper - II

Organic Chemistry (Reaction-Mechanism)

Time : 3.00 Hrs. **Max. Marks : 80**

Total No. of Printed Page : 03 **Mini. Marks : 29**

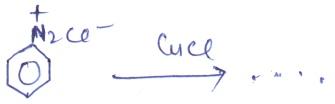
Note: Question paper is divided into three sections. Attempt question of all three section as per direction. Distribution of Marks is given in each section.

Section - 'A'

Very short type question (in few words). **6x2=12**

Q.1 Attempt any six question from the following questions :

(i) Complete and out line the Mechanism of following reaction.



(ii) What is IPSO attack ?

(iii) Complete the following reaction and out line the Mechanism .

$CH_2 = CH - NO_2 \xrightarrow{X^+Y^-} .....$

(iv) How would you synthesise $C_6H_5 - CH = CH - CH_3$.

(v) What are ambidented nucleophiles?

(vi) Complete the following reaction :

$CH_3 - CH_2 - CHO \xrightarrow{Base} .....$

(vii) What is Saytzeff rule ?

(viii) Why bromination of toluene is faster than that of to t-butyl benzene ?

(ix) Which one of the following compound undergoes thermal elimination ?

(a) Acetate (b) Alcohols (c) bromides (d) Chlorides.

(x) Give one example of reduction of unsaturated carbonyl compound by lithium aluminium hydride.

Section - 'B'

Short answer question (In 200 words) **4x5=20**

Q.2 Attempt any four question from the following questions :

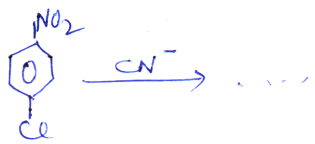
(i) Give evidence to prove E2 reactions are predominantly anti elimination.

(ii) Explain Mechanism of reformatsky reaction?

(iii) Explain why Cis-2 butene on hydrolysis with Bayer's reagent give meso - 2,3 - butane diol?

(iv) Write motes on claisen condentation?

(v) Predict the product in the following reaction and out line the mechanism.



(vi) Discuss solvent effect in aliphatic SN reactions.

(vii) Write the products of the bromination of the l-butene with NBS and indicate the mazor product?

Section - 'C'

Long answer/Essay type question. **4x12=48**

Q.3 Attempt any four question from the following questions :

(i) Write notes on --

(a) Diagenium coupling.

(b) Ortho, Para-directing and deactivating groups.

(c) Vilsmeir reaction.

(ii) Explain the following with suitable examples.

(a) Nucleophilic substitution at an allylic and vinylic carbon.

(b) Aliphatic E^1 and E^2 Mechanism.

(iii) Explain the following :-

(a) Sommelet Hanser rearranpments.

(b) Hunsdicker reaction.

(c) Free radical substitution at an aromatic substrate.

(iv) Give the mechanism of following reaction:

(a) Sharpless Assymmetric epoxidation.

(b) Hydrogenation of C=C in the presence of Metal hydrides.

(v) Write notes on --

(a) Michael addition.

(b) Stereochemistry of addition reactions.

(vi) Discuss the following :-

(a) Benzion condensation.

(b) Knovenagel reaction.

(c) Stobble condensation.

(vii) Explain the following:

(a) Mechanism of reduction of saturated and unsaturated carbonyl compounds by metal hydrides.

(b) Addition of Grignard's reagent, ethyl lithium to carbonyl compounds followed by hydrolysis.

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