

MDCAT MCQS WITH EXPLANATION

CHAPTER (ALCOHOLS, PHENOLS AND ETHER)

(PART 2)CHEMISTRY.

“MCQ’s”

Q26. Which one is the formula of wood spirit?

- a. CH_3OH
- b. $\text{C}_2\text{H}_2\text{OH}$
- c. CH_3COOH
- d. HCOOH

Q27. The reaction of an alcohol with carboxylic acid in presence of concentrated H_2SO_4 to form an ester involves the breaking of:

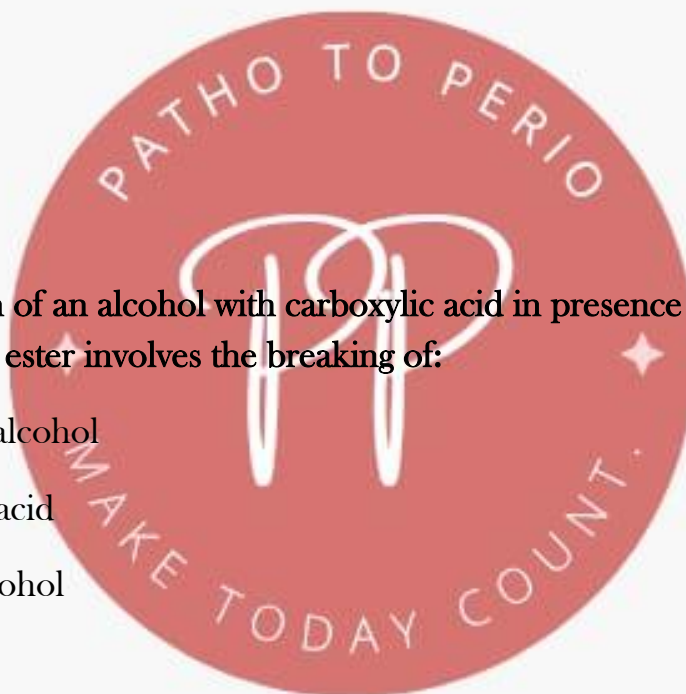
- a. C-OH bond in alcohol
- b. C-OH bond in acid
- c. OH bond in alcohol
- d. Both b & c

Q28. Ethyl alcohol can be distinguished from methyl alcohol by:

- a. Lucas test
- b. Iodoform test
- c. Silver mirror test
- d. Ring test

Q29. First product of oxidation primary alcohol is?

- a. Aldehyde



- b. Ester
- c. Carboxylic acid
- d. Ketone

Q30. Considering O-H Bond Breaking, the correct reactivity order is:

- a. $\text{CH}_3\text{OH} > 1^\circ\text{alcohol} > 2^\circ\text{alcohol} > 3^\circ\text{alcohol}$
- b. $3^\circ\text{alcohol} > 2^\circ\text{alcohol} > 1^\circ\text{alcohol} > \text{CH}_3\text{OH}$
- c. $1^\circ\text{alcohol} > 2^\circ\text{alcohol} > 3^\circ\text{alcohol} > \text{CH}_3\text{OH}$
- d. None of them

Q31. Considering C-O Bond Breaking, the most reactive alcohol is:

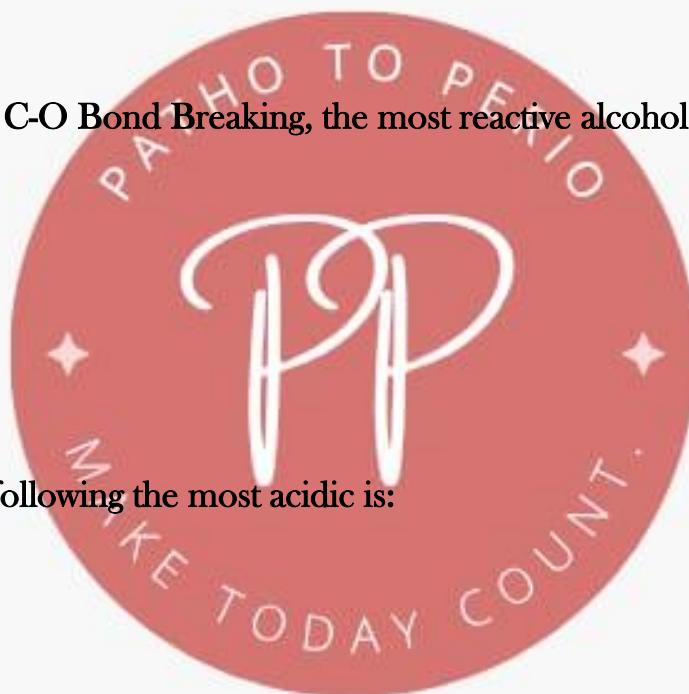
- a. $\text{T}^\circ\text{alcohol}$
- b. $\text{S}^\circ\text{-alcohol}$
- c. $\text{P}^\circ\text{alcohol}$
- d. CH_3OH

Q32. Among the following the most acidic is:

- a. Alcohol
- b. Phenol
- c. Carbonic acidic
- d. Water

Q33. Sodium ethoxide is a:

- a. Nucleophile
- b. Electrophile
- c. Lewis acid
- d. Both a & b



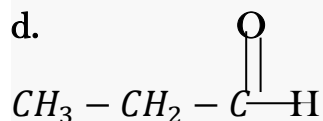
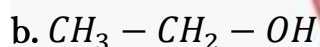
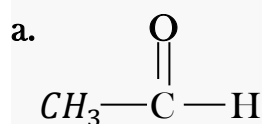
Q34. Organic compounds, which are considered to be the derivatives of water, are:

- a. Alcohols
- b. Ethers
- c. Phenols
- d. All of these

Q35. Which of the following pair contains isomers of each other?

- a. Propanoic acid and propanone
- b. Acetone and acetaldehyde
- c. Ethyl alcohol and dimethyl ether
- d. Methyl alcohol and dimethyl ether

Q36. Which one of the following compound will not give haloform test?



c.



Q37. Which one of the following reagents can be used to distinguish between ethene and acetylene the two compounds shown below?

- a. Bromine solution
- b. KMnO_4 solution
- c. Tollen's reagent
- d. All of these

Q38. Which reagent gives a white ppt when added to phenol is?

- a. Aqueous Bromine
- b. NaOH(aq)
- c. $\text{Na}_2\text{CO}_3\text{(aq)}$
- d. None of these

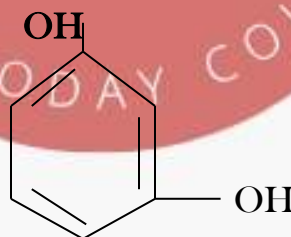
Q39. Which of the following is used for the preparation of phenol?

- a. Dow process
- b. Kolbe process
- c. Wolfkishner process
- d. Esterification

Q40. At room temperature phenol is;

- a. solid
- b. liquid
- c. gas
- d. none

Q41. The common name of the



- a. Catechol
- b. Resorcinol
- c. Hydroquinone
- d. None of these

Q42. A compound 'x' reacts with excess of bromine water to form a white precipitate the 'x' may be:

- a. Alcohol
- b. Alkene
- c. Phenol
- d. Ether

Q43. Phenols react with acid halides or acid anhydrides in aqueous alkali solution to produce:

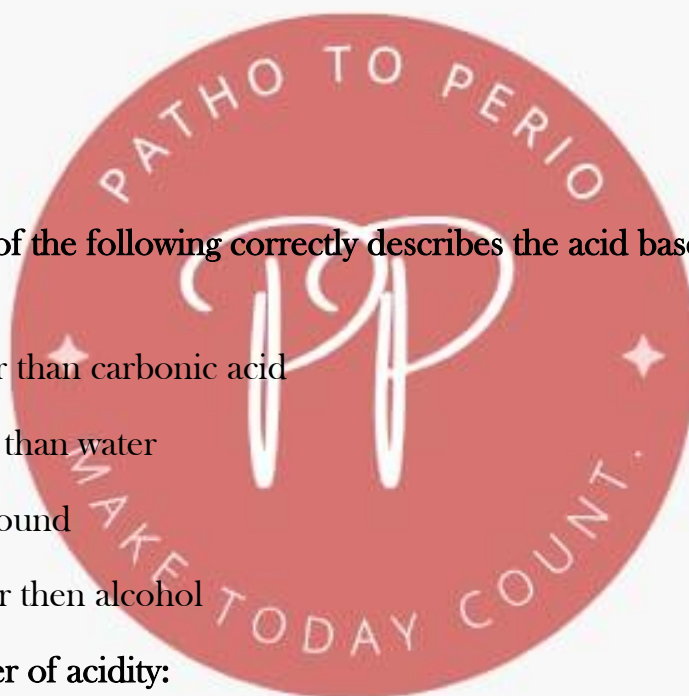
- a. Ethers
- b. Esters
- c. Ketones
- d. Aldehydes

Q44. Which one of the following correctly describes the acid base properties of phenol?

- a. An acid stronger than carbonic acid
- b. An acid weaker than water
- c. A natural compound
- d. An acid stronger than alcohol

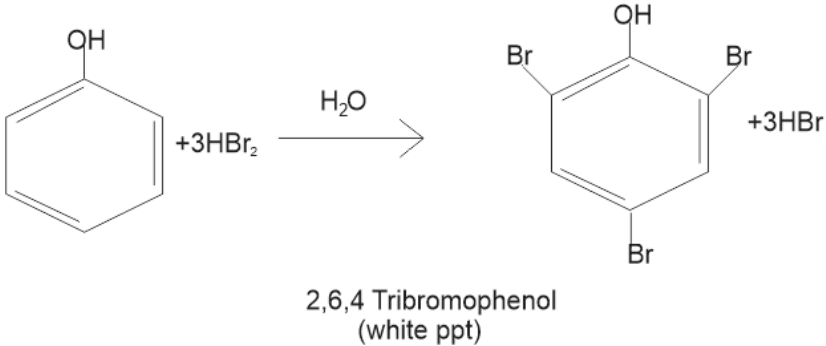
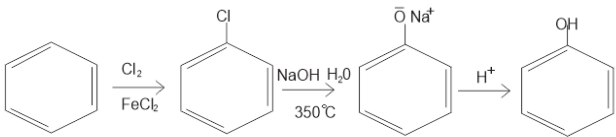
Q45. Correct order of acidity:

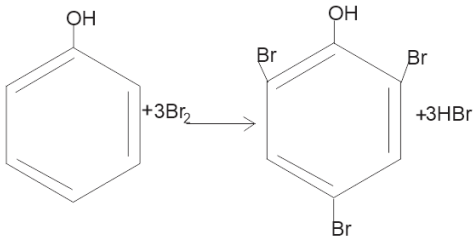
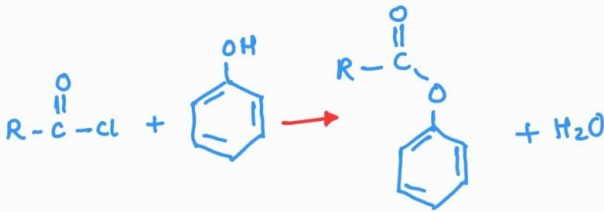
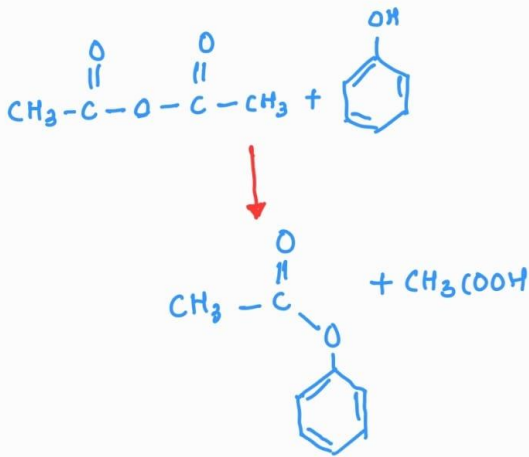
- a. Phenol > Water > Alcohol
- b. Phenol > Alcohol > Water
- c. Alcohol > Water > Phenol
- d. Water > Phenol > Alcohol



“EXPLANATION OF MCQ’s”

MCQ's No	Correct Option	EXPLANATION
26.	D	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{R}-\text{C}-\boxed{\text{O}-\text{H}+\text{H}}-\text{O}-\text{R} \xrightarrow{\text{conH}_2\text{SO}_4} \text{R}-\text{C}-\overset{\text{O}}{\parallel}-\text{O}-\text{R} + \text{H}_2\text{O} \\ \text{Carboxylic Acid} \qquad \text{alcohol} \qquad \qquad \qquad \text{Ester} \end{array} $ <p>OH bond of alcohol and C–O bond of carboxylic acid is broken.</p>
27.	B	<p>Ethyl alcohol can give iodoform test while methyl alcohol give iodoform test.</p> $ \begin{array}{c} \text{CH}_3-\text{CH}_2-\text{OH} + 4\text{I}_2 + 6\text{OH}^- \rightarrow \text{CHI}_3 + 5\text{I}^- + 5\text{H}_2\text{O} + \text{H}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}^- \\ \text{O}^- \qquad \qquad \qquad \text{Iodoform} \qquad \qquad \qquad \text{methane} \\ \text{(Positive iodoform test)} \\ \text{CH}_2-\text{OH} + 4\text{I}_2 + 6\text{OH}^- \rightarrow \text{NO Reaction} \\ \text{\{Negative Iodoform test\}} \end{array} $
28.	A	<p>As</p> $ \text{R}-\text{CH}_2-\text{OH} + [\text{O}] \xrightarrow{\text{K}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4} \text{R}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{H} $ <p style="text-align: center;">Distill</p> <p>Thus the first product obtained is aldehyde and further oxidation carboxylic acid can be obtained.</p>
29.	A	<p>When the OH bond breaks alkoxide is formed having negative charge on oxygen. Greater the alkyl group more will be the inductive effect and make the alkoxide ion more unstable..</p>
30.	A	$3^\circ > 2^\circ > 1^\circ > \text{CH}_3\text{OH}$
31.	C	<p>Carboxylic acid is more acidic than all of these because a more stable carboxylate ion is formed due to resonance</p>
32.	A	<p>Sodium ethoxide is nucleophilic in nature. It acts $\text{CH}_3\text{CH}_2\text{O}^-$ as a nucleophile.</p>
33.	D	<p>CH_3-OH, $\text{C}_6\text{H}_5\text{OH}$, $\text{CH}_3-\text{O}-\text{CH}_3$ are all derivatives of water.</p>
34.	C	<p>Ethyl alcohol and dimethyl ether are functional group isomers. $\text{CH}_3-\text{CH}_2-\text{OH}$ and $\text{CH}_3-\text{O}-\text{CH}_3$ They have same molecular formula $\text{C}_2\text{H}_6\text{O}$ but different functional group.</p>

35.	D	Aldehyde and ketone which will have $-CH_3$ group attached directly to carbonyl group shows haloform test ethanol also show this test because $-CH_3$ group is there.
36.	A	The sulphur analogues of alcohol is called thiol ($R-SH$).
37.	C	Terminal alkyne react with $NH_4OH + AgNO_3$ while alkene cannot do so.
38.	A	<p>If a bromine water is added to a solution of phenol the bromine water decolorized and a white precipitate is formed.</p>  <p style="text-align: center;">2,6,4 Tribromophenol (white ppt)</p>
39.	A	<p>Dow process is used for the preparation of phenol as</p> 
40.	A	Pure phenol is white crystalline solid.
41.	B	The common name of compound is resorcinol.
42.	C	Phenol is more reactive because of OH group which is ortho para directing group thus it increase its reactivity at ortho and para position and react with excess of bromine water to form a white precipitate.(pic on next page).

		
43.	B	<p>→ When phenol react with acid halide or acid anhydride ; ester is formed.</p>  <p>→ Acid anhydride and phenol reaction</p> 
44.	D	Phenol is stronger acid than alcohol. Phenol lose H^+ ion and form phenoxide ion which is more stable than the alcohol alkoxide ion. In phenoxide ion resonance occur which impart stability.
45.	A	Phenol is more acidic because of stable phenoxide ion due to resonance. Water is more acidic than alcohol because the alkoxide

		ion of alcohol is comparatively unstable due to positive inductive of alkyl group in alcohol.
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