



**INDIAN SCHOOL AL WADI AL KABIR**  
**DEPARTMENT OF SCIENCE 2021 - 22**  
**CLASS 12- UNIT TEST 1 – CHEMISTRY - 2021**  
**[QUESTIONPAPER & ANSWER KEY]**

Date: 24/05/2021

Max. Marks: 30

Class: XII

Subject: **CHEMISTRY**

Time: 1 hour

General instructions:

- \* There are 30 questions.
- \* Each question carries one mark.
- \* All questions are compulsory.
- \* Choose only one answer from the options given.

**SECTION A**

Read the given passage and answer the questions that follow:

Alcohols and phenols are formed when a hydrogen atom in a hydrocarbon, aliphatic and aromatic respectively, is replaced by –OH group. These classes of compounds find wide applications in industry as well as in day-to-day life. The sugar we eat, the cotton used for fabrics, the paper we use for writing, are all made up of compounds containing –OH groups. The substitution of a hydrogen atom in a hydrocarbon by an alkoxy or aryloxy group yields another class of compounds known as ‘ethers’,

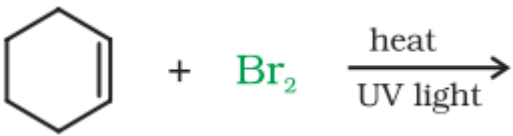
1.	What are the compounds formed when Ethanol is heated with concentrated sulphuric acid at 413 K and at 443 K respectively?  a) Ethanal and Ethoxyethane b) Ethene and Ethoxyethane c) Ethanal and Ethanoic acid d) Ethoxyethane and Ethene	1
2.	Identify the organic product(s) obtained in the following reaction.  $\text{C}_2\text{H}_5\text{ONa} + \text{CH}_3 - \underset{\text{CH}_3}{\overset{\text{CH}_3}{\text{C}}} - \text{Cl} \longrightarrow$	1

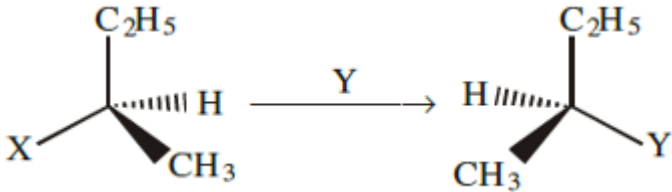
	<ul style="list-style-type: none"> <li>a) 2-Ethoxy-2-methylpropane</li> <li>b) 2-Ethoxy-2-ethylpropane</li> <li>c) 2-Methylprop-1-ene and Ethanol</li> <li>d) 2-Methylbut-2-ene and Methanol</li> </ul>	
3.	<p>Name the reagent used to convert Butan-2-one to Butan-2-ol.</p> <ul style="list-style-type: none"> <li>a) NaBH<sub>4</sub></li> <li>b) PCC</li> <li>c) CrO<sub>3</sub></li> <li>d) Acidified K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub></li> </ul>	1
4.	<p>Oxidation of phenol with sodium dichromate and sulphuric acid produces .....</p> <ul style="list-style-type: none"> <li>a) Benzene</li> <li>b) Benzoquinone</li> <li>c) Salicylic acid</li> <li>d) Salicylaldehyde</li> </ul>	1
5.	<p>What are the products obtained when 1-Ethoxypropane is treated with HI?</p> <ul style="list-style-type: none"> <li>a) Propan-1-ol and Iodoethane</li> <li>b) 1-Iodopropane and Ethanol</li> <li>c) Propene and Ethanol</li> <li>d) Propan-1-ol and Ethene</li> </ul>	1

### SECTION B

Questions 6 to 25 are multiple choice questions:

6.	<p>Identify the compound with highest dipole moment.</p> <ul style="list-style-type: none"> <li>a) CH<sub>3</sub>F</li> <li>b) CH<sub>3</sub>Cl</li> <li>c) CH<sub>3</sub>Br</li> <li>d) CH<sub>3</sub>I</li> </ul>	1
7.	<p>Sulphuric acid is not used during the reaction of alcohols with KI. This is because</p> <ul style="list-style-type: none"> <li>a) Sulphuric acid is a strong dibasic acid</li> <li>b) Sulphuric acid is a strong reducing agent</li> <li>c) Sulphuric acid is a strong oxidising agent</li> <li>d) None of these</li> </ul>	1

<p><b>8.</b></p>	<p>Among the isomeric alkanes of molecular formula <math>C_6H_{14}</math>, identify the one that on photochemical chlorination yields three isomeric monochlorides.</p> <p>a) 2-Methylpentane  b) 3-Methylpentane  c) 2,3-Dimethylbutane  d) 2,2-Dimethylbutane</p>	<p>1</p>
<p><b>9.</b></p>	<div style="text-align: center;">  </div> <p>The major organic product obtained in the above reaction is</p> <p>a) 2,2-Dibromocyclohexane  b) 2-Bromocyclohexene  c) 3-Bromocyclohexene  d) 4-Bromocyclohexene</p>	<p>1</p>
<p><b>10.</b></p>	<p>Which of the following compounds has the lowest boiling point?</p> <p>a) 1-Bromopropane  b) 2-Bromobutane  c) 1-Bromobutane  d) 1-Bromopentane</p>	<p>1</p>
<p><b>11.</b></p>	<p>Identify the compound that shows highest reactivity towards the <math>S_N1</math> reaction.</p> <p>a) 1-Chlorobut-1-ene  b) 1-Chlorobut-2-ene  c) 4-Chlorobut-1-ene  d) 1-Chlorobutane</p>	<p>1</p>

12.	<p>Identify the compound that shows highest reactivity towards <math>S_N2</math> reaction.</p> <p>a) <math>\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}</math>  b) <math>(\text{CH}_3)_3\text{CCl}</math>  c) <math>\text{CH}_3\text{CH}_2\text{CH}(\text{Cl})\text{CH}_3</math>  d) <math>(\text{CH}_3)_2\text{CHCH}_2\text{Cl}</math></p>	1
13.	<p>Consider the replacement of a group X by Y in the following reaction</p>  <p>This process is called .....</p> <p>a) retention of configuration.  b) inversion of configuration.  c) racemisation  d) <math>\beta</math>-elimination</p>	1
14.	<p>The major organic product obtained when 2-Bromopentane is treated with aqueous KOH is .....</p> <p>a) Pent-1-ene  b) Pent-2-ene  c) Pentan-2-ol  d) Pentane</p>	1
15.	<p>Toluene can be prepared by treating a mixture of Chlorobenzene and Chloromethane with sodium in presence of dry ether. This reaction is called</p> <p>a) Fittig reaction  b) Fittig reaction  c) Wurtz-Fittig reaction  d) Finkelstein reaction</p>	1
16.	<p>Which of the following is a secondary alcohol?</p> <p>a) Isopropyl alcohol  b) Isobutyl alcohol  c) 2-Methylpropan-2-ol  d) 2,2-Dimethylpropan-1-ol</p>	1

<p><b>17.</b></p>	<p>Identify the correct IUPAC name of the following compound</p> $  \begin{array}{ccccccc}  & & \text{CH}_3 & & & & \\  & &   & & & & \\  \text{CH}_3 & - & \text{C} & - & \text{CH} & - & \text{CH}_3 \\  & &   & &   & & \\  & & \text{C}_2\text{H}_5 & & \text{OH} & &   \end{array}  $ <p>a) 3-Ethyl-3-methylbutan-2-ol  b) 2-Ethyl-2-methylbutan-3-ol  c) 3,3 - Dimethylpentan-4-ol  d) 3,3 - Dimethylpentan-2-ol</p>	<p>1</p>
<p><b>18.</b></p>	<p>Which of the following compounds are weaker acids than phenol?</p> <p>(i) 4-Methoxyphenol      (ii) 3, 5-Dinitrophenol  (iii) 4-Methylphenol      (iv) 4-Nitrophenol</p> <p>a) i, iii, iv  b) Only ii  c) ii, iv  d) i, iii</p>	<p>1</p>
<p><b>19.</b></p>	<p>Identify the correct statement from the following.</p> <p>a) The bond angle in ether is slightly lower than the tetrahedral angle and C–O bond length is greater than in alcohols.  b) The bond angle in ether is slightly greater than the tetrahedral angle and C–O bond length is shorter than in alcohols.  c) The bond angle in ether is slightly lower than the tetrahedral angle and C–O bond length is almost the same as in alcohols.  d) The bond angle in ether is slightly greater than the tetrahedral angle and C–O bond length is almost the same as in alcohols.</p>	<p>1</p>
<p><b>20.</b></p>	<p>Which of the following compounds has the highest pKa value?</p> <p>a) Phenol  b) o-Cresol  c) Ethanol  d) Methanol</p>	<p>1</p>

21.	<p>When the vapours of Butan-2-ol are passed over heated copper at 573 K,</p> <p>a) dehydrogenation takes place and Butanal is formed  b) dehydrogenation takes place and Butan-2-one is formed  c) dehydrogenation takes place and But-2-ene is formed  d) dehydration takes place and But-2-ene is formed</p>	1
22.	<p>Identify the reagent used to convert Prop-2-enenitrile to Prop-2-enal is</p> <p>a) DIBAL-H  b) Stannous chloride in presence of hydrochloric acid  c) Hydrogen in presence of Palladium-Barium sulphate mixture  d) CO and HCl in presence of anhydrous aluminium chloride</p>	1
23.	<p>The alkene which on ozonolysis produces Propanal and Propanone is .....</p> <p>a) 2-Methylpent-1-ene  b) 2-Methylpent-2-ene  c) 3-Methylpent-2-ene  d) Hex-3-ene</p>	1
24.	<p>Which of the following compounds is formed when Propanoyl chloride is reacted with Dimethylcadmium?</p> <p>a) Butan-1-ol  b) Butan-2-ol  c) Butanal  d) Butan-2-one</p>	1
25.	<p>The organic compound formed when Propiophenone is reduced by NaBH<sub>4</sub> is</p> <p>a) 2-Phenylpropan-2-ol  b) 2-Phenylpropan-1-ol  c) 1-Phenylpropan-1-ol  d) 1-Phenylpropan-2-ol</p>	1

**SECTION C** Assertion and Reasoning questions:

<b>26.</b>	Assertion: Electrophilic substitution reactions in haloarenes occur slowly. Reason: C-X bond has a partial double bond character due to resonance.  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
<b>27.</b>	Assertion: Bromoethane has higher density than Chloroethane Reason: Chlorine is more electronegative than Bromine  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
<b>28.</b>	Assertion: The C-O-H bond angle in Methanol is slightly greater than the tetrahedral angle. Reason: There is repulsion between lone pairs of electrons present on oxygen.  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
<b>29.</b>	Assertion: The ortho and para Nitrophenols can be separated by steam distillation. Reason: o-Nitrophenol is less volatile due to intramolecular hydrogen	1

	<p>bonding while p-nitrophenol is steam volatile due to intermolecular hydrogen bonding.</p> <p>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.</p>	
<b>30.</b>	<p>Assertion: Lower members of aldehydes and ketones are miscible with water.</p> <p>Reason: They form hydrogen bonds with water molecules.</p> <p>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.</p>	1

### ANSWER KEY

<b>1.</b>	d) Ethoxyethane and Ethene
<b>2.</b>	c) 2-Methylprop-1-ene and Ethanol
<b>3.</b>	a) NaBH <sub>4</sub>
<b>4.</b>	b) Benzoquinone
<b>5.</b>	a) Propan-1-ol and Iodoethane
<b>6.</b>	b) CH <sub>3</sub> Cl
<b>7.</b>	c) Sulphuric acid is a strong oxidising agent
<b>8.</b>	d) 2,2-Dimethylbutane
<b>9.</b>	c) 3-Bromocyclohexene
<b>10.</b>	a) 1-Bromopropane
<b>11.</b>	b) 1-Chlorobut-2-ene
<b>12.</b>	a) CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> Cl



13.	b) inversion of configuration
14.	c) Pentan-2-ol
15.	c) Wurtz-Fittig reaction
16.	a) Isopropyl alcohol
17.	d) 3,3 - Dimethylpentan-2-ol
18.	d) i, iii
19.	d) The bond angle in ether is slightly greater than the tetrahedral angle and C–O bond length is almost the same as in alcohols.
20.	c) Ethanol
21.	b) dehydrogenation takes place and Butan-2-one is formed
22.	a) DIBAL-H
23.	b) 2-Methylpent-2-ene
24.	d) Butan-2-one
25.	c) 1-Phenylpropan-1-ol
26.	b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
27.	b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
28.	d) Assertion is wrong, but reason is correct statement.
29.	c) Assertion is correct, but reason is wrong statement.
30.	a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.

Prepared by Mr. Anoop Stephen

Checked by : HOD - SCIENCE