INDIAN SCHOOL AL WADI AL KABIR		
CLASS: XI	**DEPARTMENT: SCIENCE (2026-27)** **SUBJECT: CHEMISTRY**	**Date: 08/11/2026**
Worksheet No.: 07 with answers	**TOPIC: HYDROCARBONS**	**NOTE: A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

MULTIPLE CHOICE QUESTIONS

1.	Which reaction is used for the preparation of alkanes from alkyl halides? a) Wurtz reaction b) Friedel–Crafts reaction c) Kolbe's reaction d) None of these	**1**
2.	Which of the following reactions is characteristic of alkenes? a) Substitution b) Addition c) Elimination d) Neutralization	**1**
3.	Ethane can be prepared by decarboxylation from a) Butane b) Sodium ethanoate c) Sodium propanoate d) Sodium methanoate	**1**
4.	Which of the following compounds cannot be prepared by Kolbe's electrolysis? a) Methane b) Ethane c) Propane d) Butane	**1**
5.	IUPAC name of $(CH_3)_3CCH_2C(CH_3)_3$ is …… a) 2, 2, 3, 3-Tetramethylbutane b) 2, 2, 4, 4-Tetramethylpentane c) 2, 2, 4, 4-Tetramethylhexane d) 1,1,1,3,3,3-Hexamethylpropane	**1**

6.	IUPAC name of isobutane is ……. a) 2-Methylbutane b) 2, 2-Dimethylbutane c) 2, 2-Dimethylpropane d) 2-Methylpropane	**1**
7.	The reagent used to prepare Ethene from 1,2-Dibromoethane is ……. a) Conc. H_2SO_4 b) Zn c) aq. KOH d) Alcoholic KOH	**1**
8.	The correct decreasing order of acidic strength of the following compounds is … a) $HC \equiv CH > H_2C = CH_2 > CH_3 – CH_3$ b) $H_2C = CH_2 > CH_3 – CH_3 > HC \equiv CH$ c) $CH_3 – CH_3 > HC \equiv CH > H_2C = CH_2$ d) $CH_3 – CH_3 > H_2C = CH_2 > HC \equiv CH$	**1**
9.	Which catalyst is used in hydrogenation of alkenes? a) Fe b) Ni c) Cu d) Zn	**1**
10.	Identify the meta directing group from the following. a) – Cl b) – OH c) - CHO d) – NH_2	**1**

Read the given passage and answer the questions that follow:

Alkanes contain carbon-carbon sigma (σ) bonds. Electron distribution of the sigma molecular orbital is symmetrical around the internuclear axis of the C–C bond which is not disturbed due to rotation about its axis. This permits free rotation about C–C single bond. This rotation results into different spatial arrangements of atoms in space which can change into one another. Such spatial arrangements of atoms which can be converted into one another by rotation around a C-C single bond are called conformations or conformers or rotamers.

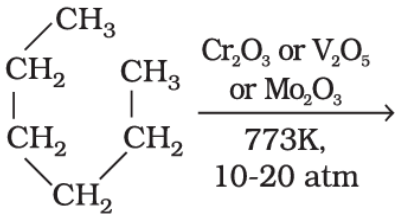
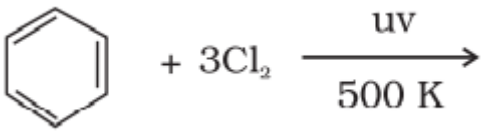
11.	What are skew conformations?	**1**
12.	Draw Sawhorse projections of eclipsed and staggered conformations of Ethane.	**2**
13.	What do you mean by torsional strain?	**1**

Assertion and Reason Type

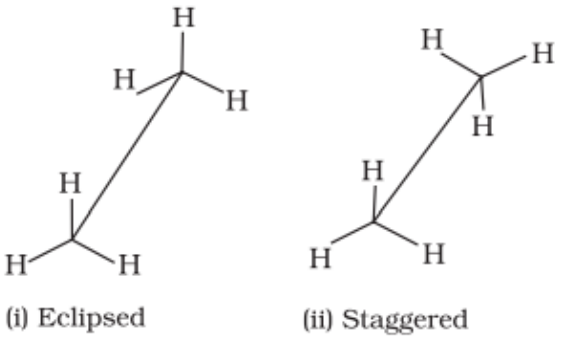
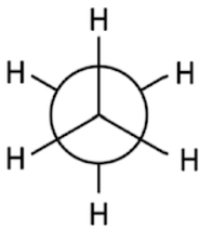
14.	Assertion: For alkanes, there is a steady increase in boiling point with increase in molecular mass Reason: van der Waals forces increase with increase of the molecular size or the surface area of the molecule. a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion. b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion. c) Assertion is correct, but reason is wrong statement. d) Assertion is wrong, but reason is correct statement.	**1**
15.	Assertion: Benzene prefers addition reactions over substitution reactions. Reason: This is due to the absence of pure double bond in benzene a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion. b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion. c) Assertion is correct, but reason is wrong statement. d) Assertion is wrong, but reason is correct statement.	**1**
16.	Assertion: The peroxide effect is not observed in addition of HCl and HI Reason: Both H–Cl and H-I bonds are too strong to be broken by the free radical. a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion. b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion. c) Assertion is correct, but reason is wrong statement. d) Assertion is wrong, but reason is correct statement	**1**

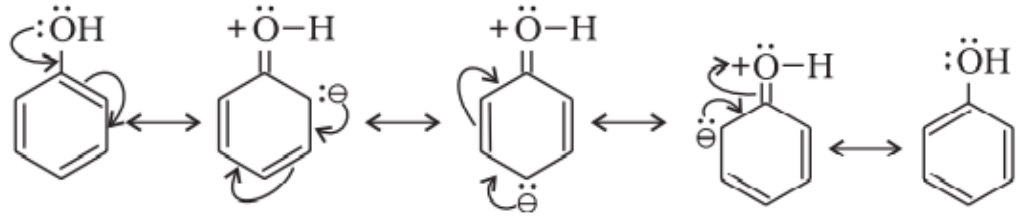
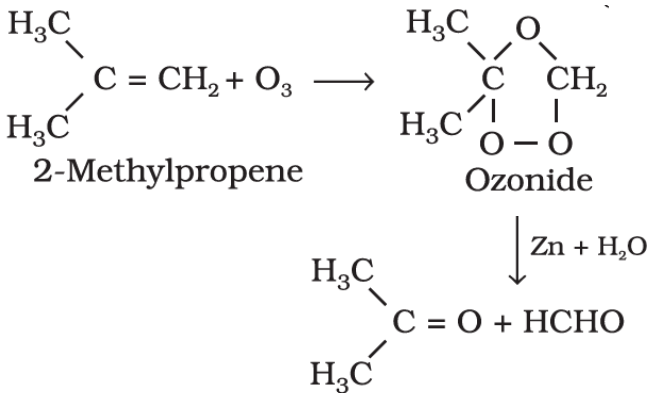
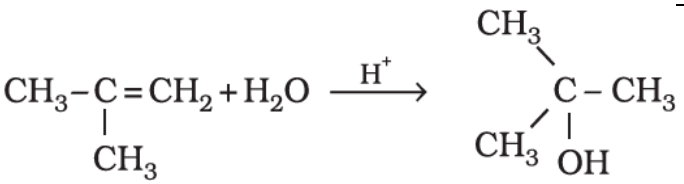
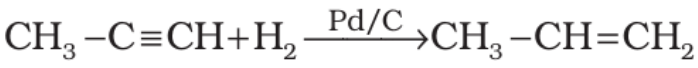
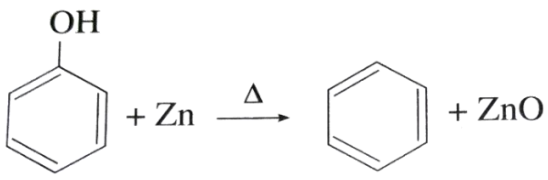
Question – Answer Type:

17.	How will you prepare Ethane from Bromomethane?	**1**
18.	Draw Newman projection of staggered conformation of Ethane.	**1**
19.	Identify the alkene which on ozonolysis yields only Propanal.	**1**
20.	Why is benzene considered as aromatic?	**2**

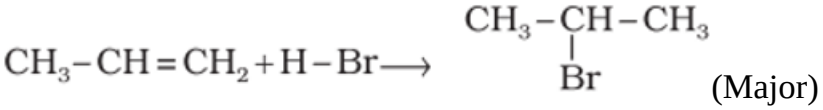
21.	With the help of resonance structures, explain directive influence of phenolic (–OH) group.	**2**
22.	Explain the directive influence of substituents in benzene during electrophilic substitution.	**2**
23.	Write an equation for the ozonolysis of 2-Methylpropene.	**2**
24.	Convert the following: a) 2-Methylpropene to 2-Methylpropan-2-ol b) Propyne to Propene c) Phenol to Benzene	**3**
25.	Complete the following reaction and write the mechanism: 	**3**
26.	a) Complete the following reaction and write the mechanism:  b) Complete the following reactions: i)  ii) 	**5**

ANSWERS

1.	a) Wurtz reaction
2.	b) Addition
3.	b) Sodium ethanoate
4.	a) Methane
5.	b) 2, 2, 4, 4-Tetramethylpentane
6.	d) 2-Methylpropane
7.	b) Zn
8.	a) $HC \equiv CH > H_2C = CH_2 > CH_3 - CH_3$
9.	b) Ni
10.	c) - CHO
11.	Any intermediate conformations other than eclipsed and staggered are called skew conformations.
12.	 (i) Eclipsed (ii) Staggered
13.	Rotation around a C-C single bond is not completely free. It is hindered by a small energy barrier due to weak repulsive interaction between the adjacent bonds. Such a type of repulsive interaction is called torsional strain.
14.	a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
15.	d) Assertion is wrong, but reason is correct statement.
16.	c) Assertion is correct, but reason is wrong statement.
17.	$CH_3Br + 2Na + BrCH_3 \xrightarrow{\text{dry ether}} CH_3 - CH_3 + 2NaBr$
18.	
19.	Prop-3-ene

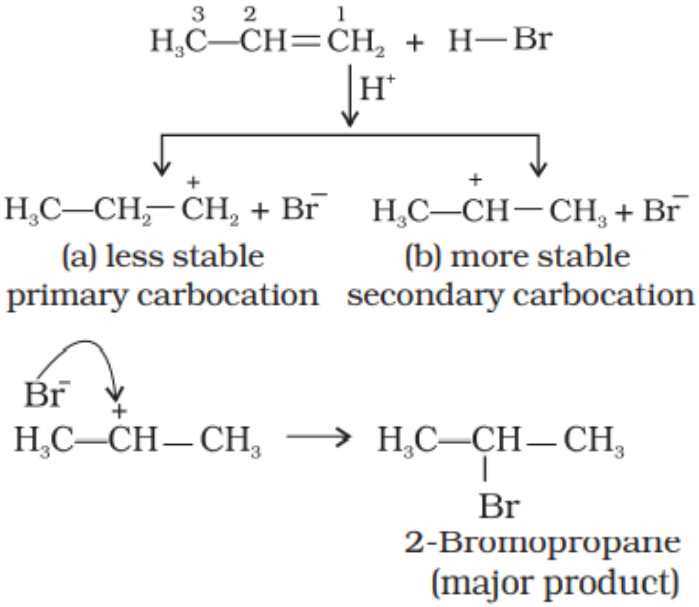
20.	Benzene is considered aromatic because: • It has a cyclic, planar structure. • It contains 6 delocalised π-electrons that follow Huckel's rule (4n+2, where n=1). • It shows resonance stabilization, making it more stable than expected for an unsaturated compound.
21.	 The electron density is more on o – and p – positions. Hence, the substitution takes place mainly at these positions.
22.	Substituents already present on benzene influence the position of incoming groups. • Electron-donating groups are usually ortho/para directing (–OH, $–NH_2$):. • Electron-withdrawing groups ($–NO_2$, –CN): Meta directing. This is due to resonance and inductive effects altering electron density in the ring.
23.	 2-Methylpropene Ozonide $Zn + H_2O$
24.	a)  b)  c)  phenol benzene

25.

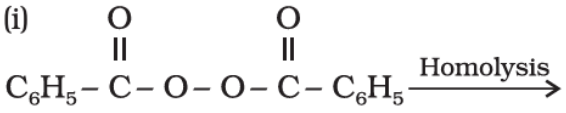


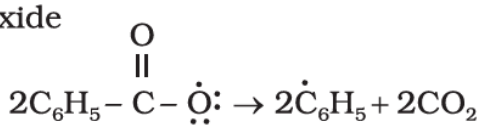
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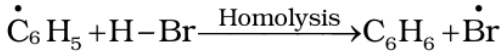
Mechanism

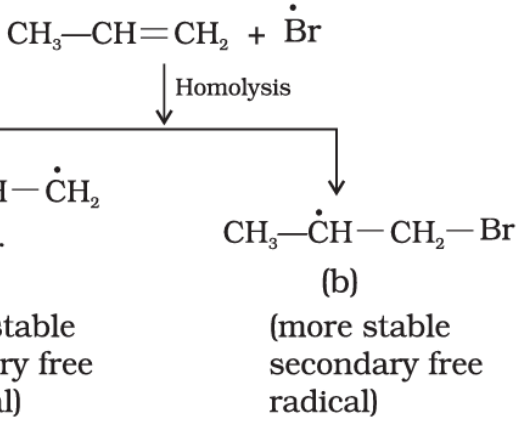


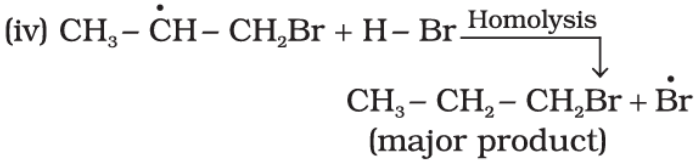
26. a)

(i) 



(ii) 

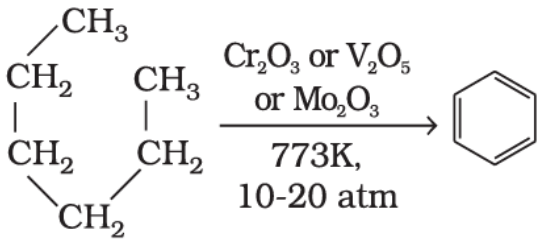
(iii) 

(iv) 

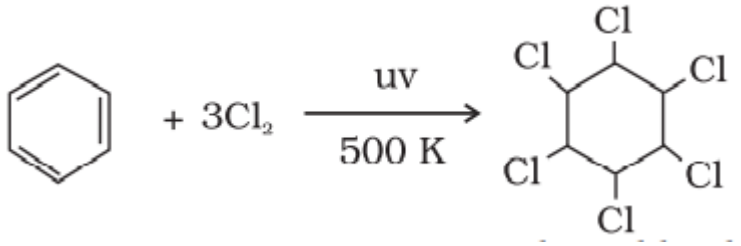
(v) $CH_3-\underset{\underset{Br}{|}}{CH}-\dot{C}H_2 + H-Br \xrightarrow{\text{Homolysis}} CH_3-\underset{\underset{Br}{|}}{CH}-CH_3 + \dot{Br}$

(minor product)

b) i)



ii)



Prepared by:	*Checked by:*
Mr Anoop Stephen	*HOD Science*