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FBISE Chemistry Class 11

Topical workbook - Volume 4 of 4

50 questions arranged by official framework topic.

National Curriculum 2022-23; supported examinations from 2027.

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Hydroxy Compounds

Domain E: Organic Chemistry

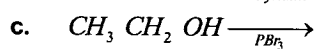
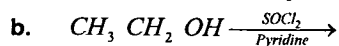
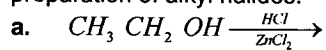
03	OR	How can primary, secondary and tertiary alcohols be distinguished by applying Lucas test?
		Write down the reactions of Ethyl Amine

(ix)	Write down three methods for the preparation of Ethyl chloride from an alcohol.	03	OR	How can primary, secondary and tertiary alcohols be distinguished by applying Lucas test?	03
(x)	Briefly explain the factors which affect the relative			Write down the reactions of Ethyl Acrylate	

How Lucas test can differentiate between Primary, Secondary and Tertiary alcohols?	1x3
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with hydrogen bromide.

Complete the following chemical equations by identifying the major products obtained for the preparation of alkyl halides:



3+3	OR	How are following conversions done?	
		a. Ethanol into Acetaldehyde	2+2
		b. Ethanol into Ethyl Acetate Ester	+2
		c. Ethanol into Ethene	
State Le Chatlier's Principle. How it helps to obtain			

How acetic acid and ethanol react to form an ester? Write the complete reaction.	03
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Give a chemical test which can distinguish between propan-1-ol and propan-2-ol.

03

Write general chemical equation of esterification.
Which type of catalyst is commonly used?

2+1

(ii)	Identify alcohol and carboxylic acid use to prepare methyl propanoate. Give equation for the reaction.	03
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(vi)	Write chemical equations involved in the preparation of Propan-1-ol from the following reagents a) Propene b) 1-Chloro Propane	1.5+ 1.5
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Complete the following reactions:-	
a. $CH_3CH_2-OH + SOCl_2 \xrightarrow{\text{Pyridine}}$	1.5
b. $2CH_3CH_2-OH \xrightarrow[140^\circ C]{\text{Cons. } H_2SO_4}$	1.5

Explain the formation of ethyne molecule on the

OR	a. Explain with the reactions, the oxidation of primary, secondary and tertiary alcohols.	3+4
	b. Write down Lucas Test reactions and its application.	

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Carbonyl

Domain E: Organic Chemistry

6.	The conversion of a nitrile into a carboxylic acid involves which type of reaction, and which reagent/conditions are required?	Hydrolysis using dilute acid or dilute alkali followed by acidification	Oxidation with acidified $K_2Cr_2O_7$ under reflux	Reduction with $LiAlH_4$	Neutralization with NaOH solution
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50.	Which reagent could best be used to distinguish between propanal and propanone?	$Ag(NH_3)_2^+$	Br_2 in CCl_4	2,4-dinitrophenyl hydrazine (2,4-DNPH)	$NaBH_4$ in CH_3OH
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14.	The compound which gives Silver mirror test as well as Iodoform test is:	Ethanol	Ethanal	Propanal	Propanone	☐	☐	☐	☐
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15.	Which pair of organic compounds can be distinguished by using 2, 4-DNPH?	Ethanol and Acetone	1-Propanol and 2-Propanol	Ethanal and Ethanol	Ethyl chloride and Ethyl bromide	☐	☐	☐	☐
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17.	Which of the following organic compound can be identified by Fehling solution test?	CH_3-CH_2-OH	CH_3-COOH	CH_3CH_2CHO	CH_3-CH_2-Cl	☐	☐	☐	☐
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OR	Write down the mechanism of base catalysed nucleophilic addition reaction of formaldehyde ($HCHO$) with HCN .	03
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	Diagram.	
OR	How can Iodoform test be applied for identification of aldehydes and ketones? Describe by giving chemical equations.	1.5 + 1.5

3+3	OR	Write down a chemical reaction between CH_3COOH and CH_3OH with necessary conditions. Also write the mechanism of this reaction, explaining each step.	2+4
		Describe the behaviour of 1-propanol and 2-propanol.	

Second Annual 2025 | Section A Q15 | 1 mark

aldehydes from ketones?	reagent	catalyst	reagent	
15. Aldehydes can be oxidized to:	Carboxylic acids	Ketones	Alcohols	Esters

Second Annual 2025 | Section B Q2(xii) OR | 3 marks

Describe the use of 2,4-dinitrophenylhydrazine to detect presence of carbonyl compounds.	03
Complete the given equations by identifying the	

	representation.			c. Ethanol into Ethene	
Q.6	What is meant by Nucleophilic addition reactions? Write mechanism of the reaction when HCN reacts with Formaldehyde and NaOH act as a base.	2+4	OR	State Le-Chatlier's Principal. How it helps to obtain maximum product in: a. Exothermic reactions b. Endothermic reactions	2+2 +2

Q.4	How can ethanoic acid be prepared from the following? Write all reagents and conditions with chemical equation: a. Ethanol b. Ethane nitrile c. Ethyl acetate	2x3
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First Annual 2026 | Section A Q8 | 1 mark

Which compound will NOT give a positive Fehling's Test?	Ethanal	Methanal	Propanone	Propanal
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First Annual 2026 | Section A Q15 | 1 mark

Ethanal is reduced by NaBH_4 to produce:	Ethene	Ethanol	Ethanoic acid	Ethane
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First Annual 2026 | Section A Q17 | 1 mark

Acetone reacts with iodine and aqueous sodium hydroxide to produce:	Yellow ppt	Red ppt	Blue ppt	Green ppt
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Write equation of formation of a primary alcohol from:	1.5
a. Reduction of a carbonyl compound	+
b. Reduction of a carboxylic acid	1.5

Which carboxylic acids are produced from the following chemicals? Write all the reagents, conditions and complete chemical equation for the reactions:	2x3
a. Propane nitrite	
b. Methyl acetate	
c. Ethanal	

viii.	Which one of the following reacts with aldehyde to give red precipitates of copper(I) oxide	Grignard's Reagent	Fehlings solution	Tollen's solution	KMnO ₄
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xv.	Identify which reagent is used to convert ethanal into ethanol?	KMnO ₄	Zn/HCl	H ₂ SO ₄	LiAlH ₄
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OR	a. Write down the general mechanism of nucleophilic addition reactions of aldehydes and ketones.
	b. Explain the chemistry and usage of: (i) Fehling's solution test (ii) Tollens' test

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Nitrogen Compounds-

Domain E: Organic Chemistry

53.	Which statement correctly describes a secondary amine?	Nitrogen bonded to one alkyl group and two hydrogens	Nitrogen bonded to two alkyl groups and one hydrogen	Nitrogen bonded to three alkyl groups	Nitrogen bonded only to hydrogen atoms
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First Annual 2025 | Section B Q2(x) OR | 3 marks

be distinguished by applying Lucas test?	
OR	Write down the reactions of Ethyl Amine ($C_2H_5-NH_2$) with: a) CH_3CH_2-Cl b) HNO_2 / HCl
	1.5 + 1.5

Second Annual 2025 | Section B Q2(vii) OR | 3 marks

What is the basic character of amines?	1.5
Write the General formulas of Primary, Secondary and Tertiary amines.	1x3
What is Catenation? How is it important in organic chemistry?	1.5

First Annual 2026 | Section A Q13 | 1 mark

Methylamine is a stronger base than:	NH_3	Dimethyl amine	Methyl ethyl amine	Diethyl amine
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xiii.	Identify the most basic amine.	$\text{CH}_3\text{CH}_2\text{NH}_2$	$(\text{CH}_3)_3\text{N}$	CH_3NHCH_3	$\text{CH}_3\text{CH}_2\text{NHCH}_3$	☐	☐	☐	☐
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Amines

Domain E: Organic Chemistry

1.5 + 1.5	OR	Describe the preparation methods of primary and secondary amines by nucleophilic substitution reaction.	1.5 + 1.5
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Describe the preparation methods of diethyl amine, $(C_2H_5)_2NH$ using a. nucleophilic substitution reactions b. reduction of nitro compounds	1.5+ 1.5
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1x3 OR	Write down the reactions in which the following molecules are converted into corresponding amines: a. CH_3CN b. $C_6H_5NO_2$ c. $CH_3-\underset{\text{H}}{\underset{ }{C}}-NH_2$
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Organic Synthesis

Domain E: Organic Chemistry

22.	Which compound will undergo nucleophilic addition reaction with HCN?	Propane	Propene	Propanone	Propanol
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46.	What intermediate compound is formed when ethanal is converting to lactic acid?	Ethanol	Ethanoic acid	Cyanohydrin	Ethene
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13.	Which reagent is used for the reduction of Carboxylic acids to Alcohols?	$KMnO_4$	$K_2Cr_2O_7$	$LiAlH_4$	H_2/Pt	☐	☐	☐	☐
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(vi)	Write chemical equation for the preparation of ethanol from:	1.5
	a. Ethanal	+
	b. Ethanoic acid	1.5

(i)	Devise a synthetic route to convert methane into ethanoic acid.	03
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Acid Base Titration

Domain G: Lab and Practical Skills

