



Date: 11-07-2025

Dept. No.

Max. : 100 Marks

Time: 10:00 AM - 01:00 PM

SECTION A- K1 (CO1)**Answer ALL the Questions****1. Draw the structure for the following molecules. (5 x 1 = 5)**

a) 3-methyl-2-hexene.

b) Resorcinol.

c) Picric acid.

d) 18-Crown-6 ether.

e) TNB.

2. Choose the correct answer for the following (5 x 1 = 5)

a) Which of the following is an optically active compound?

(i) n-butyl bromide (ii) sec-butyl bromide (iii) Isobutyl iodide (iv) tert-butyl chloride

b) When primary alcohol is treated with Grignard reagent, it gives:

(i) aldehyde (ii) epoxides (iii) alkane (iv) acid

c) Conversion of phenol into salicylaldehyde proceeds through a reactive species (electrophile) called _____.

(i) Carbanion (ii) Carbocation (iii) Carbene (iv) None of these

d) Which of the following is a symmetrical ether?

(i) diethylether (ii) ethylmethyl ether (iii) anisole (iv) phenol

e) Nitrobenzene combines with hydrogen in the presence of platinum to produce _____.

(i) Toluene (ii) Benzene (iii) Aniline (iv) Azobenzene

SECTION A- K2 (CO1)**Answer ALL the Questions****3. Match the following. (5 x 1 = 5)**

a) Optically inactive – Primary alkene

b) Hoffmann product – Cyclic ether

c) Acidic nature – Aromatic primary amine

d) Epoxide – Meso compound

e) Aniline – Phenol

4. Define the following terms (5 x 1 = 5)

a) Enantiomers.

b) Nucleophile.

c) Lucas Reagent.

d) Crown ethers.

e) Diazonium salt.

SECTION B - K3 (CO2)

Answer any TWO of the following

(2 x 10 = 20)

5.	(a)	Draw the structure of ethane in Sawhorse and Newman projection.	(5)
	(b)	Discuss the optical activity of allenes and spiranes.	(5)
6.		Illustrate the mechanism and stereochemistry of S _N 1 and S _N 2 reactions	(10)
7.	(a)	Explain the mechanism for the nitration of phenol.	(5)
	(b)	Mention the uses of organometallic reagents with example.	(5)
8.	(a)	Predict the product formed when nitro benzene undergoes electro catalytic reduction in acidic medium.	(5)
	(b)	Discuss the various methods of preparation of nitro compounds.	(5)

SECTION C -K4 (CO3)

Answer any TWO of the following

(2 x 10 = 20)

9.		Discuss suitable methods for resolving the racemic mixture.	(10)
10.	(a)	Explain the mechanism for the Reimer-Tiemann reaction of phenol.	(5)
	(b)	Differentiate primary, secondary and tertiary alcohol by Victor Meyer's method.	(5)
11.	(a)	Analyse the stereochemistry of the product obtained in S _N i reaction mechanism with an example.	(5)
	(b)	Discuss the preparation methods of epoxides from alkenes.	(5)
12.	(a)	Explain the tests to distinguish primary, secondary and tertiary amine.	(5)
	(b)	Explain the Gabriel phthalimide synthesis of amines.	(5)

SECTION D -K5 (CO4)

Answer any ONE of the following

(1 x 20 = 20)

13.	(a)	Explain the conformational isomerism of n-butane with potential energy diagram.	(10)
	(b)	Choose any two suitable methods for the synthesis of aryl halides.	(5)
	(c)	Recommend a suitable method for the synthesis of 1-Propanol from Propene.	(5)
14.	(a)	Predict the mechanism for the preparation of phenol from cumene.	(5)
	(b)	Discuss the acid catalyzed cleavage of epoxides.	(5)
	(c)	(i) The substituents have remarkable effect on the basicity of aniline - Justify. (ii) Describe the diazotization reaction mechanism.	(5+5)

SECTION E K6 (CO5)

Answer any ONE of the following

(1 x 20 = 20)

15.	(a)	Summarize the importance of Cahn-Ingold-Prelog rules with suitable examples.	(10)
	(b)	Explain the mechanism for the unimolecular elimination reaction.	(5)
	(c)	Prepare the following ethers. i) aliphatic ether ii) aromatic ether	(5)
16.	(a)	Describe the effect of electron withdrawing and electron releasing groups on acidic nature of phenol.	(5)
	(b)	<i>Ortho</i> -nitrophenol is steam volatile compared to <i>para</i> -nitrophenol – Justify.	(5)
	(c)	Explain the synthesis of ortho and para dinitrobenzenes.	(10)
