EdLoop JEE

CHEMISTRY · JEE MAIN

Alcohols, Phenols & Ethers

Previous Year Questions with answers

168 questions · **119** papers · **2003–2026** · newest paper first

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What is in this PDF: every Alcohols, Phenols & Ethers question we hold from past JEE Main and AIEEE papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

Step-by-step solutions for every question are free in the EdLoop JEE app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

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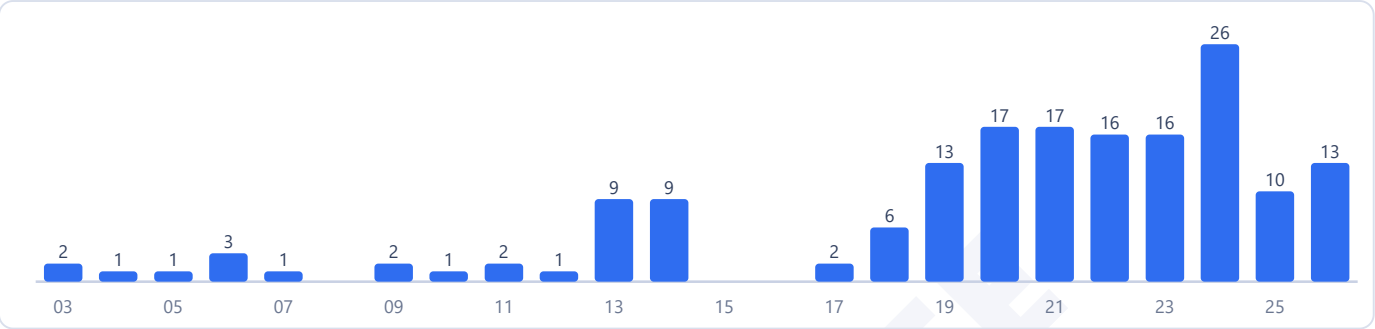
Chapter at a glance

2.8%	168	95 of 162	156 / 12
of Chemistry questions, 2019–2026	questions, 2003–2026	papers asked it, 2019–2026	MCQ / numerical, 2003–2026

Trend. Steady: 0.8 questions per paper in 2024–2026 against 0.8 in 2019–2023.

Questions per year



Counts are the questions we hold: 168 in 119 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2003–2026)



How often it comes up

Alcohols, phenols and ethers covers oxygen-containing functional groups under Unit 17: Organic Compounds Containing Oxygen in the Class 12 curriculum, holding rank 18 of 31 chapters with a 2.8% share of the chemistry section. During the 2019 to 2026 examination span, Alcohols, Phenols & Ethers contributed 128 questions across 162 exam papers, delivering 2.8% of the chemistry section and holding rank 18 of 31 chapters. In the earlier testing era from 2002 to 2018, it registered 40 questions across 38 papers with a 3.0% share. Over the recent 2024 to 2026 testing sessions, it produced 49 questions across 58 papers, accounting for a 3.2% share. Comparing both earlier testing periods against 2024 to 2026, its testing share has remained about the same.

The chapter has appeared every year from 2019 to 2026. Across 2019 to 2026, it averaged 0.8 questions per paper, consistent with the 0.8 questions per paper observed between 2024 and 2026. Twelve numerical answer questions were presented from 2019 to 2026, frequently involving acetylation stoichiometry or molecular mass calculations.

Most-asked topics

The syllabus divides across three functional classes:

- Phenols: The largest topic with 81 total questions (63 in 2019 to 2026), evaluated consistently through 2026. Core themes involve electrophilic substitution on activated benzene rings: Reimer-Tiemann formylation yielding salicylaldehyde, Kolbe-Schmitt carboxylation yielding salicylic acid, bromination in polar versus non-polar solvents (aqueous bromine giving 2,4,6-tribromophenol), nitration yielding steam-volatile ortho-nitrophenol, and industrial synthesis from cumene with acetone as an equimolar by-product.
- Alcohols: Contributed 58 total questions (41 in 2019 to 2026), examined through 2026. Focuses on acid-catalyzed dehydration into alkenes with carbocation rearrangements, oxidation with pyridinium chlorochromate (PCC) versus Jones reagent, dehydrogenation over heated copper, Lucas test turbidity rates, and the iodoform reaction.
- Ethers: Generated 29 total questions (24 in 2019 to 2026), active through 2026. Major areas include Williamson ether synthesis (SN2 attack of alkoxide on primary alkyl halides to avoid E2 elimination) and acidic cleavage with hydroiodic acid (HI), noting mechanism shifts between SN2 for primary/secondary alkyl groups and SN1 when stable tertiary or benzylic carbocations form.

What the questions look like

Examiners emphasize reaction pathways and distinguishing tests. A typical question tests acidic cleavage of mixed ethers with excess hydroiodic acid, requiring candidates to recognize that the alkyl-oxygen bond cleaves while the phenyl-oxygen bond resists cleavage due to partial double-bond character, yielding phenol and alkyl iodide.

Phenol questions regularly assess Reimer-Tiemann or Kolbe reaction mechanisms, asking students to identify intermediate dichlorocarbene species or explain why ortho-nitrophenol separates cleanly from para-nitrophenol via steam distillation due to intramolecular hydrogen bonding.

How to practise it

Prepare for oxygen-containing mechanisms through systematic reaction classification:

1. Master acidic cleavage of ethers: With primary and secondary alkyl groups, iodide attacks the less hindered carbon via SN2; if one alkyl group is tertiary or benzylic, reaction proceeds via SN1 carbocation formation at that substituted carbon. 2. Remember Williamson ether synthesis constraints: The alkyl halide must be primary; using a tertiary alkyl halide with an alkoxide yields an alkene via exclusive E2 elimination rather than an ether. 3. Distinguish Reimer-Tiemann from Kolbe synthesis: Reimer-Tiemann uses chloroform and aqueous alkali with dichlorocarbene electrophile to form salicylaldehyde; Kolbe uses sodium hydroxide and carbon dioxide under pressure to form salicylic acid. 4. Separate nitrophenols by steam distillation: Ortho-nitrophenol has intramolecular hydrogen bonding, lowering its boiling point and making it steam-volatile; para-nitrophenol has intermolecular hydrogen bonding, making it non-volatile. 5. Memorize Lucas test timing: Tertiary alcohols show instantaneous cloudiness; secondary alcohols react in five minutes; primary alcohols show no cloudiness at room temperature.

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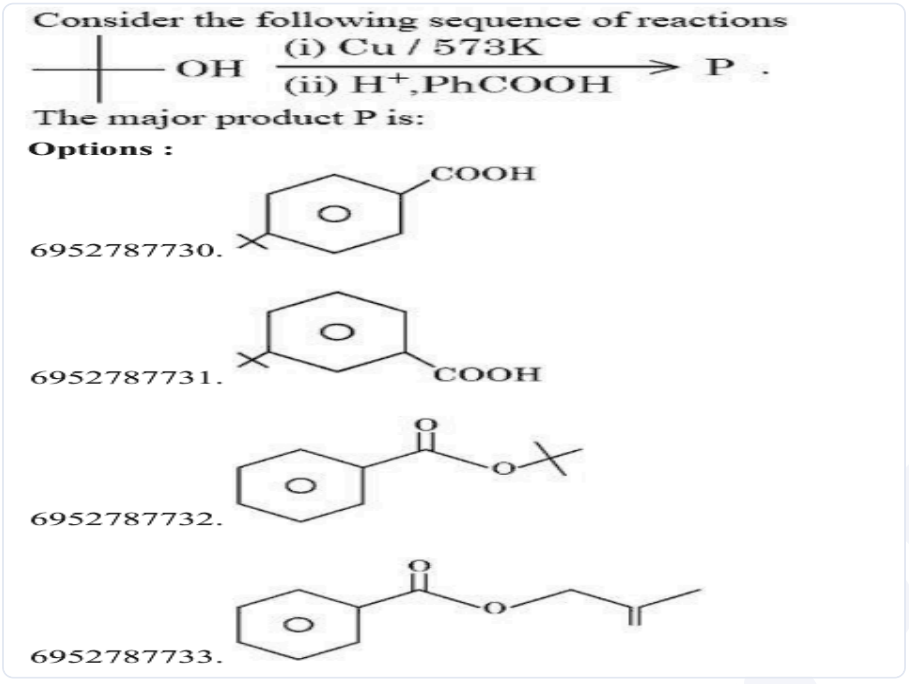
Q1 JEE Main 2026 · 6 Apr · Shift 1 MCQ

Consider the following sequence of reactions

(see the figure above)

The major product P is:



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (B) · Official NTA final key

Q2 JEE Main 2026 · 6 Apr · Shift 1 Numerical

4.7 g of phenol is heated with Zn to give product X. If this reaction goes to 60% completion then the number of moles of compound X formed will be _____ $\times 10^{-2}$.(Nearest Integer)
(Given molar mass in g mol^{-1} : H:1, C:12, O:16)

Numerical value type: the answer is a number.

Answer: 3. · Official NTA final key

Q3 JEE Main 2026 · 6 Apr · Shift 2 MCQ

Consider the following reaction.

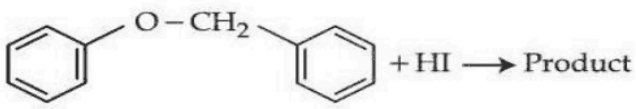
(see the figure above)

Statement I : In the above reaction, product formed will be a mixture of benzyl alcohol and iodobenzene.

Statement II : In the above reaction, the $-O-CH_2-$ bond is cleaved to give the product.

In the light of the above statements, choose the **correct** answer from the options given below :

Consider the following reaction.



Statement I : In the above reaction, product formed will be a mixture of benzyl alcohol and iodobenzene.

Statement II : In the above reaction, the $-O-CH_2-$ bond is cleaved to give the product.

In the light of the above statements, choose the **correct** answer from the options given below :

Options :

6911214311. Both **Statement I** and **Statement II** are true

6911214312. Both **Statement I** and **Statement II** are false

6911214313. **Statement I** is true but **Statement II** is false

6911214314. **Statement I** is false but **Statement II** is true

(A) Both **Statement I** and **Statement II** are true

(B) Both **Statement I** and **Statement II** are false

(C) **Statement I** is true but **Statement II** is false

(D) **Statement I** is false but **Statement II** is true

Answer: (D) Statement I is false but **Statement II** is true · Official NTA final key

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Q4 JEE Main 2026 · 5 Apr · Shift 1 MCQ

Consider compounds A, B and C with following structural formulae

$A = CH_3 - CH_2 - CH_2 - CH_2 - CH_2 - OH$

$B = CH_2 = CH - CH_2 - CH_2 - CH_3$

$C = HO - CH_2 - CH_2 - CH(OH) - CH_3$

For the conversion of B from A, reagent (D) required is _____ and structural formula of product (E) obtained when C undergoes same reaction using excess reagent (D) is _____.

(A) D: Conc. H_2SO_4; E: $CH_2 = CH - CH(OH)CH_3$

(B) D: PCC; E: $HO - CH_2 - CH_2 - CH = CH_2$

(C) D: PCC; E: $CH_2 = CH - CH = CH_2$

(D) D: Conc. H_2SO_4 or H_3PO_4; E: $CH_2 = CH - CH = CH_2$

Answer: (D) D: Conc. H_2SO_4 or H_3PO_4; E: $CH_2 = CH - CH = CH_2$ · Official NTA final key

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Q5 JEE Main 2026 · 5 Apr · Shift 1 Numerical

One mole of phenol is treated with dilute HNO_3 at 298 K to give a mixture of products. The mixture is separated by steam distillation. The steam volatile compound (X) is separated. The increase in percentage of oxygen in (X) with respect to phenol is _____ $\times 10^{-1}$ %

(Given molar mass in g mol^{-1} H:1, C:12, N:14, O:16)

Numerical value type: the answer is a number.

Answer: 175. · Official NTA final key

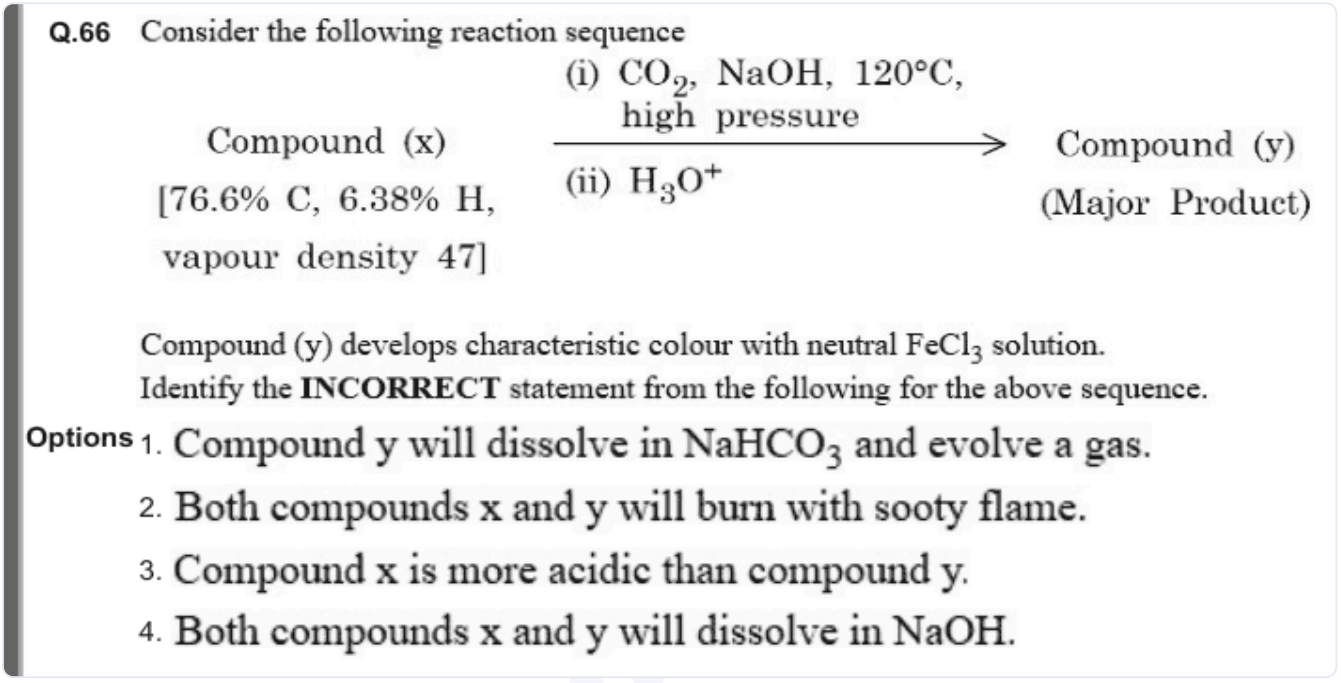
Q6 JEE Main 2026 · 28 Jan · Shift 1 MCQ

Consider the following reaction sequence

(see the figure above)

Compound (y) develops characteristic colour with neutral $FeCl_3$ solution.

Identify the **INCORRECT** statement from the following for the above sequence.



(A) Compound y will dissolve in $NaHCO_3$ and evolve a gas.
(B) Both compounds x and y will burn with sooty flame.
(C) Compound x is more acidic than compound y.
(D) Both compounds x and y will dissolve in NaOH.

Answer: (C) Compound x is more acidic than compound y. · Official NTA final key

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Q7 JEE Main 2026 · 24 Jan · Shift 1 MCQ

A hydroxy compound (X) with molar mass 122 g mol^{-1} is acetylated with acetic anhydride, using a large excess of the reagent ensuring complete acetylation of all hydroxyl groups. The product obtained has a molar mass of 290 g mol^{-1}. The number of hydroxyl groups present in compound (X) is:

(A) 3
(B) 5
(C) 4
(D) 2

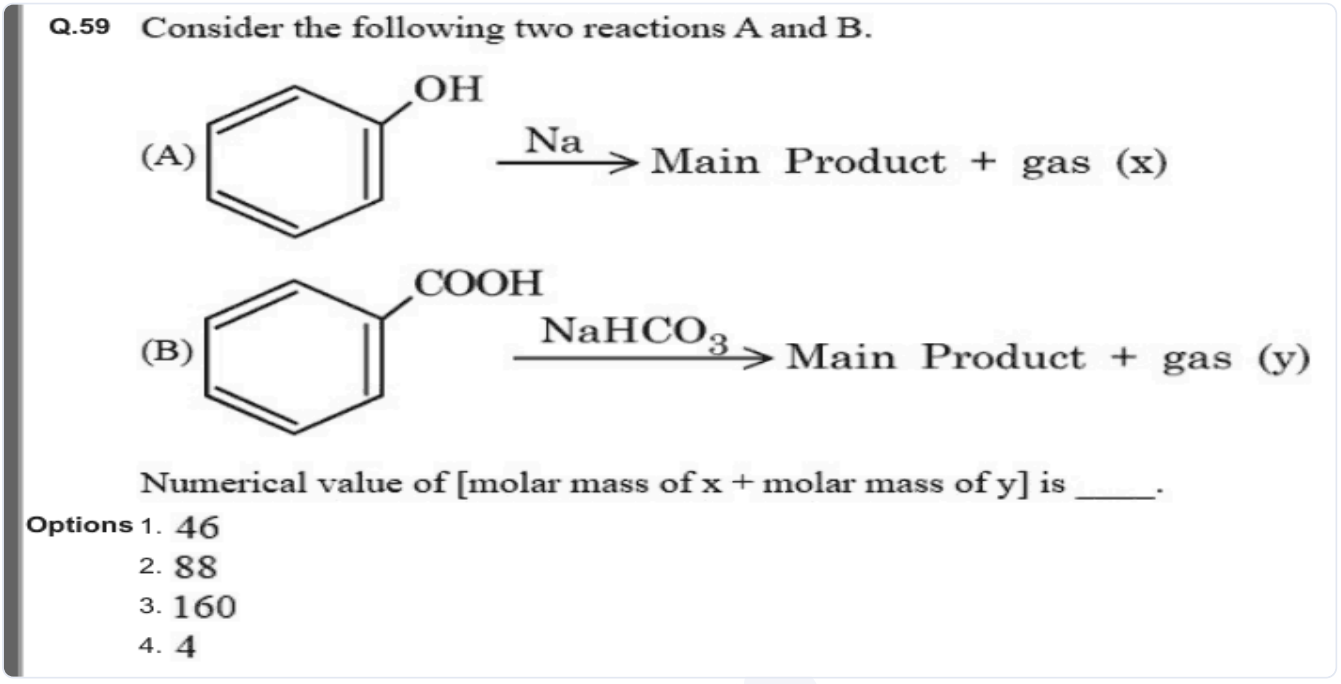
Answer: (C) 4 · Official NTA final key

Q8 JEE Main 2026 · 24 Jan · Shift 1 MCQ

Consider the following two reactions A and B.

(see the figure above)

Numerical value of [molar mass of x + molar mass of y] is _____.



(A) 46
(B) 88
(C) 160
(D) 4

Answer: (A) 46 · Official NTA final key

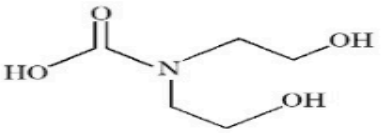
Q9 JEE Main 2026 · 24 Jan · Shift 2 MCQ

From the following, how many compounds contain at least one secondary alcohol?

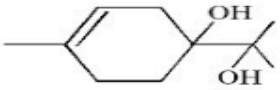
(see the figure above)

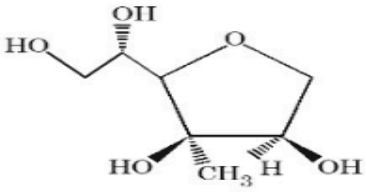
Choose the *__correct__* answer from the options given below:

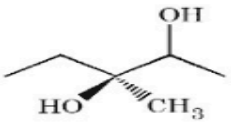
Q.60 From the following, how many compounds contain at least one secondary alcohol?

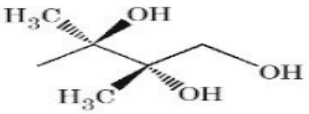

(I)


(II)


(III)


(IV)


(V)


(VI)

Choose the ***correct*** answer from the options given below:

Options
1. Three
2. Four
3. Five
4. Two

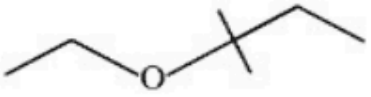
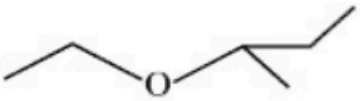
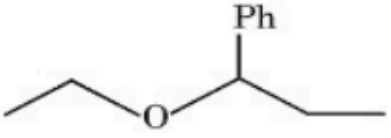
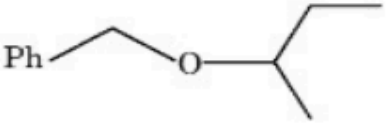
(A) Three
(B) Four
(C) Five
(D) Two

Answer: (A) Three · Official NTA final key

Q10 JEE Main 2026 · 23 Jan · Shift 2 MCQ

A mixed ether (P), when heated with excess of hot concentrated hydrogen iodide produces two different alkyl iodides which when treated with aq. NaOH give compounds (Q) and (R). Both (Q) and (R) give yellow precipitate with NaOI. Identify the mixed ether (P):

Q.54 A mixed ether (P), when heated with excess of hot concentrated hydrogen iodide produces two different alkyl iodides which when treated with aq. NaOH give compounds (Q) and (R). Both (Q) and (R) give yellow precipitate with NaOI. Identify the mixed ether (P):

Options
1. 
2. 
3. 
4. 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Official NTA final key

Q11 JEE Main 2026 · 23 Jan · Shift 2 MCQ

Iodoform test can differentiate between

A. Methanol and Ethanol

B. CH_3COOH and CH_3CH_2COOH

C. Cyclohexene and cyclohexanone

D. Diethyl ether and Pentan-3-one

E. Anisole and acetone

Choose the **correct** answer from the options given below:

(A) B, C & E Only
(B) A, B & E Only
(C) A & E Only
(D) A & D Only

Answer: (C) A & E Only · Official NTA final key

Q12 JEE Main 2026 · 22 Jan · Shift 1 MCQ

Given below are two statements:

Statement I: Phenol on treatment with $CHCl_3$/aq. KOH under refluxing condition, followed by acidification produces p-hydroxy benzaldehyde as the major product and o-hydroxy benzaldehyde as the minor product.

Statement II: The mixture of p-hydroxybenzaldehyde and o-hydroxybenzaldehyde can be easily separated through steam distillation.

In the light of the above statements, choose the **correct** answer from the options given below

(A) Statement I is false but Statement II is true
(B) Both Statement I and Statement II are true
(C) Statement I is true but Statement II is false
(D) Both Statement I and Statement II are false

Answer: (A) Statement I is false but Statement II is true · Official NTA final key

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Q13 JEE Main 2026 · 22 Jan · Shift 2 MCQ

3, 3-Dimethyl-2-butanol **cannot** be prepared by :

A. *(see the figure above)*

B. *(see the figure above)*

C. *(see the figure above)*

D. *(see the figure above)*

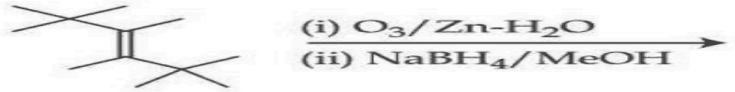
E. *(see the figure above)*

Choose the **correct** answer from the options given below :

Q.64 3, 3-Dimethyl-2-butanol **cannot** be prepared by :

A. 

B. 

C. 

D. 

E. 

Choose the **correct** answer from the options given below :

Options
1. B, C and E Only
2. B and C Only
3. B and E Only
4. B Only

(A) B, C and E Only
(B) B and C Only
(C) B and E Only
(D) B Only

Answer: (C) B and E Only · Official NTA final key

Q14 JEE Main 2025 · 8 Apr · Shift 2 MCQ

Which one of the following reactions will not lead to the desired ether formation in major proportion?

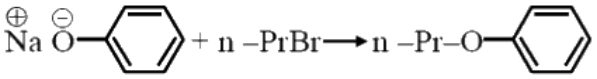
(iso- Bu $\Rightarrow$ isobutyl, sec $-$Bu $\Rightarrow$ sec-butyl, nPr $\Rightarrow$ n $-$ propyl, ^{t}Bu $\Rightarrow$ tert-butyl, Et $\Rightarrow$ ethyl

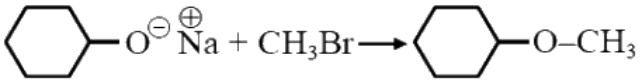
12. Which one of the following reactions will not lead to the desired ether formation in major proportion?

(iso- Bu $\Rightarrow$ isobutyl, sec $-$Bu $\Rightarrow$ sec-butyl, nPr $\Rightarrow$ n $-$ propyl,

^{t}Bu $\Rightarrow$ tert-butyl, Et $\Rightarrow$ ethyl

(1) $^{t}BuO^{-}Na^{+} + EtBr \longrightarrow {}^{t}Bu - O - Et$

(2) 

(3) 

(4) iso- Bu $O^{-}Na^{+}$ + sec – BuBr $\longrightarrow$ sec – Bu – O – iso – Bu

(A) $^{t}BuO^{-}Na^{+} + EtBr \longrightarrow {}^{t}Bu - O - Et$

(B) *see figure*

(C) *see figure*

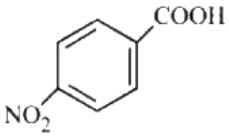
(D) iso-$BuO^{-}Na^{+}$ + sec-BuBr $\longrightarrow$ sec-Bu-O-iso-Bu

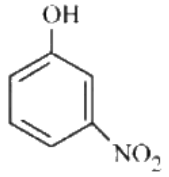
Answer: (D) iso-$BuO^{-}Na^{+}$ + sec-BuBr $\longrightarrow$ sec-Bu-O-iso-Bu · Key from source paper

Q15 JEE Main 2025 · 7 Apr · Shift 1 MCQ

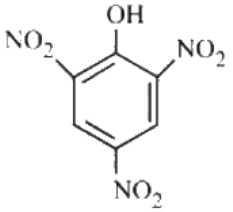
Which of the following compounds is least likely to give effervescence of CO_2 in presence of aq. $NaHCO_3$?

13. Which of the following compounds is least likely to give effervescence of CO_2 in presence of aq. $NaHCO_3$?

(1) 

(2) 

(3) Ph – $\overset{(+)}{N}H_3$ $\overset{(-)}{Cl}$

(4) 

(A) *see figure*

(B) *see figure*

(C) $Ph - \overset{(+)}{N}H_3\ \overset{(-)}{Cl}$

(D) *see figure*

Answer: (B) · Key from source paper

Q16 JEE Main 2025 · 7 Apr · Shift 1 MCQ

Given below are two statements:

Statement I: Dimethyl ether is completely soluble in water. However, diethyl ether is soluble in water to a very small extent.

Statement II: Sodium metal can be used to dry diethyl ether and not ethyl alcohol.

In the light of given statements. choose the correct answer from the options given below

(A) Both Statement I and Statement II are False

(B) Both Statement I and Statement II are true

(C) Statement I is true but Statement II is false

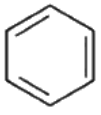
(D) Statement I is false but Statement II are true

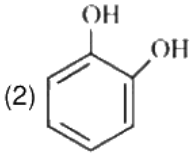
Answer: (B) Both Statement I and Statement II are true · Key from source paper

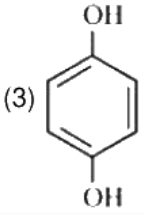
Q17 JEE Main 2025 · 4 Apr · Shift 1 MCQ

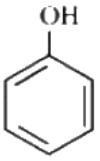
Benzene is treated with oleum to produce compound (X) which when further heated with molten sodium hydroxide followed by acidification produces compound (Y). The compound Y is treated with zinc metal to produce compound (Z). Identify the structure of compound (Z) from the following option.

16. Benzene is treated with oleum to produce compound (X) which when further heated with molten sodium hydroxide followed by acidification produces compound (Y). The compound Y is treated with zinc metal to produce compound (Z). Identify the structure of compound (Z) from the following option.

(1) 

(2) 

(3) 

(4) 

(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (A) · Key from source paper

Q18 JEE Main 2025 · 4 Apr · Shift 2 MCQ

A toxic compound "A" when reacted with NaCN in aqueous acidic medium yields an edible cooking component and food preservative "B". "B" is converted to "C" by diborane and can be used as an additive to petrol to reduce emission. "C" upon reaction with oleum at $140^{\circ}C$ yields an inhalable anesthetic "D". Identify "A", "B", "C" & "D", respectively :

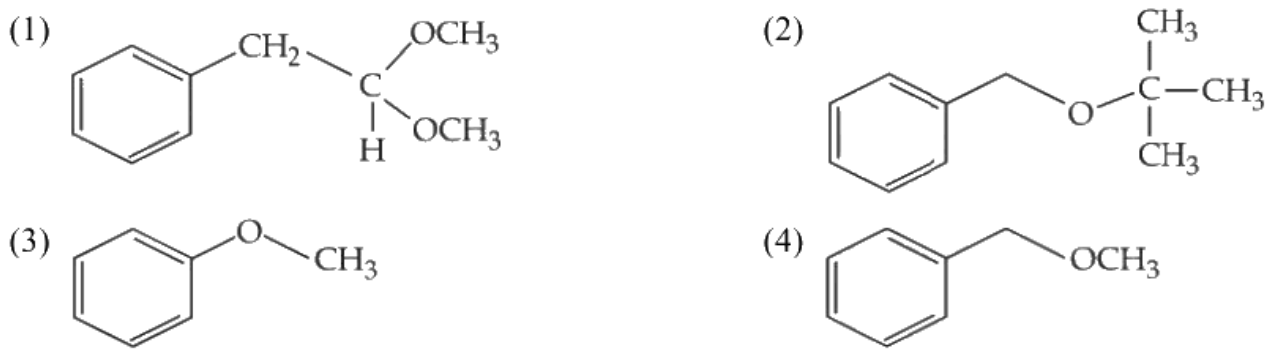
(A) Ethanol; acetonitrile; ethylamine; ethylene
(B) Methanol; formaldehyde; methyl chloride; chloroform
(C) Acetaldehyde; 2-hydroxypropanoic acid; propanoic acid; dipropyl ether
(D) Methanol; acetic acid; ethanol; diethyl ether

Answer: (D) Methanol; acetic acid; ethanol; diethyl ether · Key from source paper

Q19 JEE Main 2025 · 29 Jan · Shift 2 MCQ

Which one of the following, with HBr will give a phenol?

Q55. Which one of the following, with HBr will give a phenol?



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

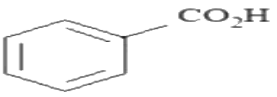
Answer: (C) · Key from source paper

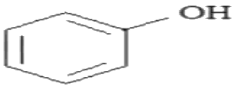
Q20 JEE Main 2025 · 28 Jan · Shift 1 MCQ

see figure

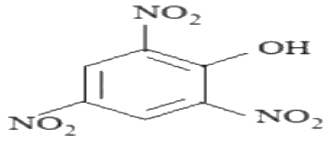
Q65.

The compounds that produce CO_2 with aqueous $NaHCO_3$ solution are: A.

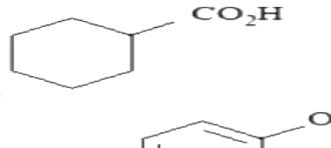




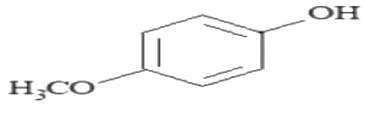
B.



C.



D.



E.

Choose the correct answer from the options given below:

(1) A, C and D Only
(2) A, B and E Only
(3) A and C Only
(4) A and B Only

(A) A, C and D Only
(B) A, B and E Only
(C) A and C Only
(D) A and B Only

Answer: (A) A, C and D Only · Key from source paper

Q21 JEE Main 2025 · 23 Jan · Shift 1 MCQ

What amount of bromine will be required to convert 2 g of phenol into 2,4,6-tribromophenol? (Given molar mass in gmol^{-1} of C, H, O, Br are 12, 1, 16, 80 respectively)

(A) 20 .44 g
(B) 4.0 g
(C) 6.0 g
(D) 10.22

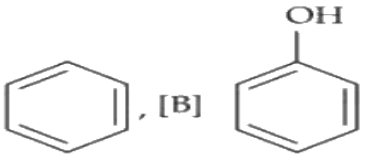
Answer: (D) 10.22 · Key from source paper

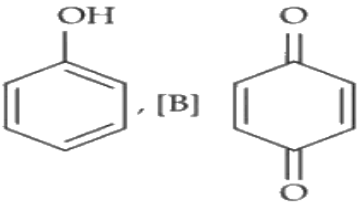
Q22 JEE Main 2025 · 23 Jan · Shift 2 MCQ

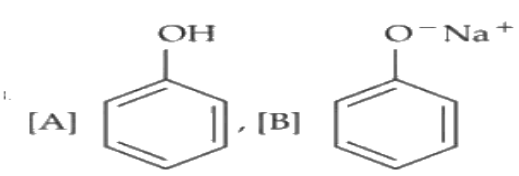
see figure

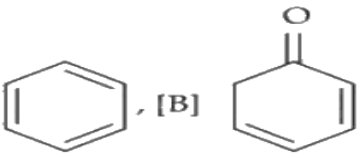
Q51. Identify the products $[A]$ and $[B]$, respectively in the following reaction :



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

Q23 JEE Main 2025 · 23 Jan · Shift 2 MCQ

Given below are two statements : Statement (I) : The boiling points of alcohols and phenols increase with increase in the number of C-atoms. Statement (II) : The boiling points of alcohols and phenols are higher in comparison to other class of compounds such as ethers, haloalkanes. In the light of the above statements, choose the correct answer from the options given below :

(A) Both Statement I and Statement II are false
(B) Both Statement I and Statement II are true
(C) Statement I is false but Statement II is true
(D) Statement I is true but Statement II is false

Answer: (B) Both Statement I and Statement II are true · Key from source paper

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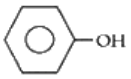
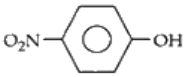
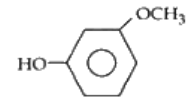
Q24 JEE Main 2024 · 9 Apr · Shift 1 MCQ

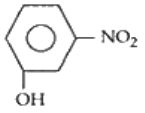
see figure

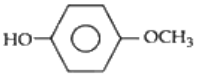
Q37.

(A) 

(B) 

(C) 

(D) 

(E) 

For the given compounds, the correct order of increasing pK_a value :

Choose the correct answer from the options given below :

(1) (B) < (D) < (C) < (A) < (E)

(2) (D) < (E) < (C) < (B) < (A)

(3) (E) < (D) < (C) < (B) < (A)

(4) (E) < (D) < (B) < (A) < (C)

A (B) < (D) < (C) < (A) < (E)

B (D) < (E) < (C) < (B) < (A)

C (E) < (D) < (C) < (B) < (A)

D (E) < (D) < (B) < (A) < (C)

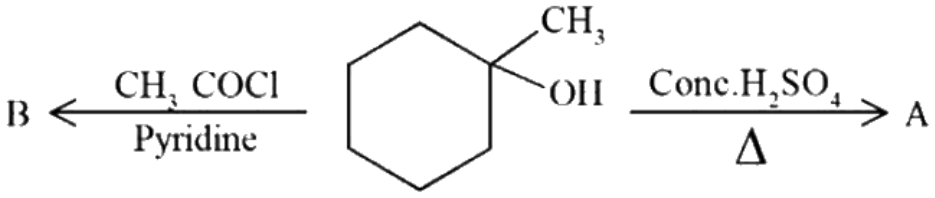
Answer: (A) (B) < (D) < (C) < (A) < (E) · Key from source paper

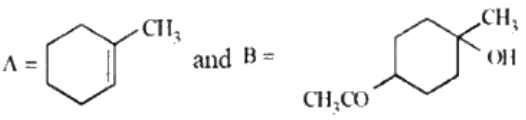
Q25 JEE Main 2024 · 8 Apr · Shift 1 MCQ

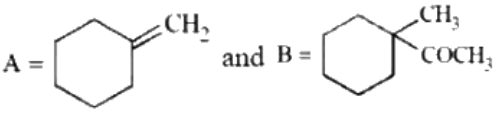
Identify the major products A and B respectively in the following set of reactions.

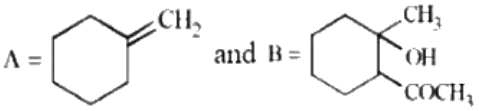
(see the figure above)

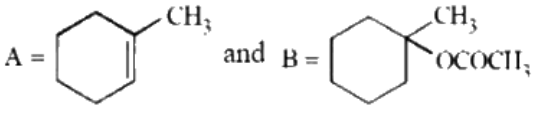
Q47. Identify the major products A and B respectively in the following set of reactions.



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (D) · Key from source paper

Q26 JEE Main 2024 · 8 Apr · Shift 2 MCQ

Which one the following compounds will readily react with dilute NaOH ?

(A) C_2H_5OH
(B) C_6H_5OH
(C) $C_6H_5CH_2OH$
(D) $(CH_3)_3COH$

Answer: (B) C_6H_5OH · Key from source paper

Q27 JEE Main 2024 · 8 Apr · Shift 2 MCQ

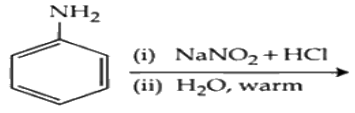
Match List - I with List - II.

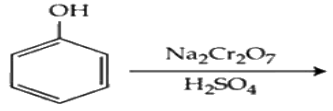
List - I (Reactions)		List - II (Products)	
(A)	*(see the figure above)*	(I)	*(see the figure above)*
(B)	*(see the figure above)*	(II)	*(see the figure above)*
(C)	*(see the figure above)*	(III)	*(see the figure above)*
(D)	*(see the figure above)*	(IV)	*(see the figure above)*

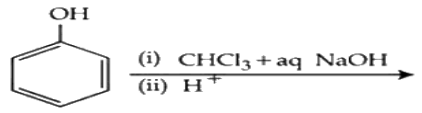
Choose the correct answer from the options given below :

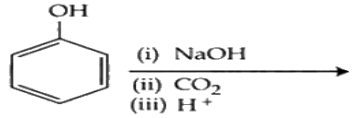
Q49.

List - I (Reactions)

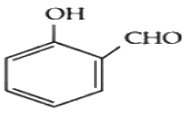
(A) 

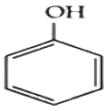
(B) 

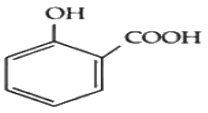
(C) 

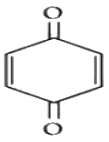
(D) 

List - II (Products)

(I) 

(II) 

(III) 

(IV) 

Match List - I with List - II.
Choose the correct answer from the options given below :
(1) (A)-(IV), (B)-(II), (C)-(III), (D)-(I)
(2) (A)-(I), (B)-(IV), (C)-(II), (D)-(III)
(3) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)
(4) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

(A) (A)-(IV), (B)-(II), (C)-(III), (D)-(I)
(B) (A)-(I), (B)-(IV), (C)-(II), (D)-(III)
(C) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)
(D) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

Answer: (D) (A)-(II), (B)-(IV), (C)-(I), (D)-(III) · Key from source paper

Q28 JEE Main 2024 · 6 Apr · Shift 1 MCQ

Given below are two statements : Statement I : Piciric acid is 2,4,6 - trinitrotoluene. Statement II : Phenol - 2,4 - disulphonic acid is treated with Conc. HNO_3 to get picric acid. In the light of the above statements, choose the most appropriate answer from the options given below :

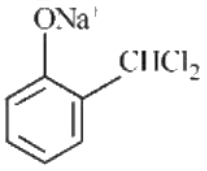
(A) Statement I is incorrect but Statement II is correct
(B) Both Statement I and Statement II are incorrect
(C) Statement I is correct but Statement II is incorrect
(D) Both Statement I and Statement II are correct

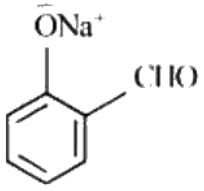
Answer: (A) Statement I is incorrect but Statement II is correct · Key from source paper

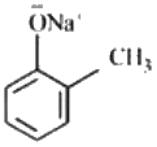
Q29 JEE Main 2024 · 6 Apr · Shift 1 MCQ

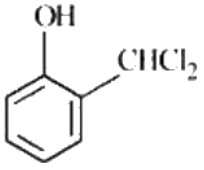
In Reimer - Tiemann reaction, phenol is converted into salicylaldehyde through an intermediate. The structure of intermediate is _____

Q47. In Reimer - Tiemann reaction, phenol is converted into salicylaldehyde through an intermediate. The structure of intermediate is _____

(1) 

(2) 

(3) 

(4) 

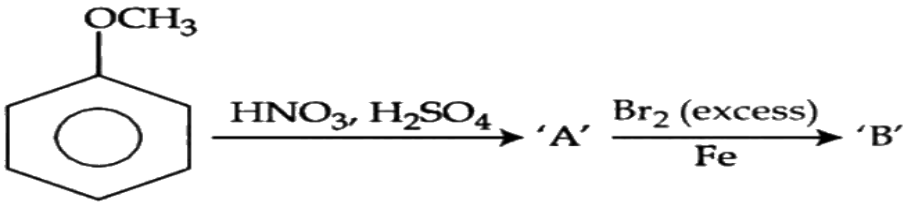
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

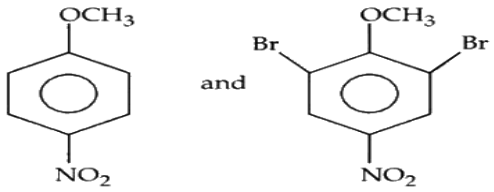
Q30 JEE Main 2024 · 6 Apr · Shift 2 MCQ

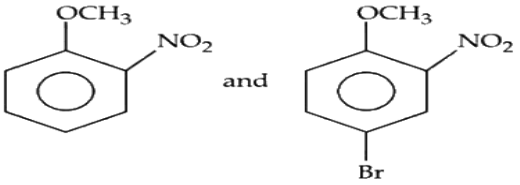
see figure

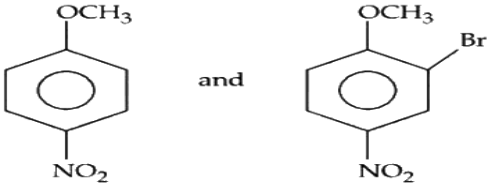
Q46.

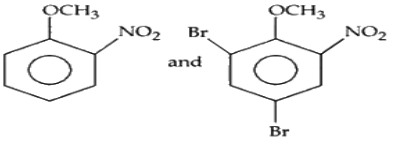


The major products formed :
A and B respectively are:

(1) 

(2) 

(3) 

(4) 

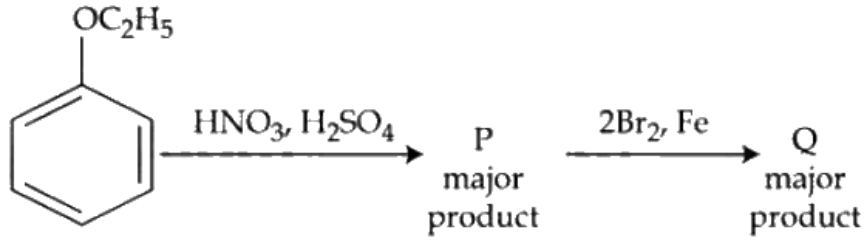
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q31 JEE Main 2024 · 6 Apr · Shift 2 Numerical

see figure

Q60.



The ratio of number of oxygen atoms to bromine atoms in the product Q is _____ $\times 10^{-1}$.

Numerical value type: the answer is a number.

Answer: 15. · Key from source paper

Q32 JEE Main 2024 · 5 Apr · Shift 1 MCQ

For the Compounds : (A) $H_3C-CH_2-O-CH_2-CH_2-CH_3$ (B) $H_3C-CH_2^2-CH_2-CH_2-CH_3$ (C) $CH_3-CH_2-C(=O)-CH_2-CH_3$ (D) $H_3C-CH(OH)-CH_2-CH_2-CH_3$

The increasing order of boiling point is : Choose the correct answer from the options given below :

(A) (D) < (C) < (A) < (B)
(B) (B) < (A) < (C) < (D)
(C) (A) < (B) < (C) < (D)
(D) (B) < (A) < (D) < (C)

Answer: (B) (B) < (A) < (C) < (D) · Key from source paper

Q33 JEE Main 2024 · 5 Apr · Shift 1 MCQ

Given below are two statement: Statements I : Bromination of phenol in solvent with low polarity such as $CHCl_3$ or CS_2 requires Lewis acid catalyst. Statements II : The Lewis acid catalyst polarises the bromine to generate Br^+. In the light of the above statements, choose the correct answer from the options given below :

(A) Both Statement I and Statement II are true
(B) Statement I is true but Statement II is false
(C) Statement I is false but Statement II is true
(D) Both Statement I and Statement II are false

Answer: (C) Statement I is false but Statement II is true · Key from source paper

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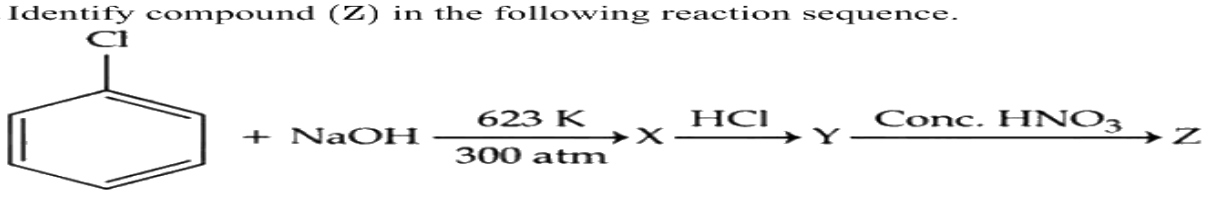
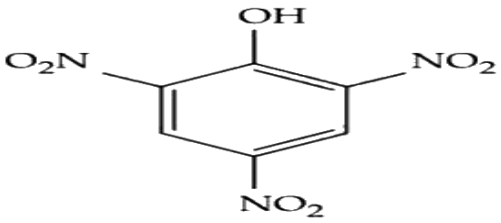
Q34 JEE Main 2024 · 5 Apr · Shift 1 MCQ

Identify compound (Z) in the following reaction sequence.

(see the figure above)

Q48. Identify compound (Z) in the following reaction sequence.



(1)


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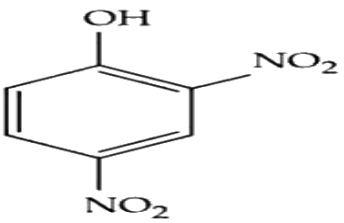
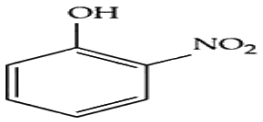
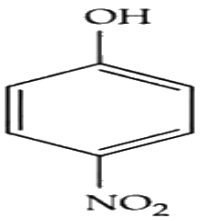


(3)


(4)


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

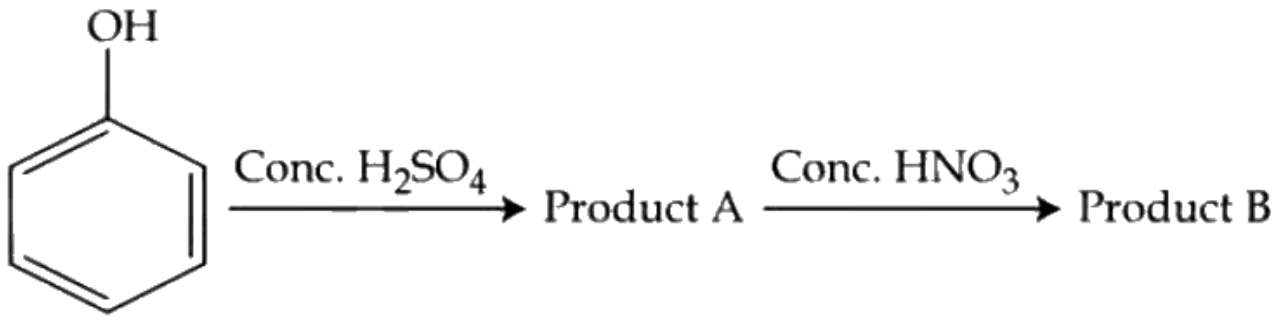
Q35 JEE Main 2024 · 5 Apr · Shift 1 Numerical

Consider the given chemical reaction sequence :

(see the figure above)

Total sum of oxygen atoms in Product A and Product B are _____

Q59. Consider the given chemical reaction sequence :



Total sum of oxygen atoms in Product A and Product B are _____

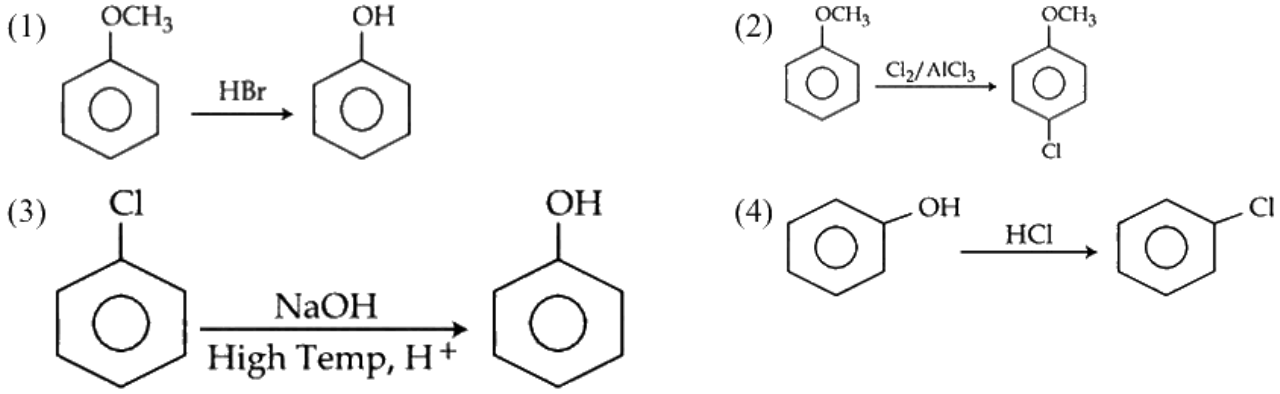
Numerical value type: the answer is a number.

Answer: 14. · Key from source paper

Q36 JEE Main 2024 · 5 Apr · Shift 2 MCQ

Which one of the following reactions is NOT possible?

Q49. Which one of the following reactions is NOT possible?



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (D) · Key from source paper

Q37 JEE Main 2024 · 1 Feb · Shift 2 MCQ

Which among the following has highest boiling point?

(A) $CH_3CH_2CH_2CH_3$
(B) $CH_3CH_2CH_2CH_2-OH$
(C) $CH_3CH_2CH_2CHO$
(D) $H_5C_2-O-C_2H_5$

Answer: (B) $CH_3CH_2CH_2CH_2-OH$ · Key from source paper

Q38 JEE Main 2024 · 1 Feb · Shift 2 MCQ

Match List - I with List - II.

List-I (Reactants)	List-II Products
(A) Phenol, Zn / Δ	(I) Salicylaldehyde
(B) Phenol, $CHCl_3$, NaOH, HCl	(II) Salicylic acid
(C) Phenol, CO_2, NaOH, HCl	(III) Benzene
(D) Phenol, Conc. HNO_3	(IV) Picric acid

Choose the correct answer from the options given below.

(A) (A)-(IV), (B)-(II), (C)-(I), (D)-(III)
(B) (A)-(IV), (B)-(I), (C)-(II), (D)-(III)
(C) (A)-(III), (B)-(I), (C)-(II), (D)-(IV)
(D) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Answer: (C) (A)-(III), (B)-(I), (C)-(II), (D)-(IV) · Key from source paper

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Q39 JEE Main 2024 · 31 Jan · Shift 1 MCQ

Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: pK_a value of phenol is 10.0 while that of ethanol is 15.9.

Reason R: Ethanol is stronger acid than phenol.

In the light of the above statements, choose the correct answer from the options given below:

(A) A is true but R is false
(B) A is false but R is true
(C) Both A and R are true and R is the correct explanation of A
(D) Both A and R are true but R is NOT the correct explanation of A.

Answer: (A) A is true but R is false · Key from source paper

Q40 JEE Main 2024 · 31 Jan · Shift 1 MCQ

Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Alcohols react both as nucleophiles and electrophiles.

Reason R: Alcohols react with active metals such as sodium, potassium and aluminum to yield corresponding alkoxides and liberate hydrogen.

In the light of the above statements, choose the correct answer from the options given below:

(A) A is false but R is true.
(B) A is true but R is false.
(C) Both A and R are true and R is the correct explanation of A
(D) Both A and R are true but R is NOT the correct explanation of A

Answer: (D) Both A and R are true but R is NOT the correct explanation of A · Key from source paper

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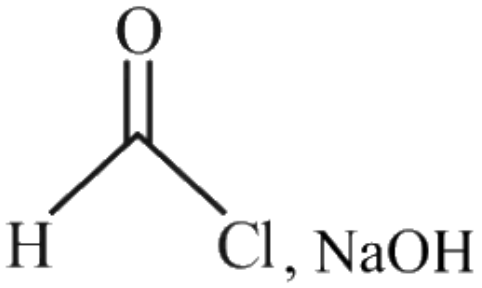
Q41 JEE Main 2024 · 30 Jan · Shift 2 MCQ

Salicylaldehyde is synthesized from phenol, when reacted with

Q48. Salicylaldehyde is synthesized from phenol, when reacted with

(1) 

(2) CO_2 , NaOH

(3) CCl_4 , NaOH

(4) $HCCl_3$, NaOH

(A) *see figure*
(B) CO_2 , NaOH
(C) CCl_4 , NaOH
(D) $HCCl_3$, NaOH

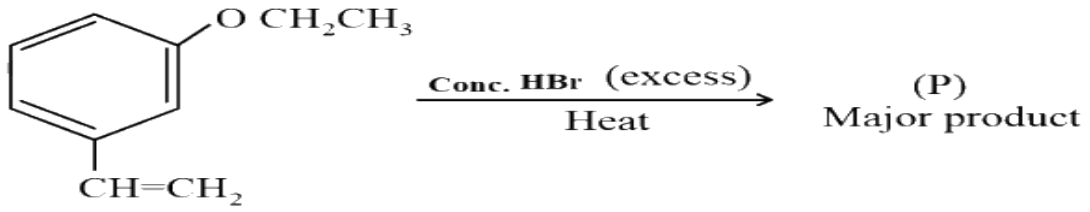
Answer: (D) $HCCl_3$ **, NaOH** · Key from source paper

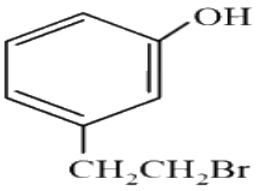
Q42 JEE Main 2024 · 29 Jan · Shift 1 MCQ

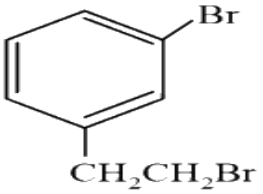
The major product(P) in the following reaction is

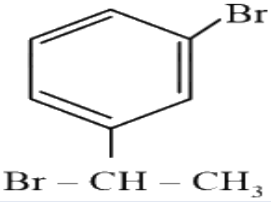
(see the figure above)

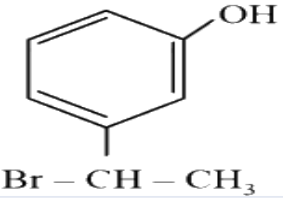
Q41. The major product(P) in the following reaction is



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (D) · Key from source paper

Q43 JEE Main 2024 · 29 Jan · Shift 2 MCQ

Match List I with List II

List I (Compound)		List II (pK_a value)	
A.	Ethanol	I.	10.0
B.	Phenol	II.	15.9
C.	m-Nitrophenol	III.	7.1
D.	p-Nitrophenol	IV.	8.3

Choose the correct answer from the options given below:

(A) A-I, B-II, C-III, D-IV
(B) A-IV, B-I, C-II, D-III
(C) A-III, B-IV, C-I, D-II
(D) A-II, B-I, C-IV, D-III

Answer: (D) A-II, B-I, C-IV, D-III · Key from source paper

Q44 JEE Main 2024 · 29 Jan · Shift 2 MCQ

Phenol treated with chloroform in presence of sodium hydroxide, which further hydrolysed in presence of an acid results

(A) Salicylic acid
(B) Benzene-1,2-diol
(C) Benzene-1, 3-diol
(D) 2-Hydroxybenzaldehyde

Answer: (D) 2-Hydroxybenzaldehyde · Key from source paper

Q45 JEE Main 2024 · 27 Jan · Shift 1 MCQ

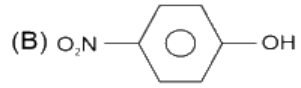
The ascending order of acidity of – OH group in the following compounds is :

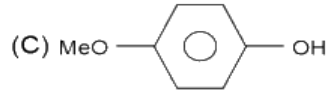
(see the figure above)

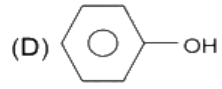
Choose the correct answer from the options given below :

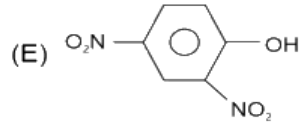
Q40. The ascending order of acidity of – OH group in the following compounds is :

(A) Bu – OH

(B) 

(C) 

(D) 

(E) 

Choose the correct answer from the options given below :

(1) (A) < (D) < (C) < (B) < (E)
(2) (C) < (A) < (D) < (B) < (E)
(3) (C) < (D) < (B) < (A) < (E)
(4) (A) < (C) < (D) < (B) < (E)

(A) (A) < (D) < (C) < (B) < (E)
(B) (C) < (A) < (D) < (B) < (E)
(C) (C) < (D) < (B) < (A) < (E)
(D) (A) < (C) < (D) < (B) < (E)

Answer: (D) (A) < (C) < (D) < (B) < (E) · Key from source paper

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Q46 JEE Main 2024 · 27 Jan · Shift 1 MCQ

Given below are two statements :

Statement (I) : p-nitrophenol is more acidic than m-nitrophenol and o-nitrophenol.

Statement (II) : Ethanol will give immediate turbidity with Lucas reagent.

In the light of the above statements, choose the correct answer from the options given below :

(A) Statement I is true but Statement II is false
(B) Both Statement I and Statement II are true
(C) Both Statement I and Statement II are false
(D) Statement I is false but Statement II is true

Answer: (A) Statement I is true but Statement II is false · Key from source paper

Q47 JEE Main 2024 · 27 Jan · Shift 2 MCQ

Phenolic group can be identified by a positive:

(A) Phthalein dye test
(B) Lucas test
(C) Tollen's test
(D) Carbylamine test

Answer: (A) Phthalein dye test · Key from source paper

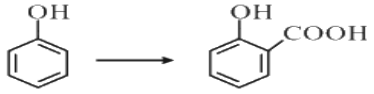
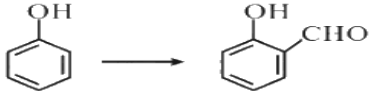
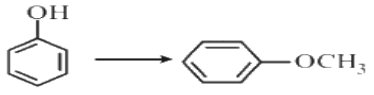
Q48 JEE Main 2024 · 27 Jan · Shift 2 MCQ

Match List-I with List-II.

List I (Reaction)	List II (Reagent(s))
(A) *(see the figure above)*	(I) $Na_2Cr_2O_7/H_2SO_4$
(B) *(see the figure above)*	(II) (i) NaOH (ii) CH_3Cl
(C) *(see the figure above)*	(III) (i)NaOH, $CHCl_3$ (ii) NaOH (iii) HCl
(D) *(see the figure above)*	(IV) (i) NaOH (ii) CO_2 (iii) HCl

Choose the correct answer from the options given below:

Q48. Match List-I with List-II.

List I (Reaction)		List II (Reagent(s))	
(A)		(I)	$Na_2Cr_2O_7$ / H_2SO_4
(B)		(II)	(i) NaOH (ii) CH_3Cl
(C)		(III)	(i)NaOH, $CHCl_3$ (ii) NaOH (iii) HCl
(D)		(IV)	(i) NaOH (ii) CO_2 (iii) HCl

Choose the correct answer from the options given below:

(1) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)
(2) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)
(3) (A)-(II), (B)-(I), (C)-(III), (D)-(IV)
(4) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

(A) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)
(B) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)
(C) (A)-(II), (B)-(I), (C)-(III), (D)-(IV)
(D) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

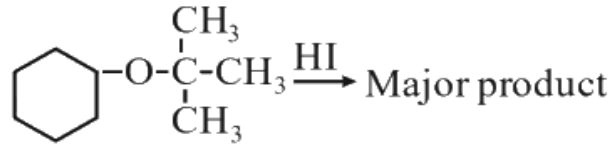
Answer: (D) (A)-(IV), (B)-(III), (C)-(I), (D)-(II) · Key from source paper

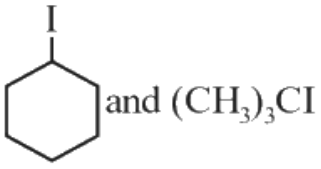
Q49 JEE Main 2024 · 27 Jan · Shift 2 MCQ

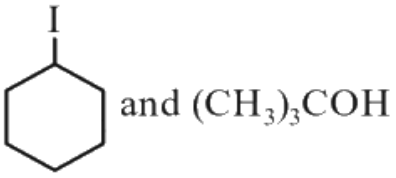
Major product formed in the following reaction is a mixture of:

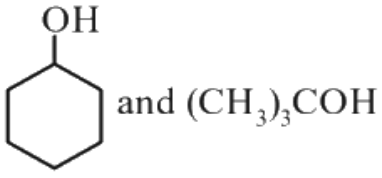
(see the figure above)

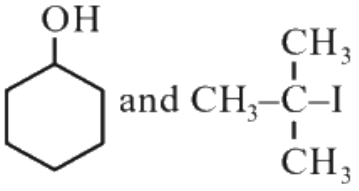
Q49. Major product formed in the following reaction is a mixture of:



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (D) · Key from source paper

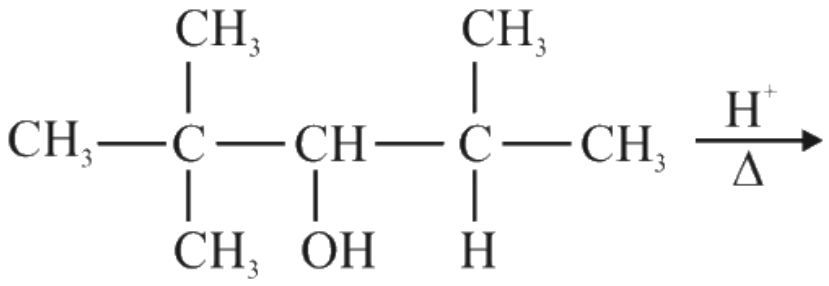
Q50 JEE Main 2023 · 13 Apr · Shift 1 Numerical

For the given reaction

(see the figure above)

The, total number of possible products formed by tertiary carbocation of A is_____.

Q57. For the given reaction



The, total number of possible products formed by tertiary carbocation of A is_____.

Numerical value type: the answer is a number.

Answer: 5. · Key from source paper

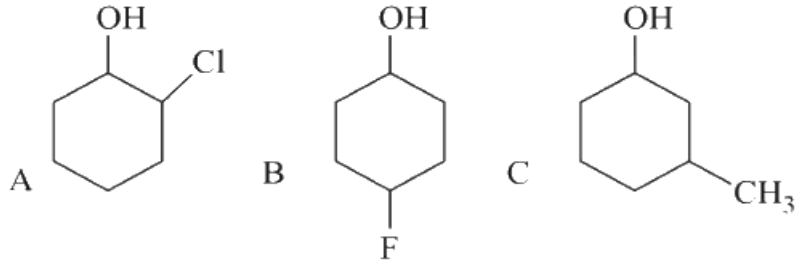
Q51 JEE Main 2023 · 13 Apr · Shift 2 MCQ

Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R.
Assertion A : Order of acidic nature of the following compounds is A > B > C.

(see the figure above)

Reason R: Fluoro is a stronger electron withdrawing group than Chloro group.
In the light of the above statements, choose the correct answer from the options given below :

Q38. Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R.
Assertion A : Order of acidic nature of the following compounds is A > B > C.



Reason R: Fluoro is a stronger electron withdrawing group than Chloro group.
In the light of the above statements, choose the correct answer from the options given below :

(1) A is false but R is true
(2) Both A and R are correct and R is the correct explanation of A
(3) A is true but R is false
(4) Both A and R are correct but R is NOT the correct explanation of A

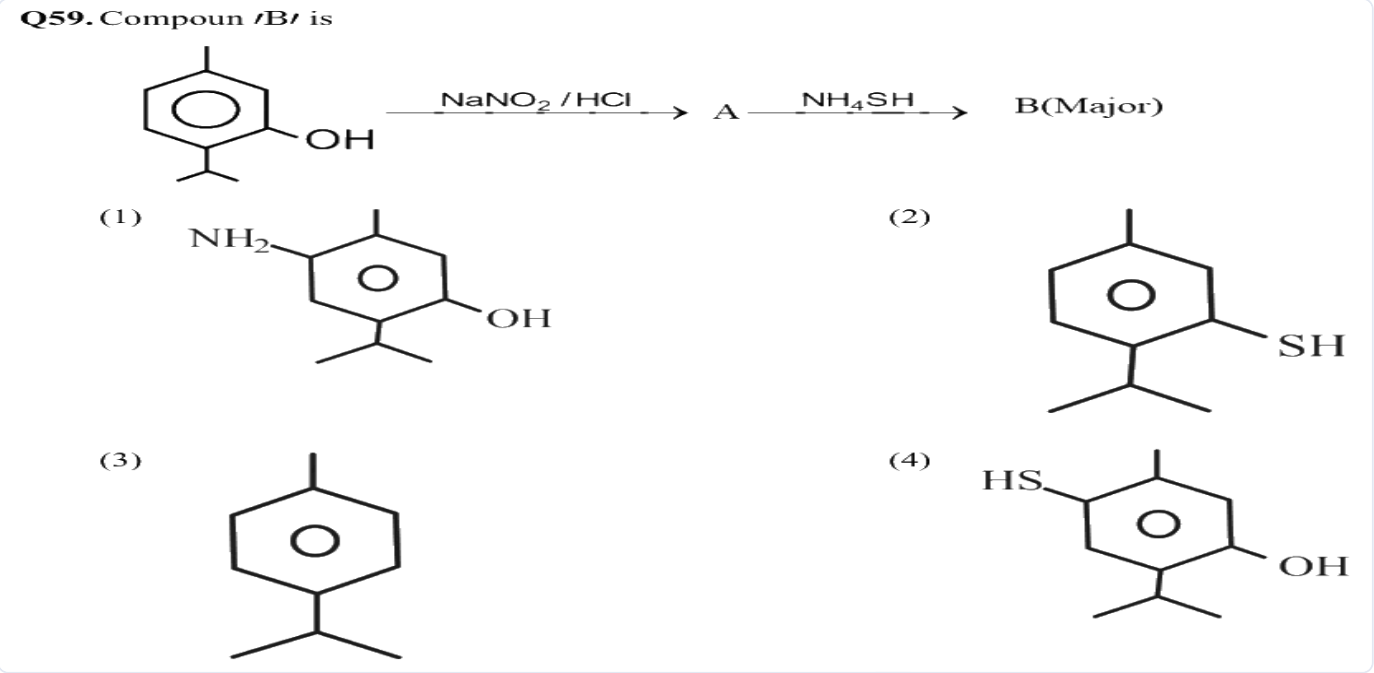
(A) A is false but R is true
(B) Both A and R are correct and R is the correct explanation of A
(C) A is true but R is false
(D) Both A and R are correct but R is NOT the correct explanation of A

Answer: (D) Both A and R are correct but R is NOT the correct explanation of A · Key from source paper

Q52 JEE Main 2023 · 11 Apr · Shift 2 MCQ

Compoun 'B' is

(see the figure above)



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (A) · Key from source paper

Q53 JEE Main 2023 · 10 Apr · Shift 1 MCQ

Suitable reaction condition for preparation of Methyl phenyl ether is

(A) $\mathrm{PhO^{\ominus}Na^{\oplus}}$, MeOH

(B) Benzene, MeBr

(C) Ph - Br, $\mathrm{MeO^{\ominus}Na^{\oplus}}$

(D) $\mathrm{PhO^{\ominus}Na^{\oplus}}$, MeBr

Answer: (D) $\mathrm{PhO^{\ominus}Na^{\oplus}}$**, MeBr** · Key from source paper

Q54 JEE Main 2023 · 10 Apr · Shift 2 MCQ

Incorrect method of preparation for alcohols from the following is:

(A) Reaction of Ketone with RMgBr followed by hydrolysis.

(B) Reaction of alkyl halide with aqueous NaOH.

(C) Hydroboration-oxidation of alkene.

(D) Ozonolysis of alkene

Answer: (D) Ozonolysis of alkene · Key from source paper

Q55 JEE Main 2023 · 8 Apr · Shift 2 MCQ

A compound 'X' when treated with phthalic anhydride in presence of concentrated H_2SO_4 yields 'Y'. 'Y' is used as an acid/base indicator. 'X' and 'Y' are respectively

(A) Anisole, methyl orange
(B) Salicylaldehyde, Phenolphthalein
(C) Toludine, Phenolphthalein
(D) Carbolic acid, Phenolphthalein

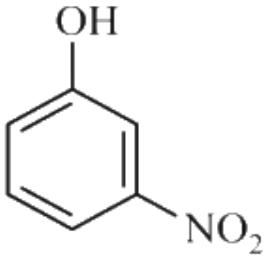
Answer: (D) Carbolic acid, Phenolphthalein · Key from source paper

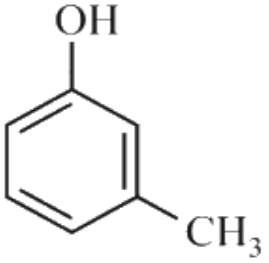
Q56 JEE Main 2023 · 6 Apr · Shift 2 MCQ

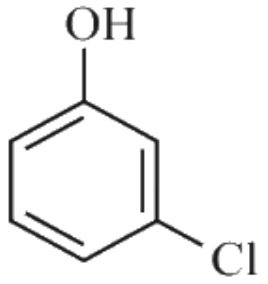
The strongest acid from the following is

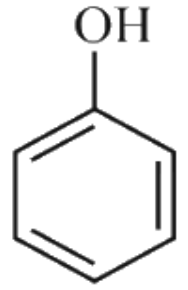
(see the figure above)

Q43. The strongest acid from the following is

(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

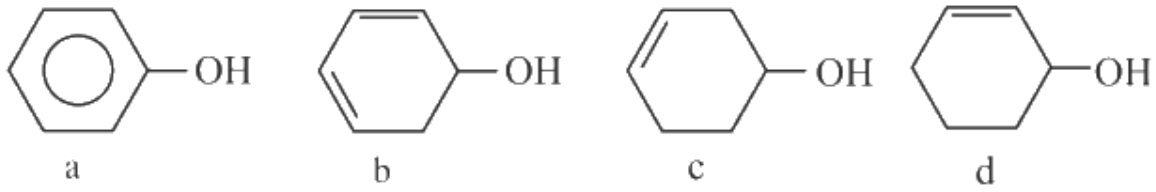
Answer: (A) · Key from source paper

Q57 JEE Main 2023 · 1 Feb · Shift 1 MCQ

Decreasing order of dehydration of the following alcohols is

(see the figure above)

Q46. Decreasing order of dehydration of the following alcohols is



(1) a > d > b > c
(2) b > d > c > a
(3) b > a > d > c
(4) d > b > c > a

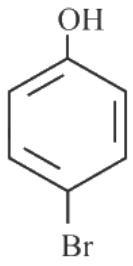
(A) a > d > b > c
(B) b > d > c > a
(C) b > a > d > c
(D) d > b > c > a

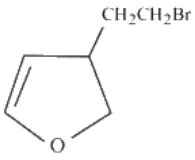
Answer: (B) b > d > c > a · Key from source paper

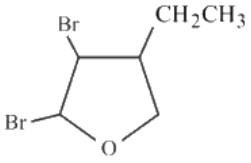
Q58 JEE Main 2023 · 31 Jan · Shift 1 MCQ

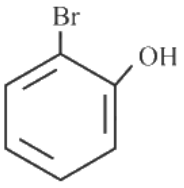
An organic compound ' A ' with empirical formula C_6H_6O gives sooty flame on burning. Its reaction with bromine solution in low polarity solvent results in high yield of B. B is

Q46. An organic compound ' A ' with empirical formula C_6H_6O gives sooty flame on burning. Its reaction with bromine solution in low polarity solvent results in high yield of B . B is

(1)


(2)


(3)


(4)


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q59 JEE Main 2023 · 30 Jan · Shift 1 Numerical

A trisubstituted compound 'A', $C_{10}H_{12}O_2$ gives neutral $FeCl_3$ test positive. Treatment of compound 'A' with NaOH and CH_3Br gives $C_{11}H_{14}O_2$, with hydroiodic acid gives methyl iodide and with hot conc. NaOH gives a compound B, $C_{10}H_{12}O_2$. Compound 'A' also decolorises alkaline $KMnO_4$. The number of π bond/s present in the compound 'A' is _____ .

Numerical value type: the answer is a number.

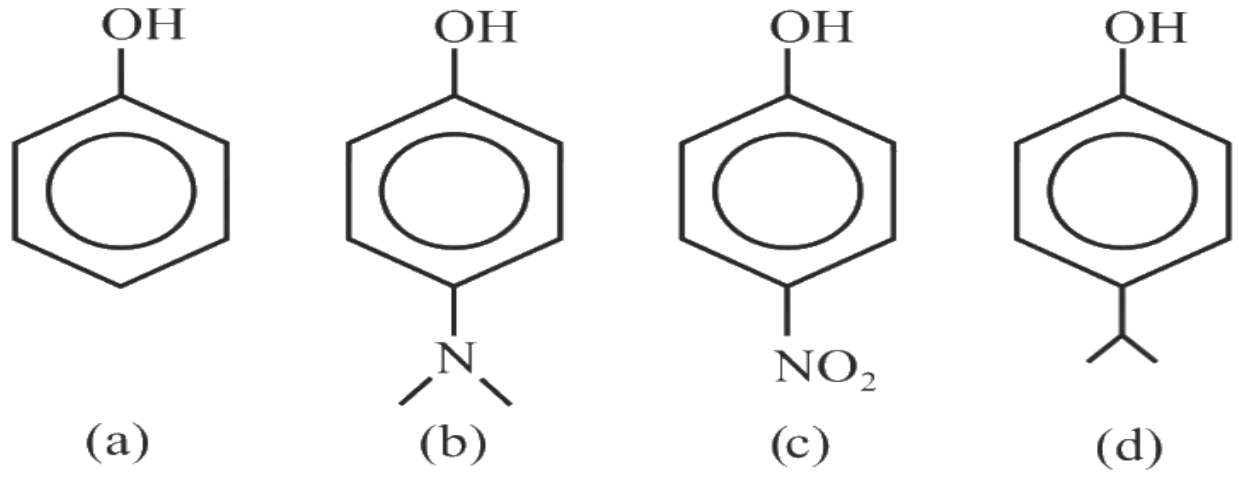
Answer: 4. · Key from source paper

Q60 JEE Main 2023 · 30 Jan · Shift 2 MCQ

The correct order of pK_a values for the following compounds is:

(see the figure above)

Q41. The correct order of pK_a values for the following compounds is:



(1) c > a > d > b
(2) b > d > a > c
(3) b > a > d > c
(4) a > b > c > d

(A) c > a > d > b
(B) b > d > a > c
(C) b > a > d > c
(D) a > b > c > d

Answer: (B) b > d > a > c · Key from source paper

Q61 JEE Main 2023 · 29 Jan · Shift 1 MCQ

The increasing order of pK_a for the following phenols is

(A) 2,4-Dinitrophenol
(B) 4-Nitrophenol
(C) 2,4,5-Trimethylphenol
(D) Phenol
(E) 3-Chlorophenol

Choose the correct answer from the option given below :

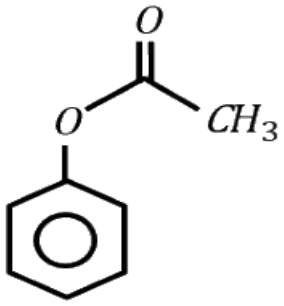
(A) (A), (E), (B), (D), (C)
(B) (A), (B), (E), (D), (C)
(C) (C), (D), (E), (B), (A)
(D) (C), (E), (D), (B), (A)

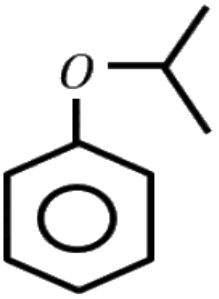
Answer: (B) (A), (B), (E), (D), (C) · Key from source paper

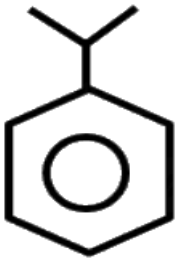
Q62 JEE Main 2023 · 25 Jan · Shift 1 MCQ

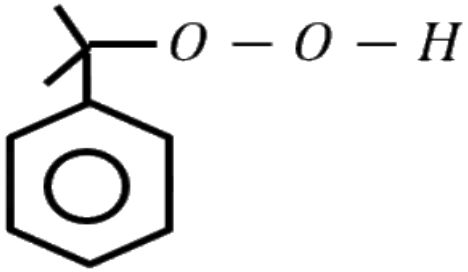
In the cumene to phenol preparation in presence of air, the intermediate is

Q53. In the cumene to phenol preparation in presence of air, the intermediate is

(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

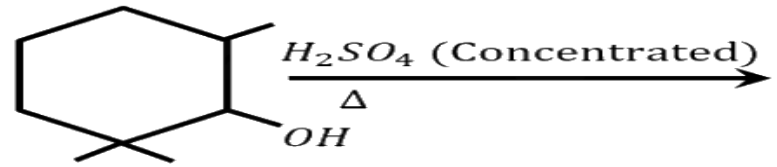
Answer: (D) · Key from source paper

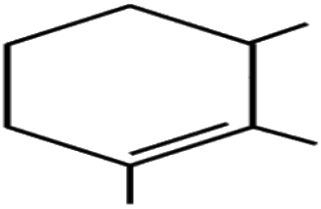
Q63 JEE Main 2023 · 25 Jan · Shift 2 MCQ

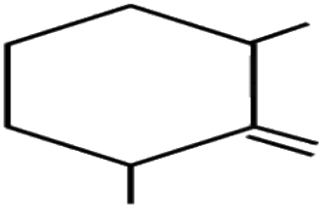
Find out the major product from the following reaction.

(see the figure above)

Q54. Find out the major product from the following reaction.



(1)


(2)


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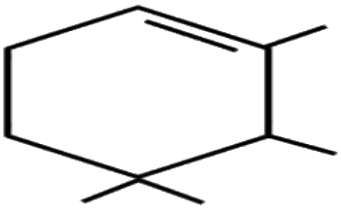

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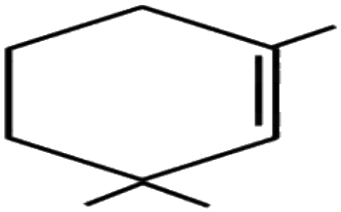


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

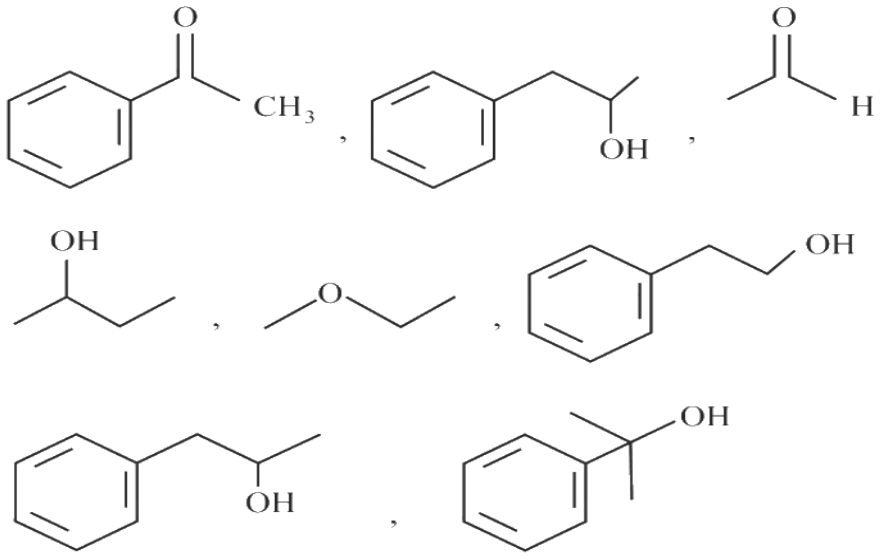
Answer: (A) · Key from source paper

Q64 JEE Main 2023 · 25 Jan · Shift 2 Numerical

Number of compounds giving (i) red colouration with ceric ammonium nitrate and also (ii) positive iodoform test from the following is _____

(see the figure above)

Q57. Number of compounds giving (i) red colouration with ceric ammonium nitrate and also (ii) positive iodoform test from the following is _____



Numerical value type: the answer is a number.

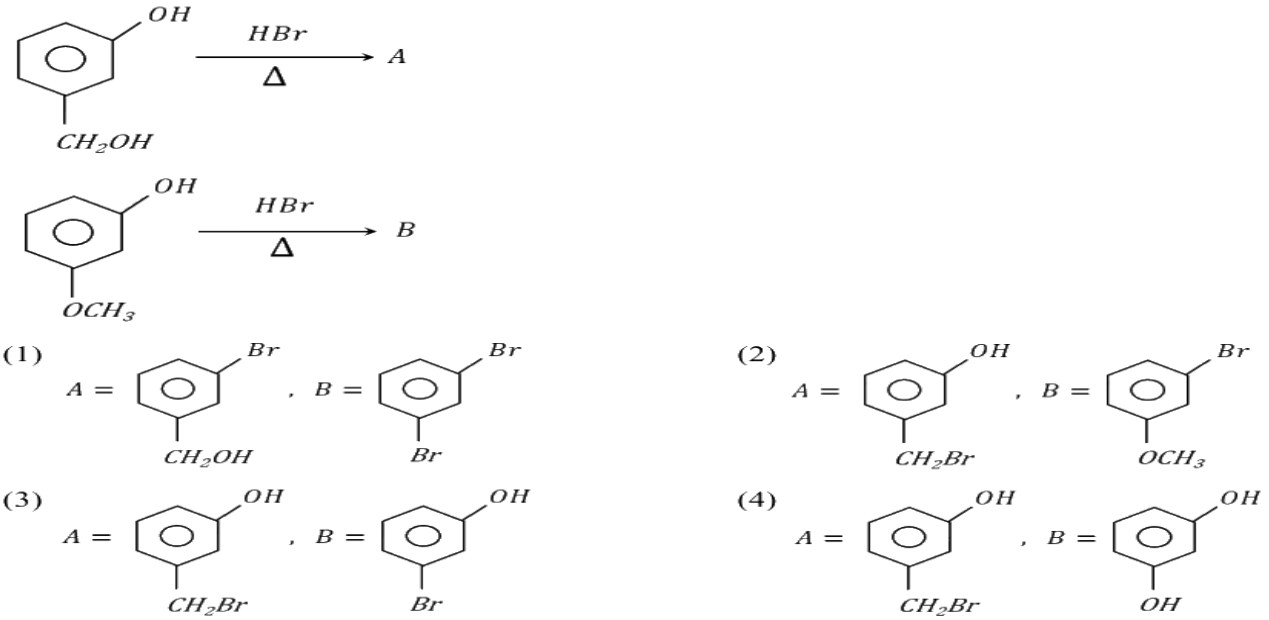
Answer: 3. · Key from source paper

Q65 JEE Main 2023 · 24 Jan · Shift 1 MCQ

'A' and 'B' formed in the following set of reactions are:

(see the figure above)

Q47. A' and 'B' formed in the following set of reactions are:



(A) $A =$ *(see the figure above)* , $B =$ *(see the figure above)*

(B) $A =$ *(see the figure above)* , $B =$ *(see the figure above)*

(C) $A =$ *(see the figure above)* , $B =$ *(see the figure above)*

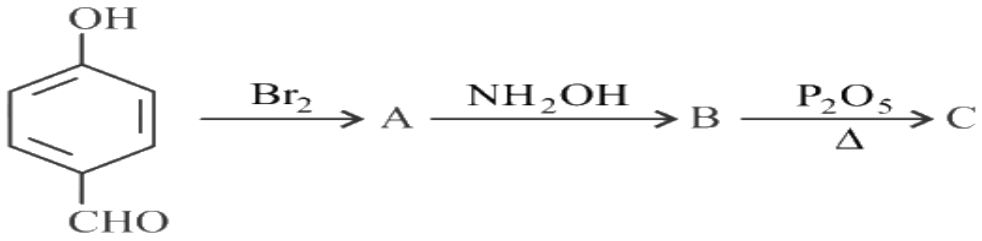
(D) $A =$ *(see the figure above)* , $B =$ *(see the figure above)*

Answer: (D) $A =$ *(see the figure above)* , $B =$ *(see the figure above)* · Key from source paper

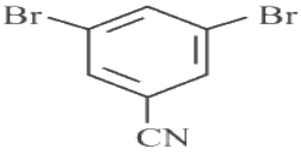
Q66 JEE Main 2022 · 29 Jul · Shift 1 MCQ

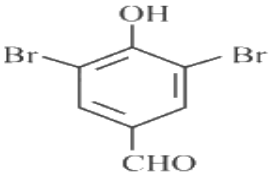
see figure

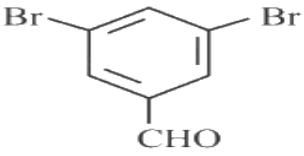
Q44.

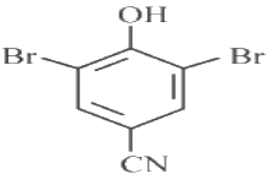


Consider the above reaction sequence, the Product 'C' is

(1) 

(2) 

(3) 

(4) 

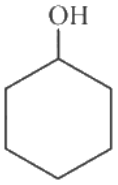
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

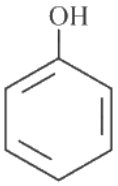
Answer: (D) · Key from source paper

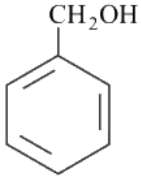
Q67 JEE Main 2022 · 29 Jul · Shift 1 MCQ

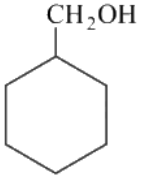
A compound 'X' is acidic and it is soluble in NaOH solution, but insoluble in $NaHCO_3$ solution. Compound 'X' also gives violet colour with neutral $FeCl_3$ solution. The compound 'X' is

Q45. A compound 'X' is acidic and it is soluble in $NaOH$ solution, but insoluble in $NaHCO_3$ solution. Compound 'X' also gives violet colour with neutral $FeCl_3$ solution. The compound 'X' is

(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

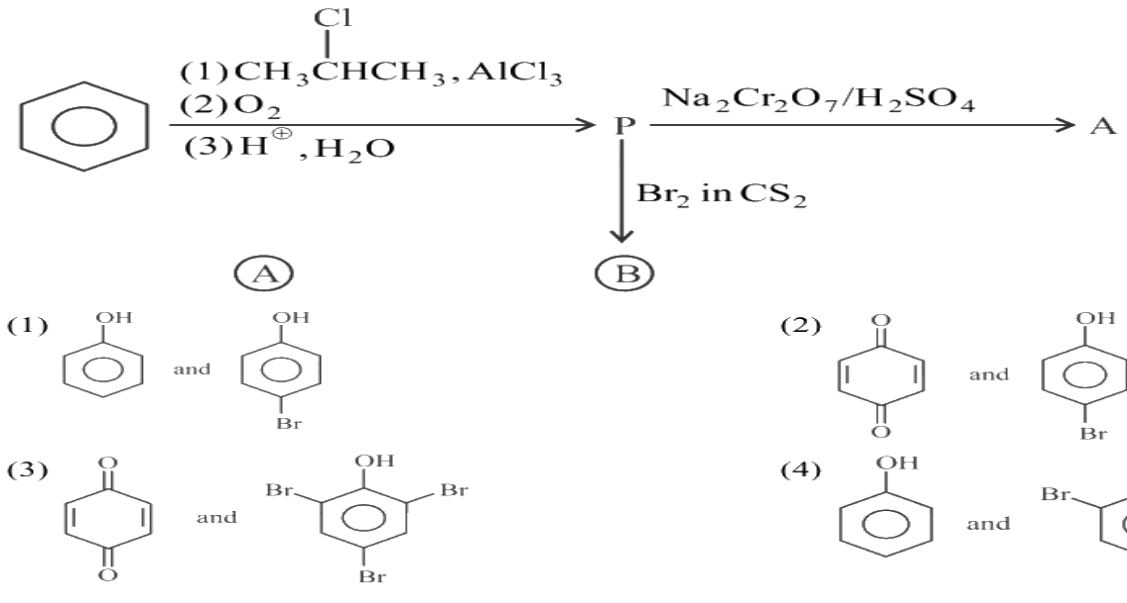
Answer: (B) · Key from source paper

Q68 JEE Main 2022 · 28 Jul · Shift 1 MCQ

Identify the major product A and B for the below given reaction sequence.

(see the figure above)

Q47. Identify the major product A and B for the below given reaction sequence.



(A) A = *(see the figure above)* phenol (benzene ring with OH), B = *(see the figure above)* 4-bromophenol (benzene ring with OH and Br on opposite carbons)

(B) A = *(see the figure above)* para-benzoquinone (six-membered ring with two C=O on opposite carbons), B = *(see the figure above)* 4-bromophenol (benzene ring with OH and Br on opposite carbons)

(C) A = *(see the figure above)* para-benzoquinone (six-membered ring with two C=O on opposite carbons), B = *(see the figure above)* 2,4,6-tribromophenol (benzene ring with OH and three Br at the two ortho and the para positions)

(D) A = *(see the figure above)* phenol (benzene ring with OH), B = *(see the figure above)* 2,4,6-tribromophenol (benzene ring with OH and three Br at the two ortho and the para positions)

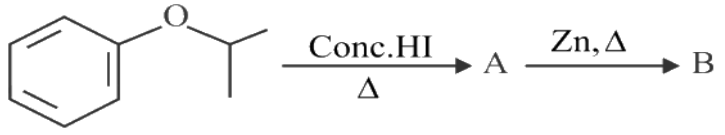
Answer: (B) A = *(see the figure above)* **para-benzoquinone (six-membered ring with two C=O on opposite carbons),** B = *(see the figure above)* **4-bromophenol (benzene ring with OH and Br on opposite carbons)** · Key from source paper

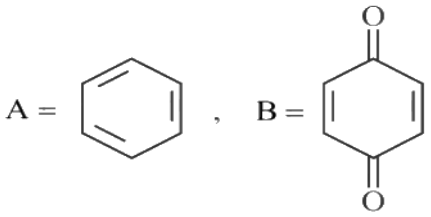
Q69 JEE Main 2022 · 28 Jul · Shift 2 MCQ

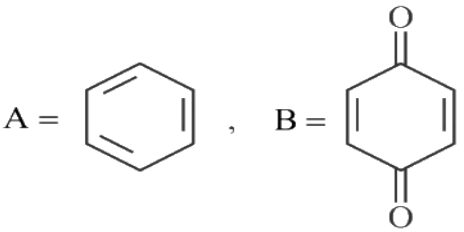
Compound I is heated with Conc. HI to give a hydroxy compound A which is further heated with Zn dust to give compound B. Identify A and B.

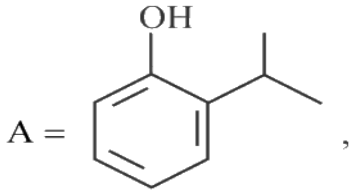
(see the figure above)

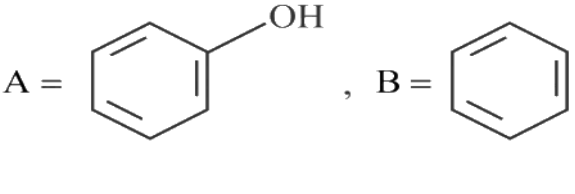
Q45. Compound I is heated with Conc. HI to give a hydroxy compound A which is further heated with Zn dust to give compound B. Identify A and B.



(1) 

(2) 

(3) 

(4) 

(A) $A =$ *(see the figure above)* benzene ring, $B =$ *(see the figure above)* para-benzoquinone (six-membered ring with two C=O at opposite positions, two C=C)

(B) $A =$ *(see the figure above)* benzene ring, $B =$ *(see the figure above)* para-benzoquinone (six-membered ring with two C=O at opposite positions, two C=C)

(C) $A =$ *(see the figure above)* benzene ring with OH and an isopropyl group on neighbouring ring carbons, $B =$ *(see the figure above)* benzene ring with one methyl group (toluene)

(D) $A =$ *(see the figure above)* phenol (benzene ring with OH), $B =$ *(see the figure above)* benzene ring

Answer: (D) $A =$ *(see the figure above)* **phenol (benzene ring with OH),** $B =$ *(see the figure above)* **benzene ring** · Key from source paper

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Q70 JEE Main 2022 · 26 Jul · Shift 1 MCQ

The difference in the reaction of phenol with bromine in chloroform and bromine in water medium is due to

(A) Hyperconjugation in substrate

(B) Polarity of solvent

(C) Free radical formation

(D) Electromeric effect of the substrate

Answer: (B) Polarity of solvent · Key from source paper

Q71 JEE Main 2022 · 26 Jul · Shift 2 MCQ

Hydrolysis of which compound will give carbolic acid?

(A) Cumene

(B) Benzenediazonium chloride

(C) Benzal chloride

(D) Ethylene glycol ketal

Answer: (B) Benzenediazonium chloride · Key from source paper

Q72 JEE Main 2022 · 25 Jul · Shift 1 MCQ

Given below are two statements :
Statement I : On heating with $KHSO_4$, glycerol is dehydrated and acrolein is formed.
Statement II : Acrolein has fruity odour and can be used to test glycerol's presence.
Choose the correct option.

(A) Both Statement I and Statement II are correct.
(B) Both Statement I and Statement II are incorrect
(C) Statement I is correct but Statement II is incorrect
(D) Statement I is incorrect but Statement II is correct

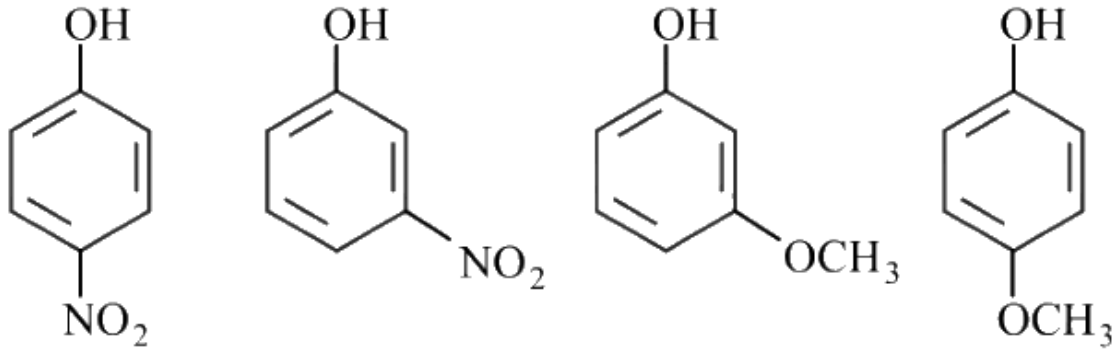
Answer: (C) Statement I is correct but Statement II is incorrect · Key from source paper

Q73 JEE Main 2022 · 25 Jul · Shift 2 MCQ

Arrange the following in decreasing acidic strength.

(see the figure above)

Q37. Arrange the following in decreasing acidic strength.



(A) (B) (C) (D)

(1) A > B > C > D
(2) B > A > C > D
(3) D > C > A > B
(4) D > C > B > A

(A) $A > B > C > D$
(B) $B > A > C > D$
(C) $D > C > A > B$
(D) $D > C > B > A$

Answer: (A) $A > B > C > D$ · Key from source paper

Q74 JEE Main 2022 · 25 Jul · Shift 2 Numerical

A sample of 4.5 mg of an unknown monohydric alcohol, R − OH was added to methylmagnesium iodide. A gas is evolved and is collected and its volume measured to be 3.1 mL. The molecular weight of the unknown alcohol is g/ mol.

Numerical value type: the answer is a number.

Answer: 33. · Key from source paper

Q75 JEE Main 2022 · 29 Jun · Shift 1 MCQ

Given below are two statements.
Statement I : Phenols are weakly acidic.
Statement II : Therefore they are freely soluble in NaOH solution and are weaker acids than alcohols and water.
Choose the most appropriate option

(A) Both Statement I and Statement II are correct.
(B) Statement I is correct but Statement II is incorrect.
(C) Statement I is incorrect but Statement II is correct.
(D) Both Statement I and Statement II are incorrect.

Answer: (B) Statement I is correct but Statement II is incorrect. · Key from source paper

Q76 JEE Main 2022 · 29 Jun · Shift 1 Numerical

$$C_6H_{12}O_6 \xrightarrow{\text{Zymase}} A \xrightarrow[\Delta]{\text{NaOI}} B + CHI_3$$

The number of carbon atoms present in the product B is

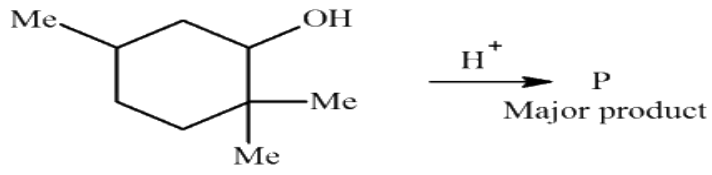
Numerical value type: the answer is a number.

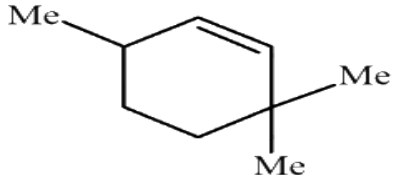
Answer: 1. · Key from source paper

Q77 JEE Main 2022 · 28 Jun · Shift 2 MCQ

The major product P of the given reaction is (where, Me is $-CH_3$)
(see the figure above)

Q45. The major product P of the given reaction is (where, Me is $-CH_3$)



(1)


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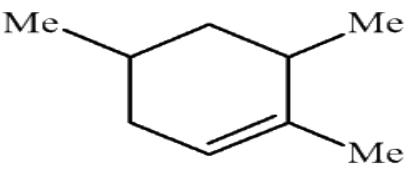

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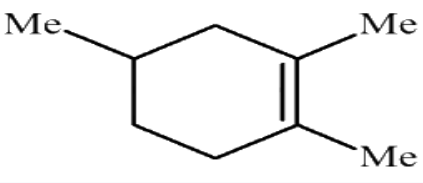

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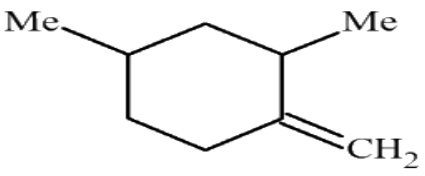
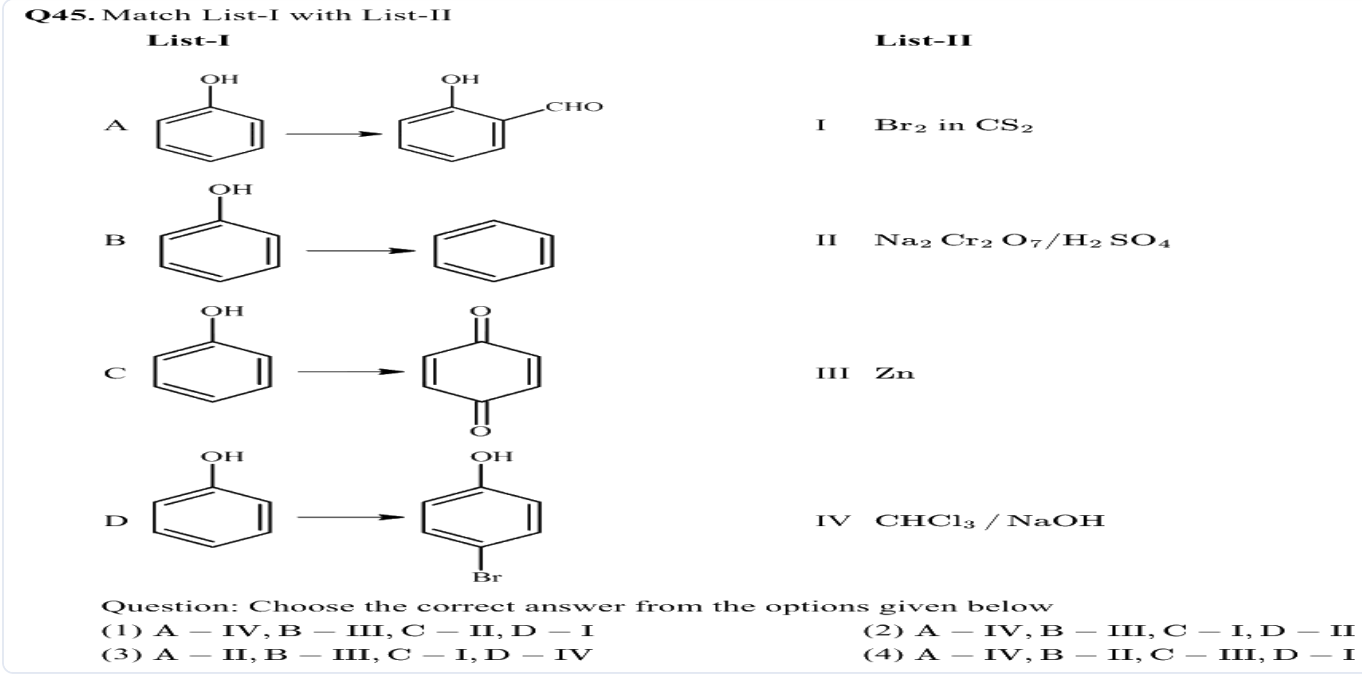


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Key from source paper

Q78 JEE Main 2022 · 27 Jun · Shift 2 MCQ

Match List-I with List-II
List-I
A *(see the figure above)*
B *(see the figure above)*
C *(see the figure above)*
D *(see the figure above)*
List-II
I Br_2 in CS_2
II $Na_2Cr_2O_7/H_2SO_4$
III Zn
IV $CHCl_3/NaOH$
Question: Choose the correct answer from the options given below



(A) A — IV, B — III, C — II, D — I
(B) A — IV, B — III, C — I, D — II
(C) A — II, B — III, C — I, D — IV
(D) A — IV, B — II, C — III, D — I

Answer: (A) A — IV, B — III, C — II, D — I · Key from source paper

Q79 JEE Main 2022 · 26 Jun · Shift 1 Numerical

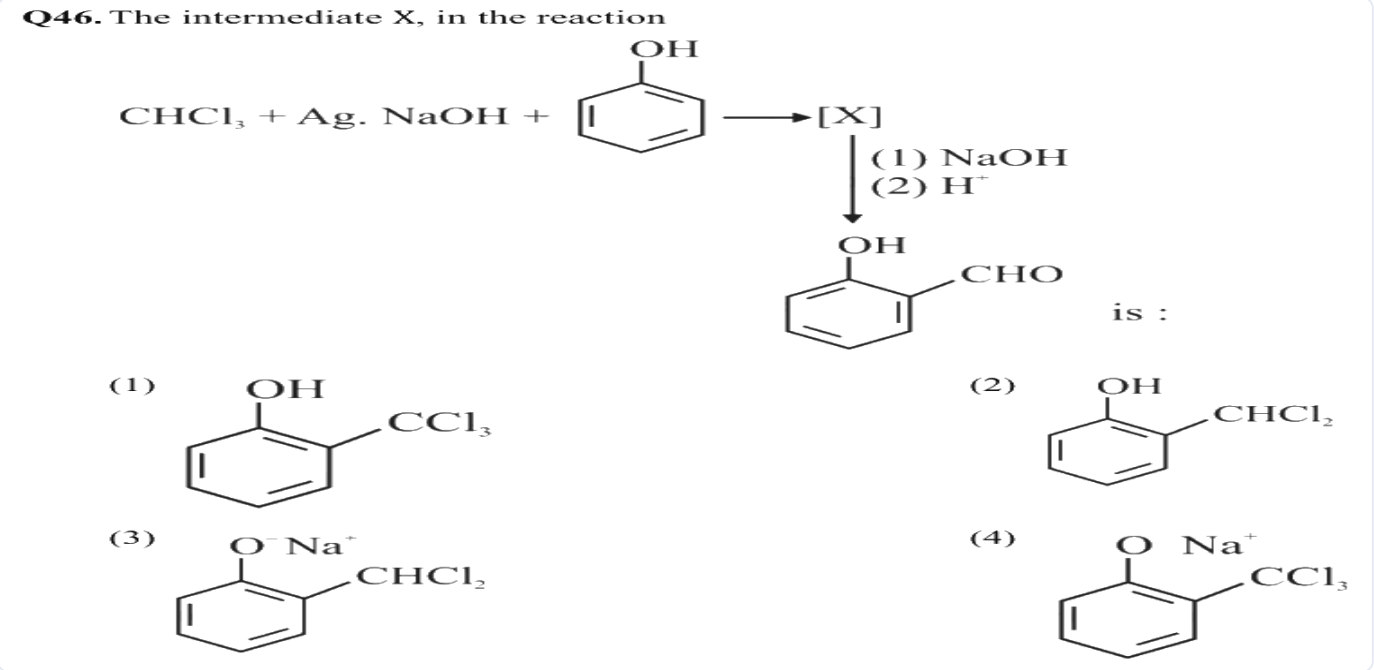
Compound 'P' on nitration with dil. HNO_3 yields two isomers (A) and (B). These isomers can be separated by steam distillations. Isomers (A) and (B) show the intramolecular and intermolecular hydrogen bonding respectively. Compound (P) on reaction with conc. HNO_3 yields a yellow compound 'C', a strong acid. The number of oxygen atoms is present in compound 'C'

Numerical value type: the answer is a number.

Answer: 7. · Key from source paper

Q80 JEE Main 2022 · 25 Jun · Shift 1 MCQ

The intermediate X, in the reaction
(see the figure above)
is :



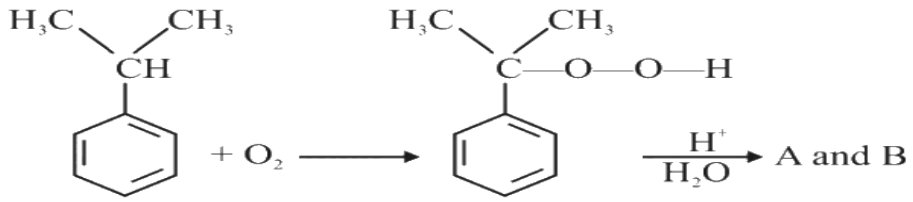
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Key from source paper

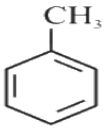
Q81 JEE Main 2022 · 25 Jun · Shift 1 MCQ

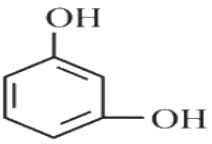
In the following reaction :
(see the figure above)
The compounds A and B respectively are

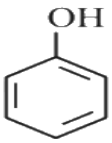
Q47. In the following reaction :

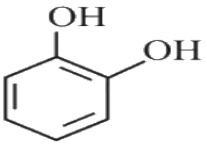


The compounds A and B respectively are

(1)  , CH_3COOH

(2)  , CH_3COCH_3

(3)  , CH_3COCH_3

(4)  , CH_3COCH_3

(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

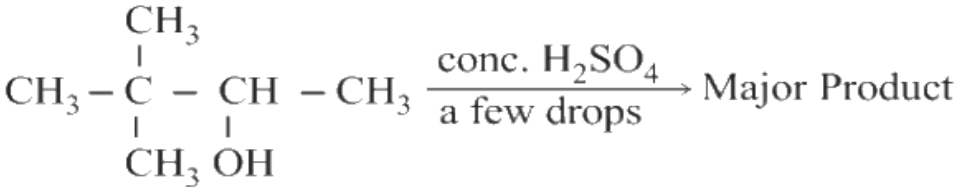
Answer: (C) · Key from source paper

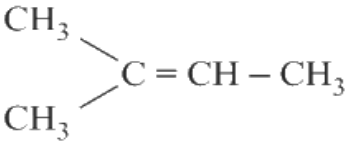
Q82 JEE Main 2021 · 31 Aug · Shift 1 MCQ

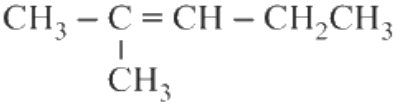
The major product formed in the following reaction is :

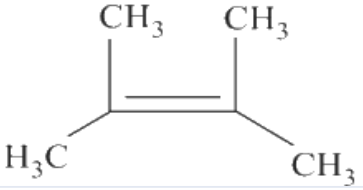
(see the figure above)

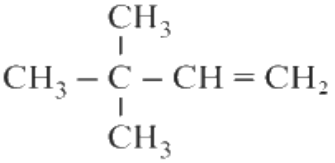
Q49. The major product formed in the following reaction is :



(1) 

(2) 

(3) 

(4) 

(A) *see figure*

(B) $CH_3 - C(CH_3)=CH - CH_2CH_3$ (the CH3 branch hangs below the second carbon)

(C) *see figure*

(D) $CH_3 - C(CH_3)(CH_3) - CH=CH_2$ (the carbon bearing three CH3 groups, with the CH3 above and below it, joined to $CH=CH_2$)

Answer: (C) · Key from source paper

Q83 JEE Main 2021 · 27 Aug · Shift 1 MCQ

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A) : Synthesis of ethyl phenyl ether may be achieved by Williamson synthesis.
Reason (R): Reaction of bromobenzene with sodium ethoxide yields ethyl phenyl ether.
In the light of the above statements, choose the most appropriate answer from the options given below.

(A) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A)

(B) (A) is correct but (R) is not correct

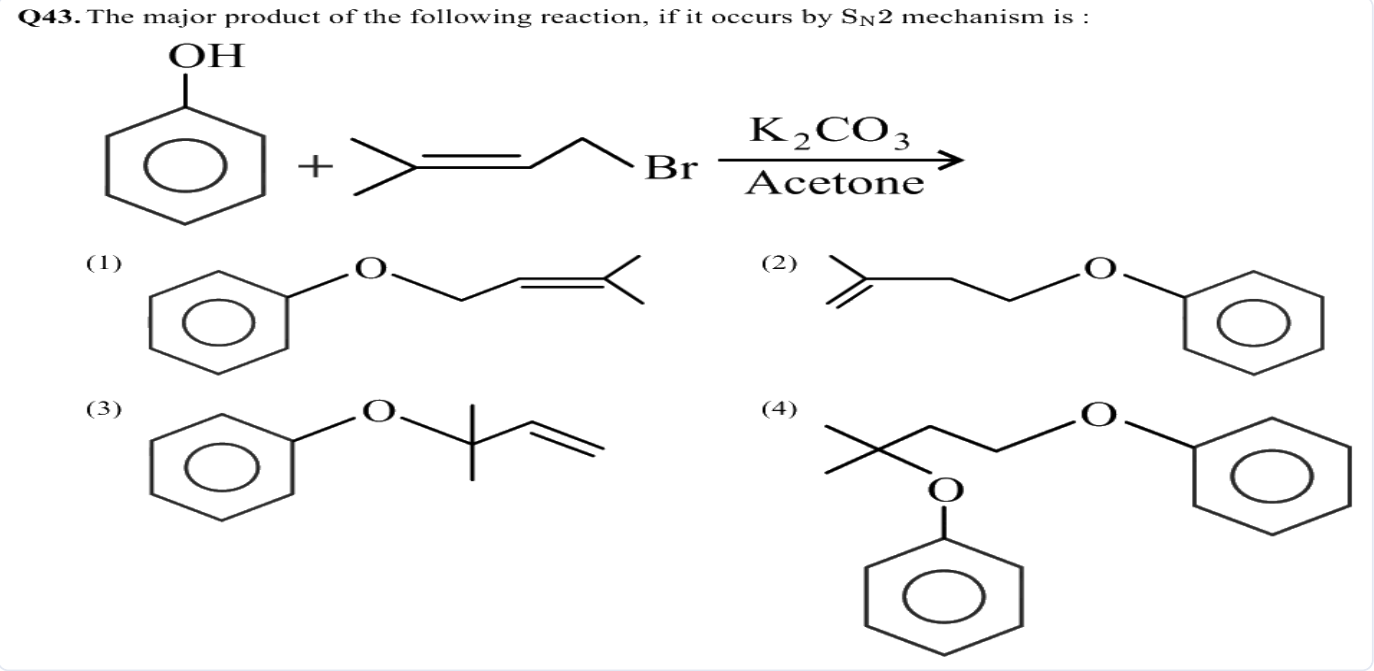
(C) (A) is not correct but (R) is correct

(D) Both (A) and (R) are correct and (R) is the correct explanation of (A)

Answer: (B) (A) is correct but (R) is not correct · Key from source paper

Q84 JEE Main 2021 · 27 Aug · Shift 2 MCQ

The major product of the following reaction, if it occurs by S_N2 mechanism is :
(see the figure above)



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q85 JEE Main 2021 · 27 Aug · Shift 2 MCQ

Given below are two statements :
Statement I : Ethyl pent-4-yn-oate on reaction with CH_3MgBr gives a 3°-alcohol.
Statement II : In this reaction one mole of ethyl pent-4-yn-oate utilizes two moles of CH_3MgBr.
In the light of the above statements, choose the most appropriate answer from the options given below :

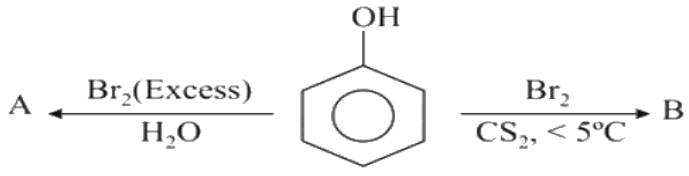
(A) Both Statement I and Statement II are false
(B) Statement I is true but Statement II is false
(C) Statement I is false but Statement II is true
(D) Both Statement I and Statement II are true

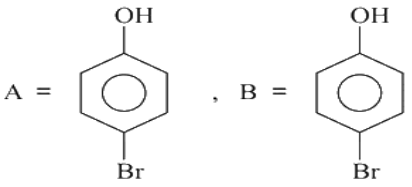
Answer: (B) Statement I is true but Statement II is false · Key from source paper

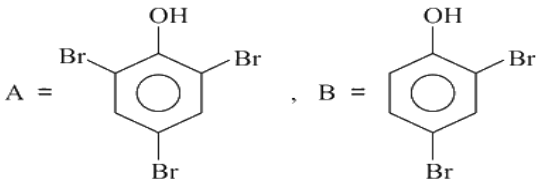
Q86 JEE Main 2021 · 26 Aug · Shift 1 MCQ

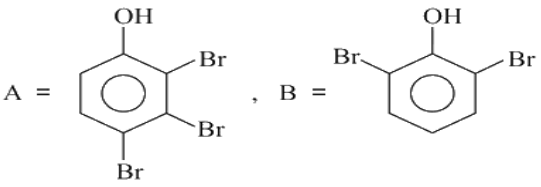
The correct options for the products A and B of the following reactions are:
(see the figure above)

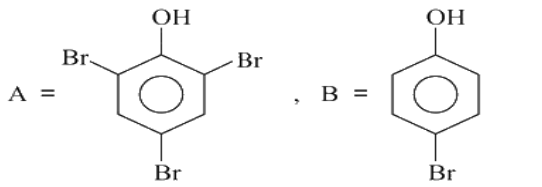
Q46. The correct options for the products A and B of the following reactions are:



(1) 

(2) 

(3) 

(4) 

(A) A = *(see the figure above)* phenol with Br at the para position (4-bromophenol), B = *(see the figure above)* phenol with Br at the para position (4-bromophenol)

(B) A = *(see the figure above)* phenol with Br at both ortho positions and at the para position (2,4,6-tribromophenol), B = *(see the figure above)* phenol with Br at one ortho position and at the para position (2,4-dibromophenol)

(C) A = *(see the figure above)* phenol with Br at one ortho position, at the neighbouring meta position and at the para position (2,3,4-tribromophenol as drawn), B = *(see the figure above)* phenol with Br at both ortho positions (2,6-dibromophenol)

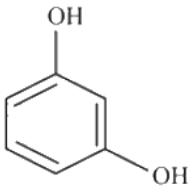
(D) A = *(see the figure above)* phenol with Br at both ortho positions and at the para position (2,4,6-tribromophenol), B = *(see the figure above)* phenol with Br at the para position (4-bromophenol)

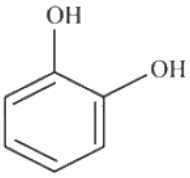
Answer: (D) A = *(see the figure above)* phenol with Br at both ortho positions and at the para position (2,4,6-tribromophenol), B = *(see the figure above)* phenol with Br at the para position (4-bromophenol) · Key from source paper

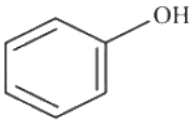
Q87 JEE Main 2021 · 26 Aug · Shift 2 MCQ

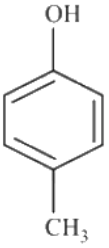
Which one of the following phenols does not give colour when condensed with phthalic anhydride in presence of conc. H_2SO_4 ?

Q46. Which one of the following phenols does not give colour when condensed with phthalic anhydride in presence of conc. H_2SO_4 ?

(1) 

(2) 

(3) 

(4) 

(A) *see figure*

(B) *see figure*

(C) *see figure*

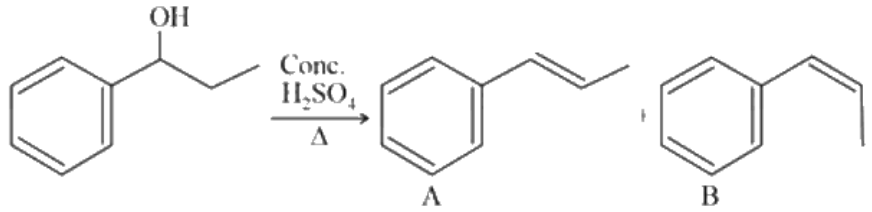
(D) *see figure*

Answer: (D) · Key from source paper

Q88 JEE Main 2021 · 27 Jul · Shift 2 MCQ

see figure

Q37.



consider the above reaction, and choose the correct statement:

(1) The reaction is not possible in acidic medium
(2) Both compounds A and B are formed equally
(3) Compound A will be the major product
(4) Compound B will be the major product

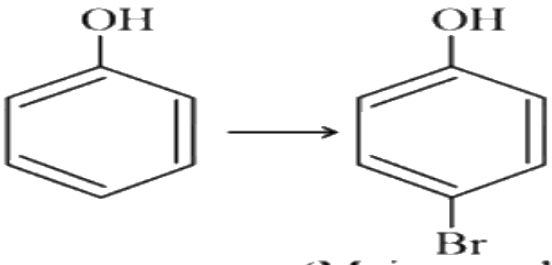
(A) The reaction is not possible in acidic medium
(B) Both compounds A and B are formed equally
(C) Compound A will be the major product
(D) Compound B will be the major product

Answer: (C) Compound A will be the major product · Key from source paper

Q89 JEE Main 2021 · 25 Jul · Shift 1 MCQ

see figure

Q43.



(Major product)

The given reaction can occur in the presence of :

(a) Bromine water
(b) Br_2 in CS_2, 273 K
(c) Br_2 / $FeBr_3$
(d) Br_2 in $CHCl_3$, 273 K

Choose the correct answer from the options given below:

(1) (b) and (d) only
(2) (a) and (c) only
(3) (b), (c) and (d) only
(4) (a), (b) and (d) only

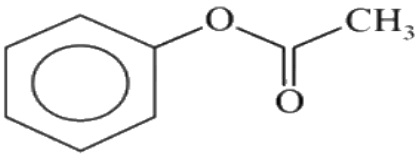
(A) (b) and (d) only
(B) (a) and (c) only
(C) (b), (c) and (d) only
(D) (a), (b) and (d) only

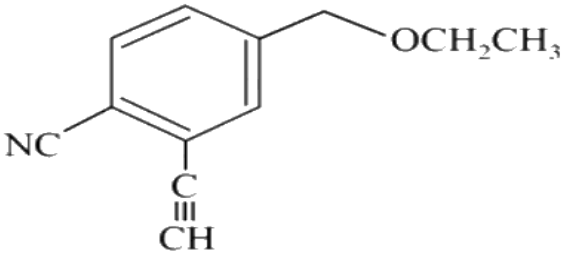
Answer: (C) (b), (c) and (d) only · Key from source paper

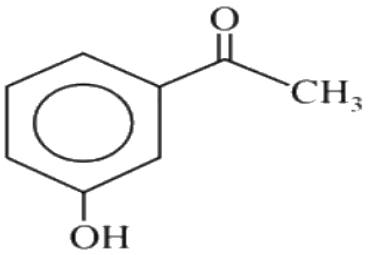
Q90 JEE Main 2021 · 22 Jul · Shift 1 MCQ

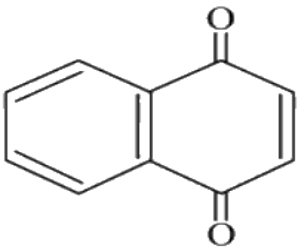
Which of the following compounds will provide a tertiary alcohol on reaction with excess of $CH_3\ MgBr$ followed by hydrolysis ?

Q46. Which of the following compounds will provide a tertiary alcohol on reaction with excess of CH_3MgBr followed by hydrolysis ?

(1) 

(2) 

(3) 

(4) 

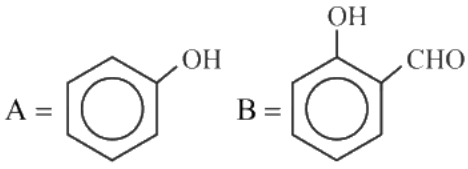
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

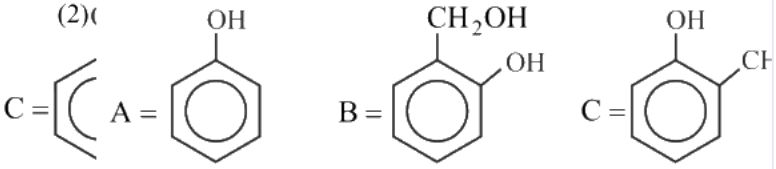
Answer: (A) · Key from source paper

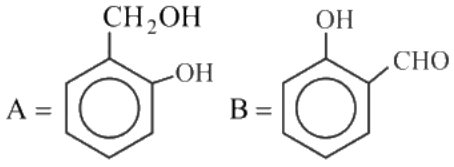
Q91 JEE Main 2021 · 22 Jul · Shift 1 MCQ

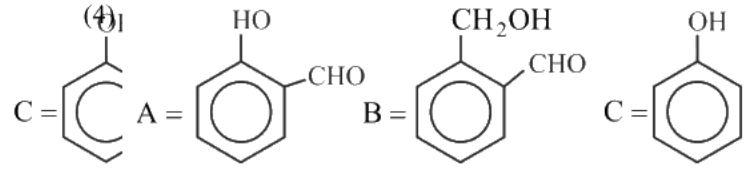
An organic compound A(C_6H_6O) gives dark green colouration with ferric chloride. On treatment with $CHCl_3$ and KOH, followed by acidification gives compound B. Compound B can also be obtained from compound C on reaction with pyridinium chlorochromate (PCC). Identify A, B and C.

Q47. An organic compound A(C_6H_6O) gives dark green colouration with ferric chloride. On treatment with $CHCl_3$ and KOH, followed by acidification gives compound B. Compound B can also be obtained from compound C on reaction with pyridinium chlorochromate (PCC). Identify A, B and C.

(1) 

(2) 

(3) 

(4) 

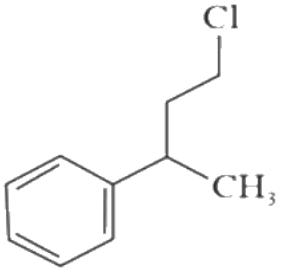
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

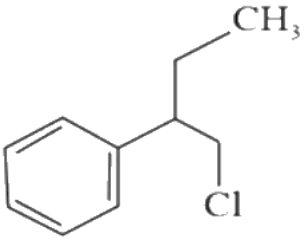
Answer: (A) · Key from source paper

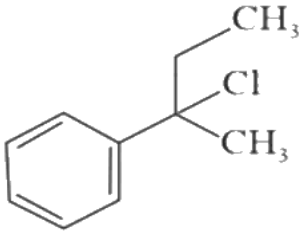
Q92 JEE Main 2021 · 18 Mar · Shift 1 MCQ

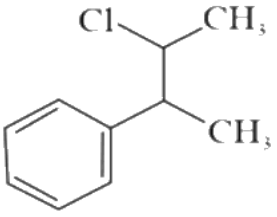
Reaction of Grignard reagent, C_2H_5MgBr with C_8H_8O followed by hydrolysis gives compound A, which reacts instantly with Lucas reagent to give compound $B(C_{10}H_{13}Cl)$.
The Compound B is:

Q44. Reaction of Grignard reagent, C_2H_5MgBr with C_8H_8O followed by hydrolysis gives compound A, which reacts instantly with Lucas reagent to give compound $B(C_{10}H_{13}Cl)$.
The Compound B is:

(1) 

(2) 

(3) 

(4) 

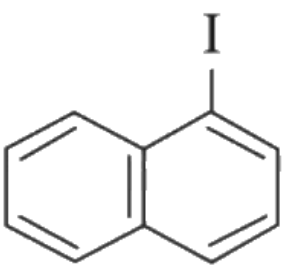
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

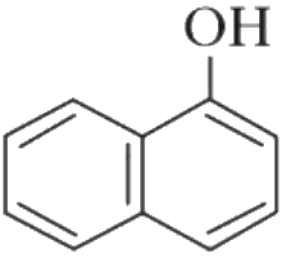
Answer: (C) · Key from source paper

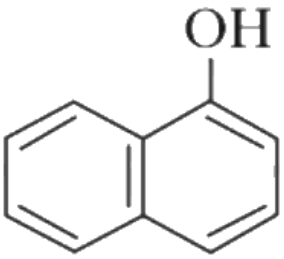
Q93 JEE Main 2021 · 18 Mar · Shift 2 MCQ

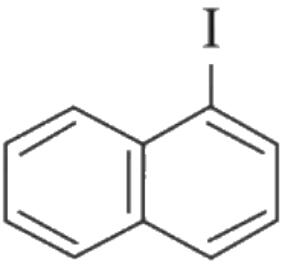
Main Products formed during a reaction of 1-methoxy naphthalene with hydroiodic acid are:

Q45. Main Products formed during a reaction of 1-methoxy naphthalene with hydroiodic acid are:

(1)  and CH_3OH

(2)  and CH_3I

(3)  and CH_3OH

(4)  and CH_3I

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

Q94 JEE Main 2021 · 17 Mar · Shift 1 MCQ

see figure

Q45.



The above reaction requires which of the following reaction conditions?

(1) 573 K, Cu, 300 atm
(2) 623 K, Cu, 300 atm
(3) 573 K, 300 atm
(4) 623 K, 300 atm

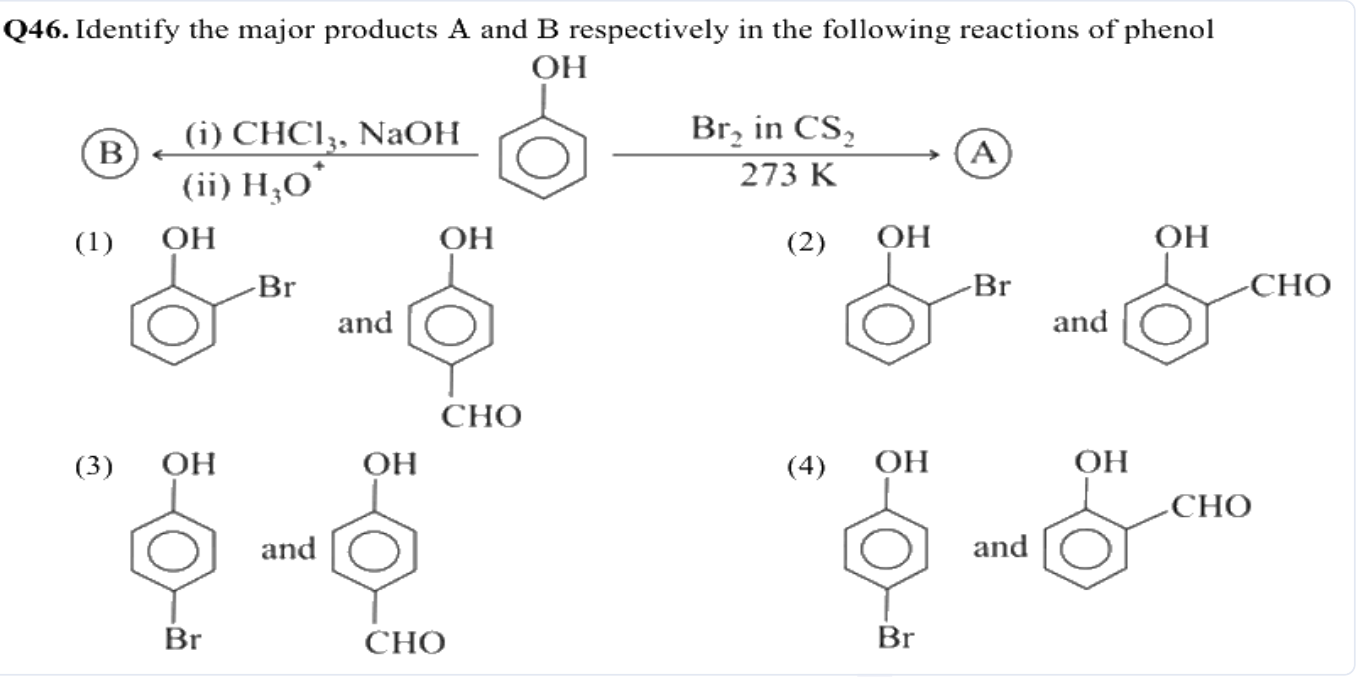
(A) 573 K, Cu, 300 atm
(B) 623 K, Cu, 300 atm
(C) 573 K, 300 atm
(D) 623 K, 300 atm

Answer: (D) 623 K, 300 atm · Key from source paper

Q95 JEE Main 2021 · 26 Feb · Shift 1 MCQ

Identify the major products A and B respectively in the following reactions of phenol

(see the figure above)



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

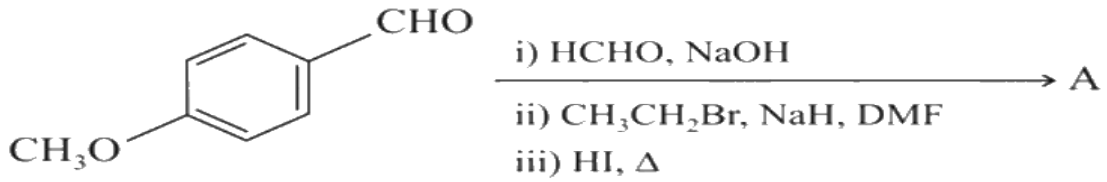
Answer: (D) · Key from source paper

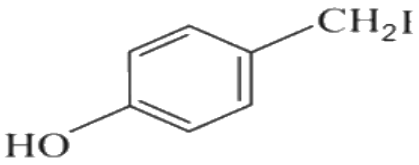
Q96 JEE Main 2021 · 26 Feb · Shift 2 MCQ

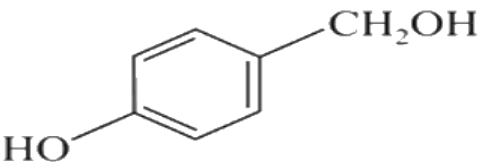
Identify A in the following chemical reaction.

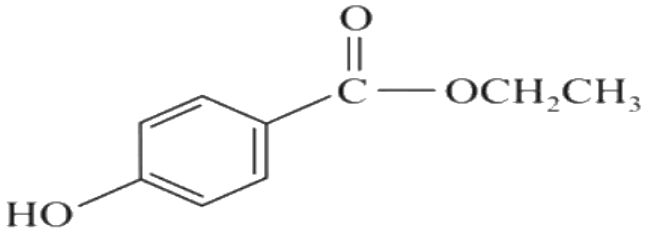
(see the figure above)

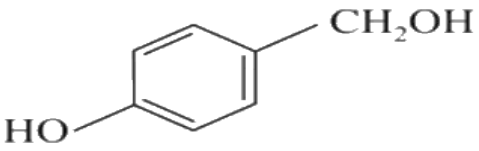
Q46. Identify A in the following chemical reaction.



(1) 

(2) 

(3) 

(4) 

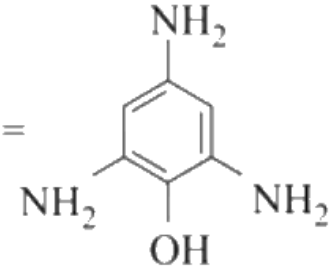
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

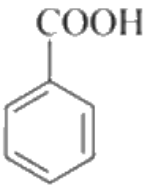
Answer: (A) · Key from source paper

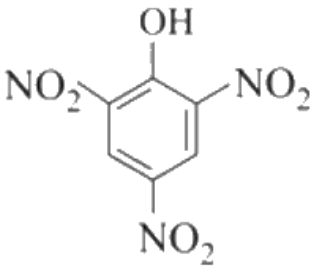
Q97 JEE Main 2021 · 25 Feb · Shift 1 MCQ

Compound(s) which will liberate carbon dioxide with sodium bicarbonate solution is/are :
(see the figure above)

Q37. Compound(s) which will liberate carbon dioxide with sodium bicarbonate solution is/are :

A = 

B = 

C = 

(1) A and B only
(2) B and C only
(3) C only
(4) B only

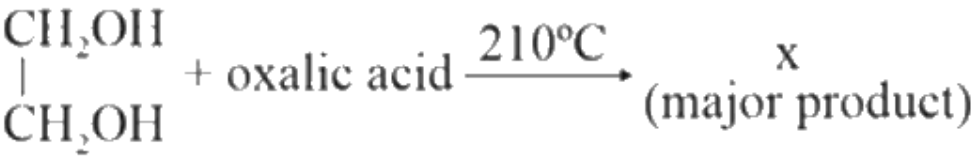
(A) A and B only
(B) B and C only
(C) C only
(D) B only

Answer: (B) B and C only · Key from source paper

Q98 JEE Main 2021 · 25 Feb · Shift 2 MCQ

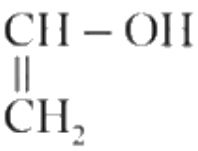
What is 'X' in the given reaction?
(see the figure above)

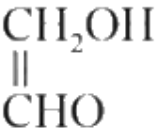
Q48. What is 'X' in the given reaction?



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

Q99 JEE Main 2020 · 6 Sep · Shift 2 Numerical

A solution of phenol in chloroform when treated with aqueous NaOH gives compound Pas a major product. The mass percentage of carbon in P is _____.

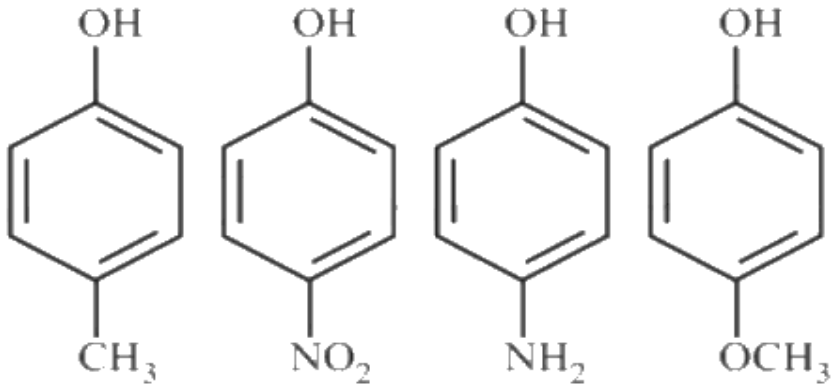
Numerical value type: the answer is a number.

Answer: 69. · Key from source paper

Q100 JEE Main 2020 · 5 Sep · Shift 2 MCQ

The increasing order of boiling points of the following compounds is :
(see the figure above)

Q28. The increasing order of boiling points of the following compounds is :



I II III IV

(1) I < III < IV < II
(2) I < IV < II< III
(3) IV < I < II < III
(4) III < I < II < IV

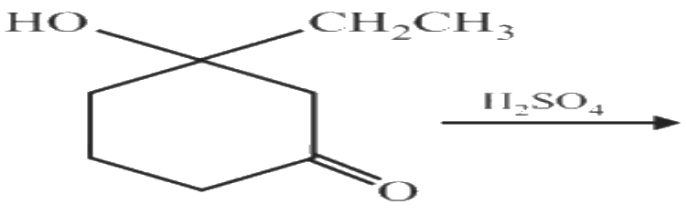
(A) I < III < IV < II
(B) I < IV < II< III
(C) IV < I < II < III
(D) III < I < II < IV

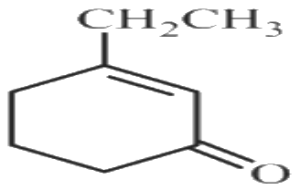
Answer: (B) I < IV < II< III · Key from source paper

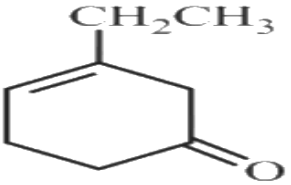
Q101 JEE Main 2020 · 5 Sep · Shift 2 MCQ

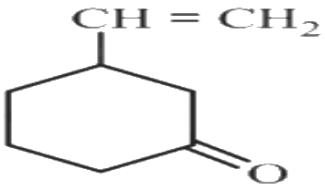
The major product of the following reaction is :
(see the figure above)

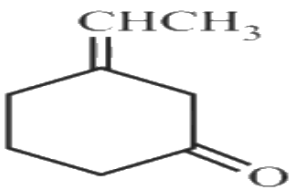
Q43. The major product of the following reaction is :



(1)


(2)


(3)


(4)


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

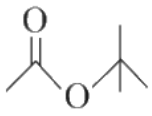
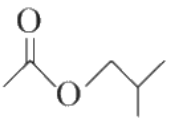
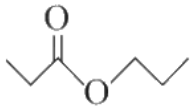
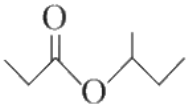
Answer: (A) · Key from source paper

Q102 JEE Main 2020 · 4 Sep · Shift 1 MCQ

An organic compound (A) (molecular formula $C_6H_{12}O_2$) was hydrolysed with dil. H_2SO_4 to give a carboxylic acid (B) and an alcohol (C). 'C ' gives white turbidity immediately when treated with anhydrous $ZnCl_2$ and conc. HCl. The organic compound (A) is:

(see the figure above)

Q41. An organic compound (A) (molecular formula $C_6H_{12}O_2$) was hydrolysed with dil. H_2SO_4 to give a carboxylic acid (B) and an alcohol (C). 'C ' gives white turbidity immediately when treated with anhydrous $ZnCl_2$ and conc. HCl. The organic compound (A) is:

(1) 
(2) 
(3) 
(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

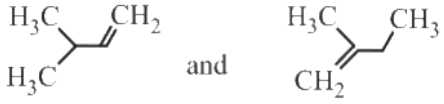
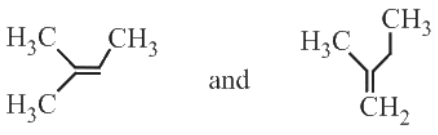
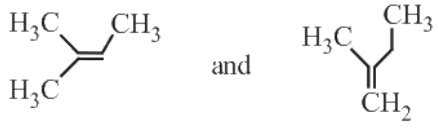
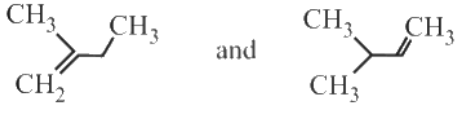
Answer: (A) · Key from source paper

Q103 JEE Main 2020 · 4 Sep · Shift 1 MCQ

When neopentyl alcohol is heated with an acid, it slowly converted into an 85 : 15 mixture of alkenes A and B, respectively. What are these alkenes?

(see the figure above)

Q42. When neopentyl alcohol is heated with an acid, it slowly converted into an 85 : 15 mixture of alkenes A and B, respectively. What are these alkenes?

(1) 
(2) 
(3) 
(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Options (2) or (3) were accepted. More than one answer was accepted. · Key from source paper

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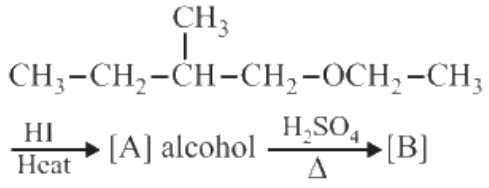
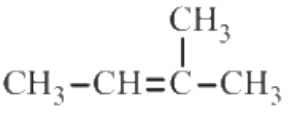
Q104 JEE Main 2020 · 4 Sep · Shift 2 MCQ

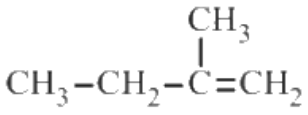
The major product [B] in the following reaction is :
(see the figure above)

Q41. The major product [B] in the following reaction is :



(1) $CH_2 = CH_2$

(2) 

(3) 

(4) $CH_3 - CH_2\,CH = CH - CH_3$

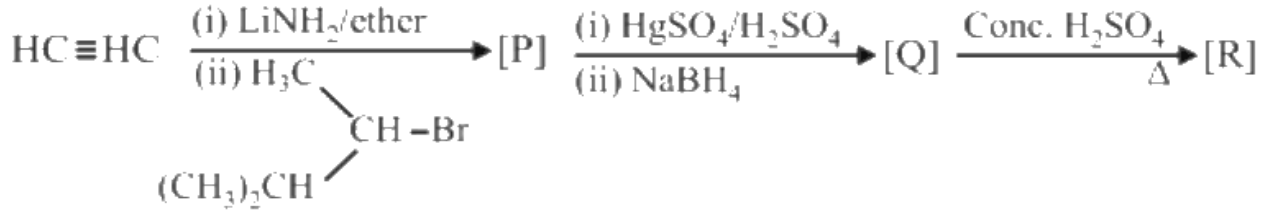
(A) $CH_2 = CH_2$
(B) *see figure*
(C) *see figure*
(D) $CH_3 - CH_2\,CH = CH - CH_3$

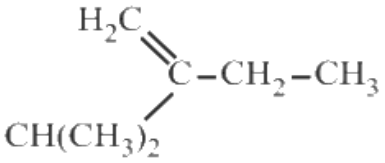
Answer: (B) · Key from source paper

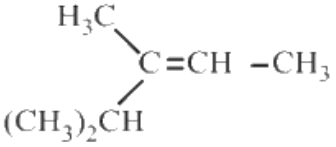
Q105 JEE Main 2020 · 4 Sep · Shift 2 MCQ

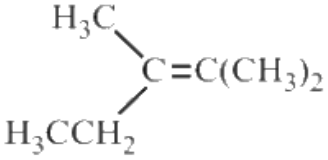
The major product [R] in the following sequence of reaction is :
(see the figure above)

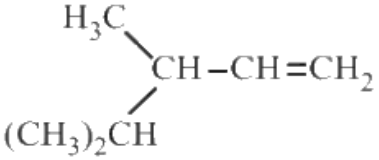
Q42. The major product [R] in the following sequence of reaction is :



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Key from source paper

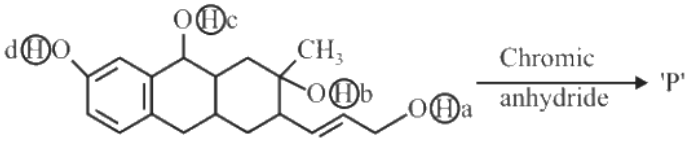
Q106 JEE Main 2020 · 3 Sep · Shift 2 MCQ

Consider the following reaction:

(see the figure above)

The product 'P' gives positive ceric ammonium nitrate test. This is because of the presence of which of these –OH group(s)?

Q40. Consider the following reaction:



The product 'P' gives positive ceric ammonium nitrate test. This is because of the presence of which of these – OH group(s)?

(1) (b) only
(2) (c) and (d)
(3) (d) only
(4) (b) and (d)

(A) (b) only
(B) (c) and (d)
(C) (d) only
(D) (b) and (d)

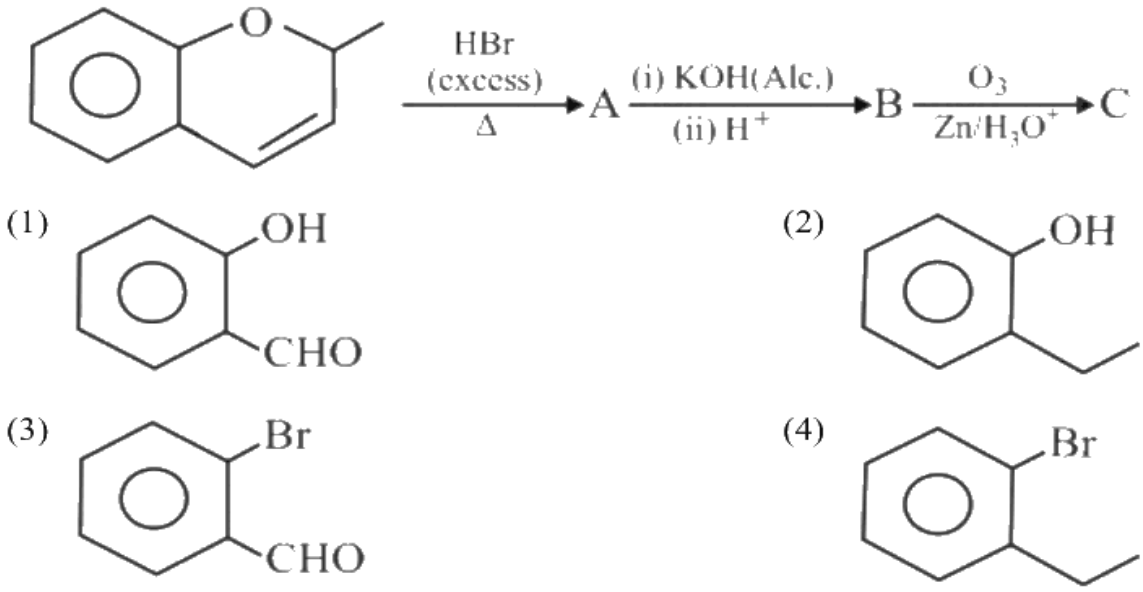
Answer: (A) (b) only · Key from source paper

Q107 JEE Main 2020 · 2 Sep · Shift 1 MCQ

The major aromatic product C in the following reaction sequence will be :

(see the figure above)

Q44. The major aromatic product C in the following reaction sequence will be :



(A) *see figure*

(B) *see figure*

(C) *see figure*

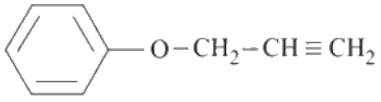
(D) *see figure*

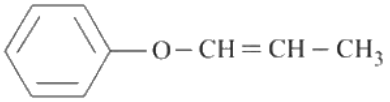
Answer: (A) · Key from source paper

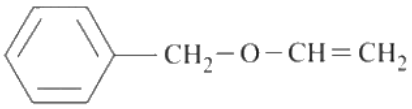
Q108 JEE Main 2020 · 2 Sep · Shift 2 MCQ

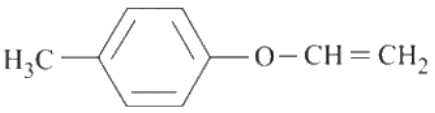
An organic compound 'A' ($C_9H_{10}O$) when treated with conc. HI undergoes cleavage to yield compound 'B' and 'C'. 'B' gives yellow precipitate with $AgNO_3$ where as 'C' tautomerizes to 'D'. 'D' gives positive iodoform test. 'A' could be:

Q33. An organic compound 'A' ($C_9H_{10}O$) when treated with conc. HI undergoes cleavage to yield compound 'B' and 'C'. 'B' gives yellow precipitate with $AgNO_3$ where as 'C' tautomerizes to 'D'. 'D' gives positive iodoform test. 'A' could be:

(1) 

(2) 

(3) 

(4) 

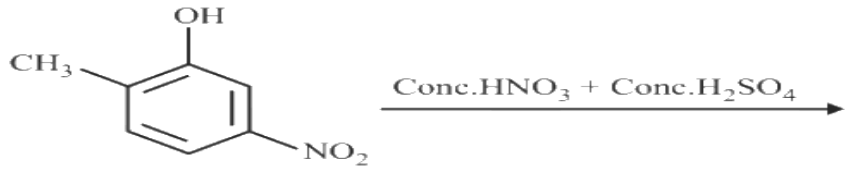
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

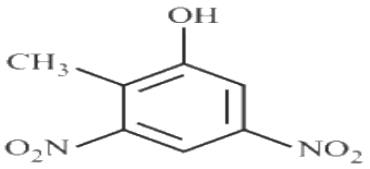
Answer: (C) · Key from source paper

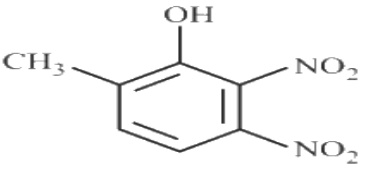
Q109 JEE Main 2020 · 2 Sep · Shift 2 MCQ

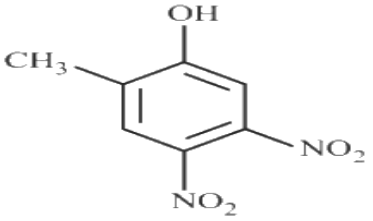
The major product of the following reaction is:
(see the figure above)

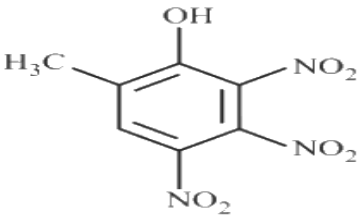
Q34. The major product of the following reaction is:



(1)


(2)


(3)


(4)


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Key from source paper

Q110 JEE Main 2020 · 2 Sep · Shift 2 MCQ

Two compounds A and B with same molecular formula (C_3H_6O) undergo Grignard reaction with methylmagnesium bromide to give products C and D. Products C and D show following chemical tests.

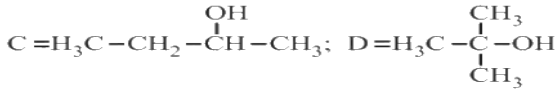
Test	C	D
Ceric ammonium nitrate Test	Positive	Positive
Lucas Test	Turbidity obtained after five minutes	Turbidity obtained Immediately
Iodoform Test	Positive	Negative

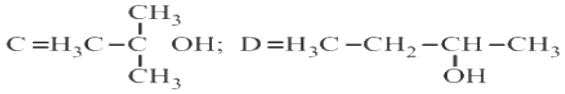
C and D respectively are

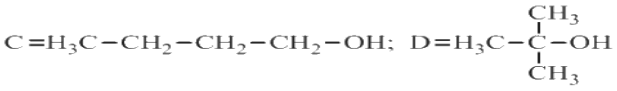
Q43. Two compounds A and B with same molecular formula (C_3H_6O) undergo Grignard reaction with methylmagnesium bromide to give products C and D. Products C and D show following chemical tests.

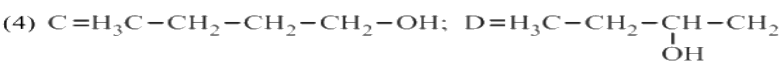
Test	C	D
Ceric ammonium nitrate Test	Positive	Positive
Lucas Test	Turbidity obtained after five minutes	Turbidity obtained Immediately
Iodoform Test	Positive	Negative

C and D respectively are

(1) 

(2) 

(3) 

(4) 

(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (A) · Key from source paper

Q111 JEE Main 2020 · 9 Jan · Shift 2 · Numerical

Consider the following reactions $A \xrightarrow[(ii)H_3O^+]{(i)CH_3MBr} B \xrightarrow[573K]{Cu} 2-\text{methyl}-2-\text{butene}$. The mass percentage of carbon in A is _____.

Numerical value type: the answer is a number.

Answer: 66.67. · Key from source paper

Q112 JEE Main 2020 · 8 Jan · Shift 1 · MCQ

Arrange the following compounds in increasing order of $C-OH$ bond length: methanol, phenol, p -ethoxyphenol

(A) methanol < p -ethoxyphenol < phenol

(B) phenol < methanol < p -ethoxyphenol

(C) phenol < p -ethoxyphenol < methanol

(D) methanol < phenol < p -ethoxyphenol

Answer: (C) phenol < p -ethoxyphenol < methanol · Key from source paper

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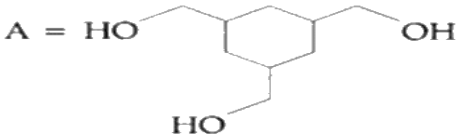
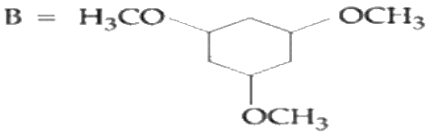
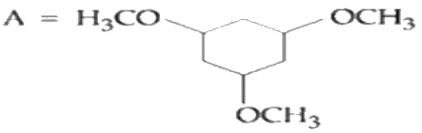
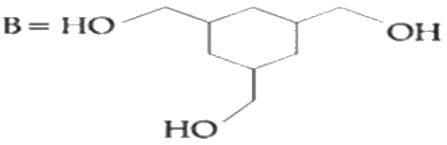
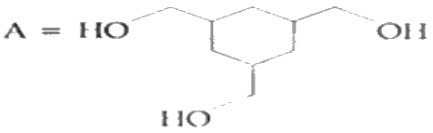
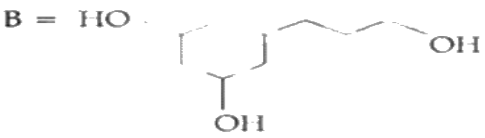
Q113 JEE Main 2020 · 8 Jan · Shift 2 · MCQ

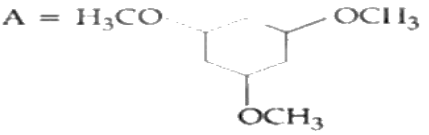
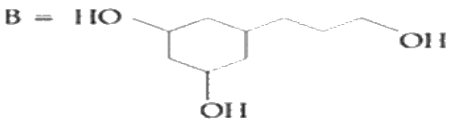
Among the compounds A and B with molecular formula $C_9H_{18}O_3$, A is having higher boiling point than B. The possible structures of A and B are:

Q29. Among the compounds A and B with molecular formula $C_9H_{18}O_3$, A is having higher boiling point than B. The possible structures of A and B are:

(1) A = 
B = 

(2) A = 
B = 

(3) A = 
B = 

(4) A = 
B = 

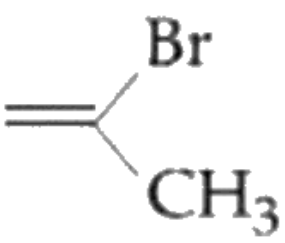
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

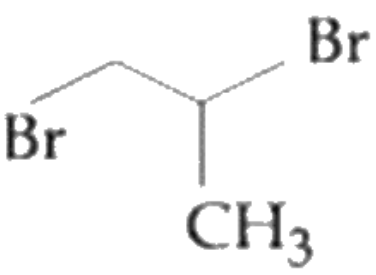
Answer: (A) · Key from source paper

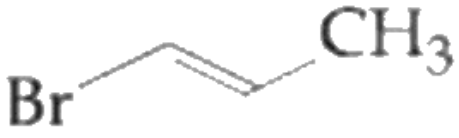
Q114 JEE Main 2020 · 7 Jan · Shift 1 MCQ

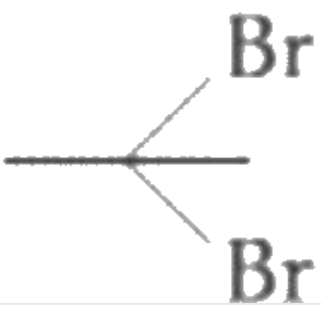
1-methyl ethylene oxide when treated with an excess of HBr produces
(see the figure above)

Q42. 1-methyl ethylene oxide when treated with an excess of HBr produces

(1) 

(2) 

(3) 

(4) 

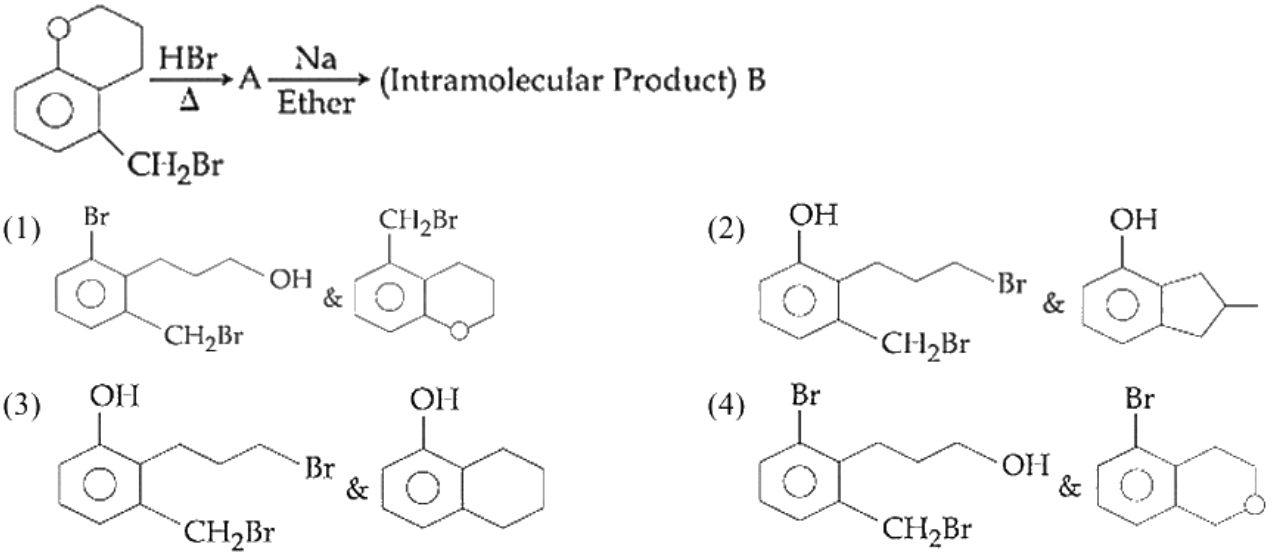
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

Q115 JEE Main 2020 · 7 Jan · Shift 2 MCQ

In the following reaction sequence, structures of A and B are, respectively
(see the figure above)

Q43. In the following reaction sequence, structures of A and B are, respectively



(A) A: Br on the ring, side chain ending in OH, CH2Br on the ring; B: chroman skeleton with CH2Br *(see the figure above)*
(B) A: OH on the ring, side chain ending in Br, CH2Br on the ring; B: OH-substituted ring fused to a five-membered ring with a methyl *(see the figure above)*
(C) A: OH on the ring, side chain ending in Br, CH2Br on the ring; B: OH-substituted tetralin-type skeleton *(see the figure above)*
(D) A: Br on the ring, side chain ending in OH, CH2Br on the ring; B: Br-substituted ring fused to an O-containing six-membered ring *(see the figure above)*

Answer: (C) A: OH on the ring, side chain ending in Br, CH2Br on the ring; B: OH-substituted tetralin-type skeleton *(see the figure above)* · Key from source paper

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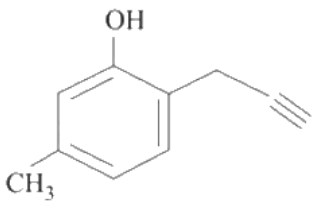
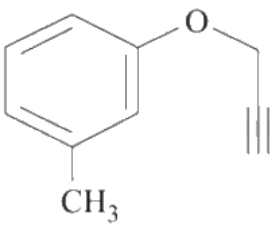
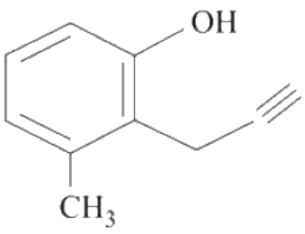
Q116 JEE Main 2019 · 12 Apr · Shift 2 MCQ

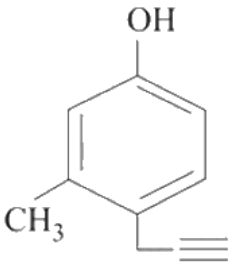
What will be the major product when m-cresol is reacted with propargyl bromide ($HC \equiv C - CH_2Br$) in presence of K_2CO_3 in acetone?

Q57. What will be the major product when m-cresol is reacted with propargyl bromide ($HC \equiv C - CH_2Br$) in presence of K_2CO_3 in acetone?

(1) 

(2) 

(3) 

(4) 

A *see figure*
B *see figure*
C *see figure*
D *see figure*

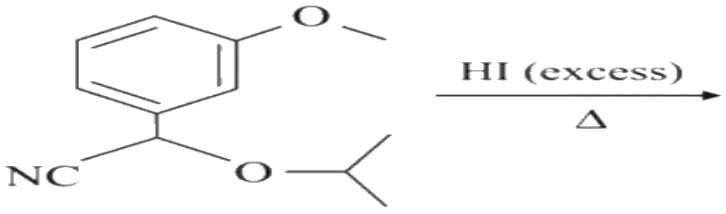
Answer: (B) · Key from source paper

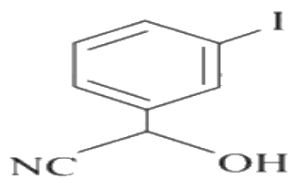
Q117 JEE Main 2019 · 10 Apr · Shift 1 MCQ

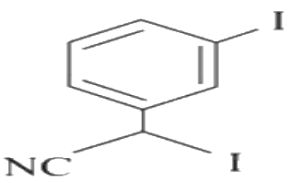
The major product of the following reaction is:

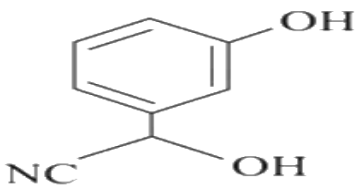
(see the figure above)

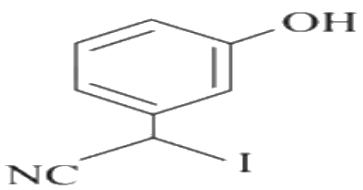
Q55. The major product of the following reaction is:



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

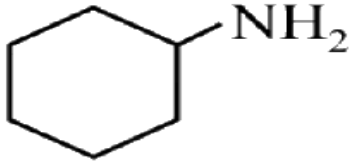
Answer: (C) · Key from source paper

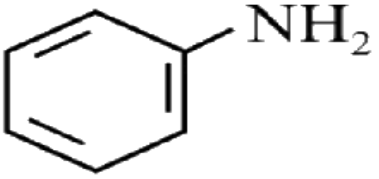
Q118 JEE Main 2019 · 9 Apr · Shift 1 MCQ

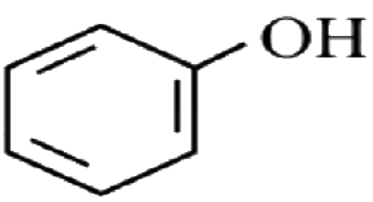
The organic compound that gives following qualitative analysis is:
(see the figure above)

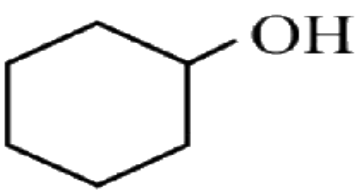
Q56. The organic compound that gives following qualitative analysis is:

	Test	Inference
(a)	Dil. HCl	Insoluble
(b)	NaOH solution	Soluble
(c)	Br_2/water	Decolourization

(1) 

(2) 

(3) 

(4) 

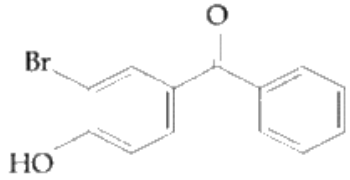
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

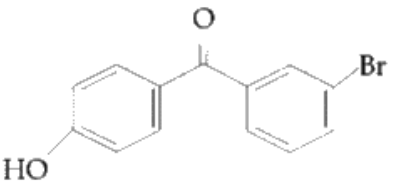
Answer: (C) · Key from source paper

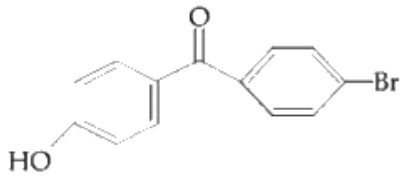
Q119 JEE Main 2019 · 9 Apr · Shift 2 MCQ

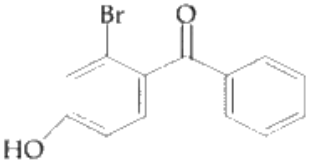
p-Hydroxybenzophenone upon reaction with bromine in carbon tetrachloride gives:
(see the figure above)

Q53. p-Hydroxybenzophenone upon reaction with bromine in carbon tetrachloride gives:

(1) 

(2) 

(3) 

(4) 

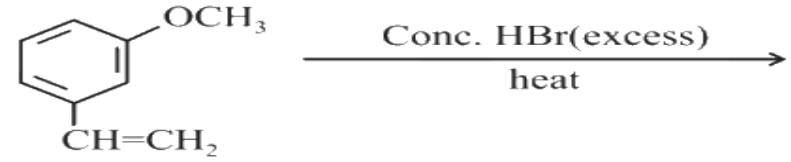
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

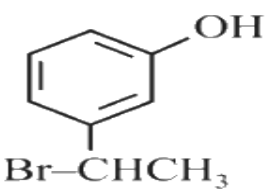
Answer: (A) · Key from source paper

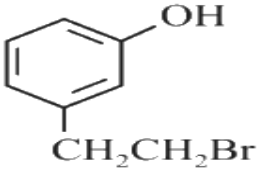
Q120 JEE Main 2019 · 8 Apr · Shift 1 MCQ

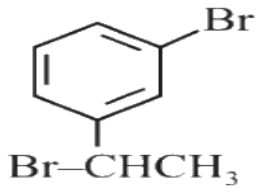
The major product of the f following reaction is:
(see the figure above)

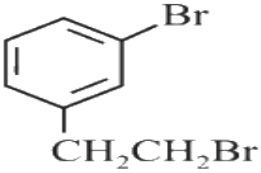
Q42. The major product of the f following reaction is:



(1) 

(2) 

(3) 

(4) 

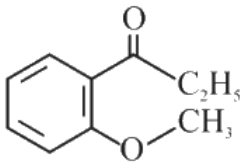
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

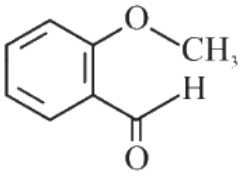
Answer: (A) · Key from source paper

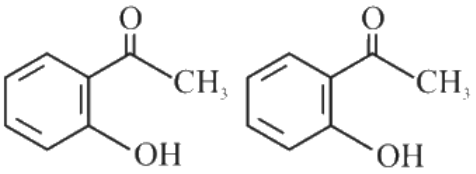
Q121 JEE Main 2019 · 8 Apr · Shift 1 MCQ

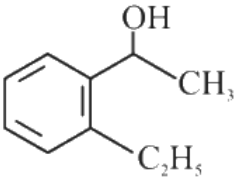
An organic compound neither reacts with neutral ferric chloride solution nor with Fehling solution. It however, reacts with Grignard reagent and given positive iodoform test. The compound is:

Q54. An organic compound neither reacts with neutral ferric chloride solution nor with Fehling solution. It however, reacts with Grignard reagent and given positive iodoform test. The compound is:

(1) 

(2) 

(3) 

(4) 

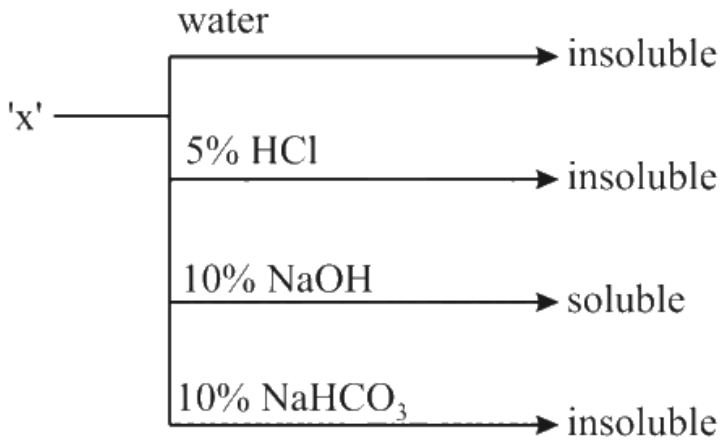
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (D) · Key from source paper

Q122 JEE Main 2019 · 8 Apr · Shift 1 MCQ

An organic compound 'X' showing the following solubility profile is:
(see the figure above)

Q56. An organic compound 'X' showing the following solubility profile is:



(1) m-Cresol (2) o-Toluidine (3) Oleic acid (4) Benzamide

(A) m-Cresol
(B) o-Toluidine
(C) Oleic acid
(D) Benzamide

Answer: (A) m-Cresol · Key from source paper

Q123 JEE Main 2019 · 12 Jan · Shift 1 MCQ

see figure

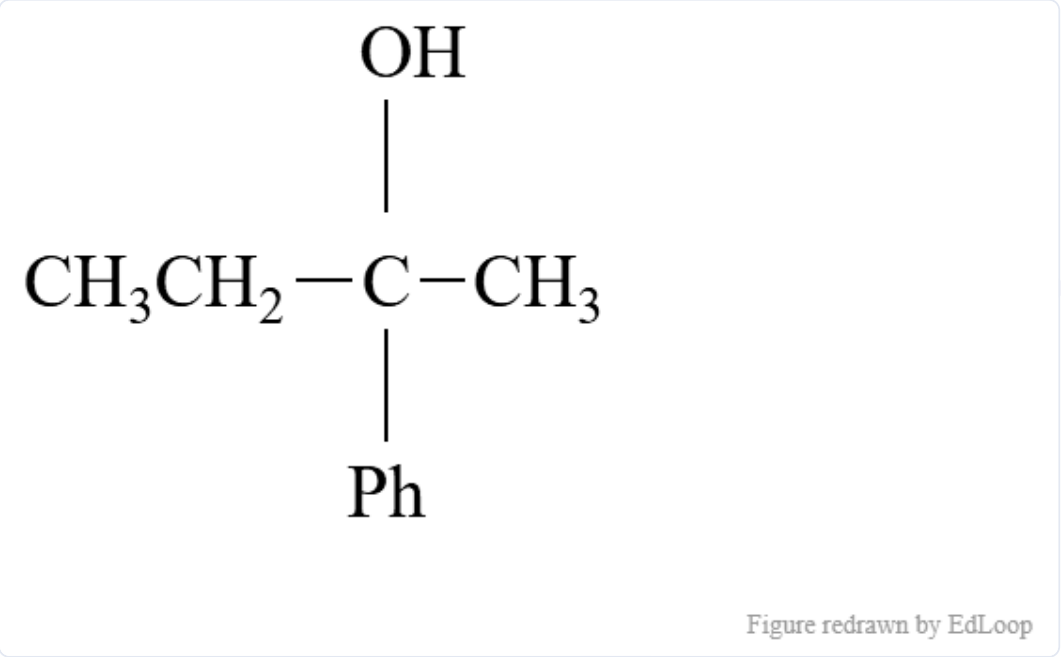


Figure redrawn by EdLoop

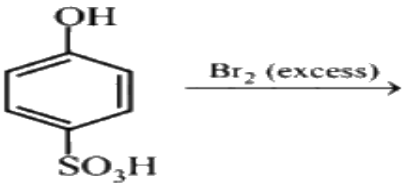
(A) $HCHO + PhCH(CH_3)\ CH_2\ MgX$
(B) $PhCOCH_2\ CH_3 + CH_3\ MgX$
(C) $CH_3\ CH_2\ COCH_3 + PhMgX$
(D) $PhCOCH_3 + CH_3\ CH_2\ MgX$

Answer: (A) $HCHO + PhCH(CH_3)\ CH_2\ MgX$ · Key from source paper

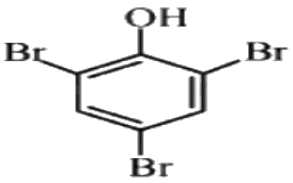
Q124 JEE Main 2019 · 11 Jan · Shift 1 MCQ

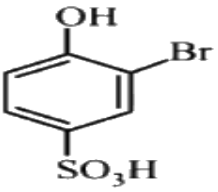
see figure

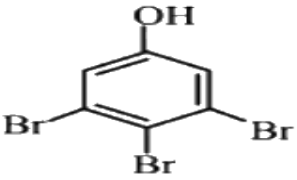
Q53.

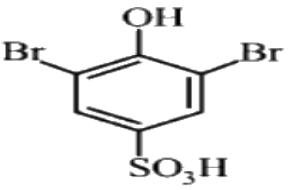


The major product of the following reaction is:

(1) 

(2) 

(3) 

(4) 

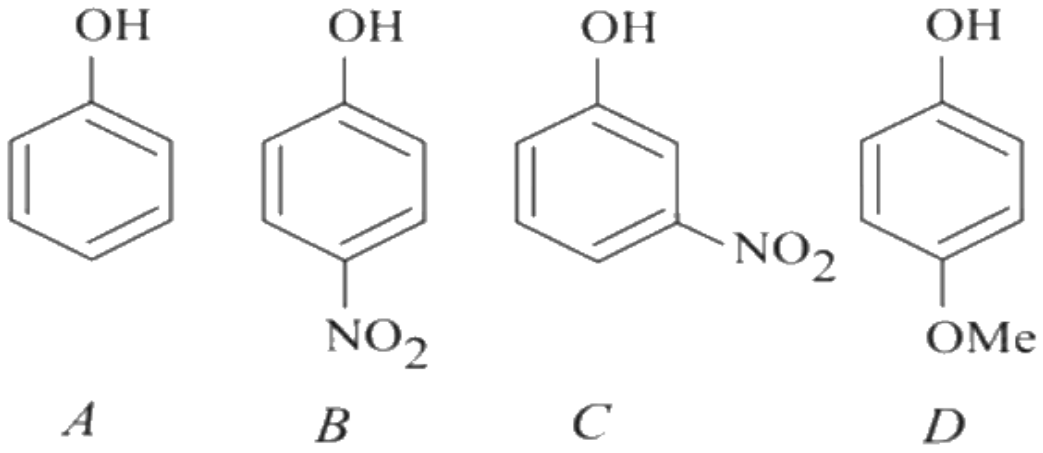
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q125 JEE Main 2019 · 10 Jan · Shift 1 MCQ

The increasing order of the pKa values of the following compounds is:
(see the figure above)

Q41. The increasing order of the pKa values of the following compounds is:



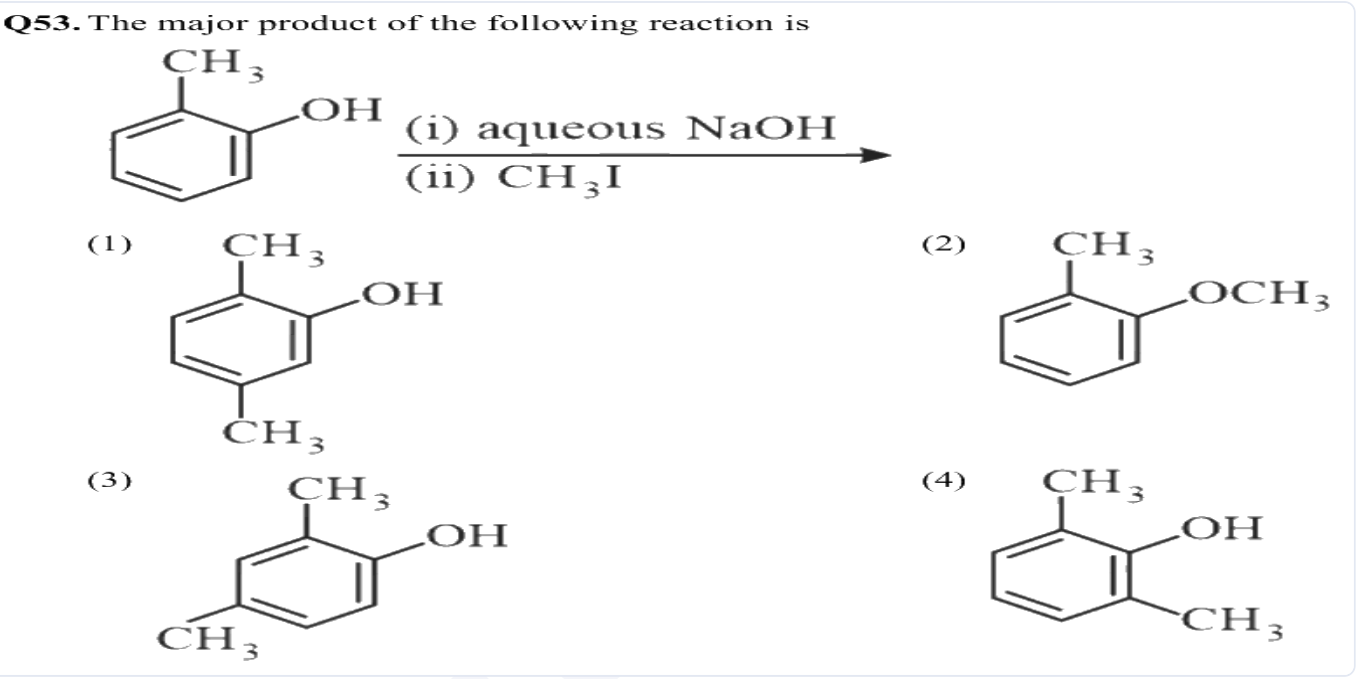
(1) $B < C < A < D$
(2) $D < A < C < B$
(3) $B < C < D < A$
(4) $C < B < A < D$

(A) $B < C < A < D$
(B) $D < A < C < B$
(C) $B < C < D < A$
(D) $C < B < A < D$

Answer: (A) $B < C < A < D$ · Key from source paper

Q126 JEE Main 2019 · 10 Jan · Shift 2 MCQ

The major product of the following reaction is
(see the figure above)



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

Q127 JEE Main 2019 · 10 Jan · Shift 2 MCQ

Which is the most suitable reagent for the following transformation?
$CH_3-CH=CH-CH_2-CH(OH)-CH_3 \longrightarrow CH_3-CH=CH-CH_2CO_2H$

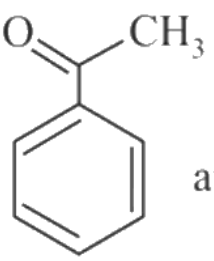
(A) Tollen's reagent
(B) I_2/ NaOH
(C) Alkaline $KMnO_4$
(D) CrO_2Cl_2 / CS_2

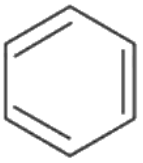
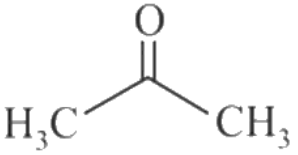
Answer: (B) I_2/ NaOH · Key from source paper

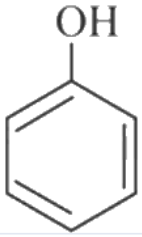
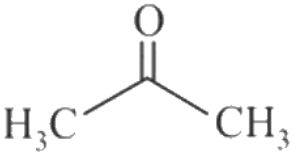
Q128 JEE Main 2019 · 9 Jan · Shift 2 MCQ

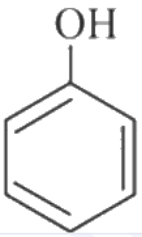
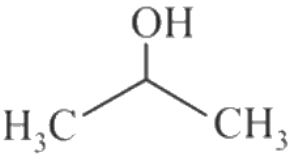
The products formed in the reaction of cumene with O_2 followed by treatment with dil HCl are:
(see the figure above)

Q54. The products formed in the reaction of cumene with O_2 followed by treatment with dil HCl are:

(1)  and CH_3-OH

(2)  and 

(3)  and 

(4)  and 

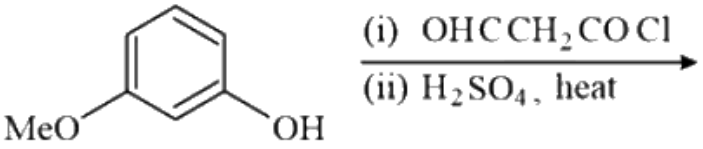
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

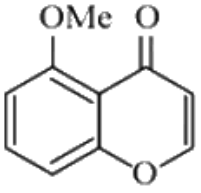
Answer: (C) · Key from source paper

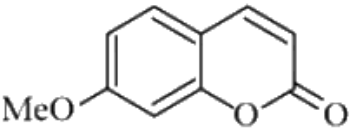
Q129 JEE Main 2018 · 16 Apr · Online MCQ

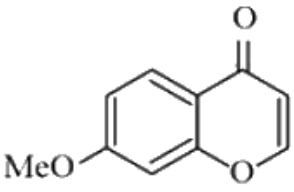
The major product of the following reaction is:
(see the figure above)

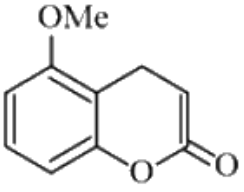
Q42. The major product of the following reaction is:



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

Q130 JEE Main 2018 · 16 Apr · Online MCQ

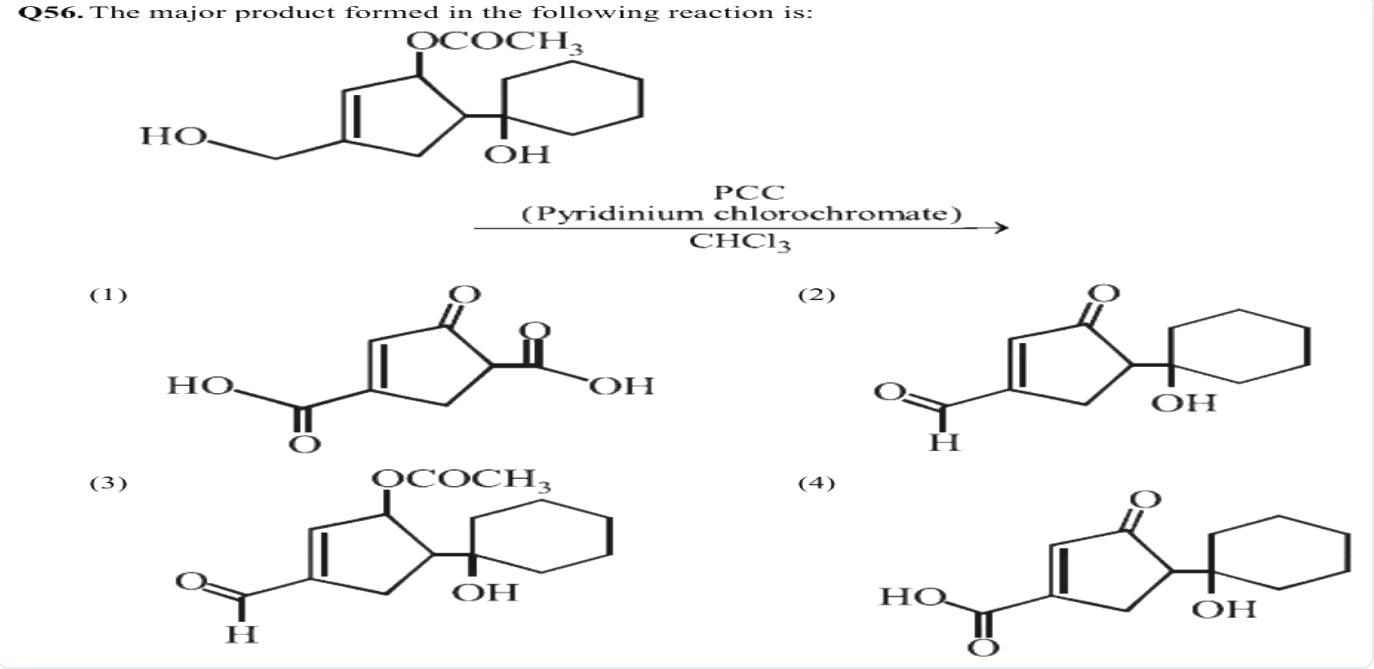
Which of the following compounds will most readily be dehydrated to give alkene under acidic condition?

(A) 4 - Hydroxypentan - 2-one
(B) 3- Hydroxypentan-2-one
(C) 1-Pentanol
(D) 2-Hydroxycyclopentanone

Answer: (A) 4 - Hydroxypentan - 2-one · Key from source paper

Q131 JEE Main 2018 · 15 Apr · Shift 2 MCQ

The major product formed in the following reaction is:
(see the figure above)



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

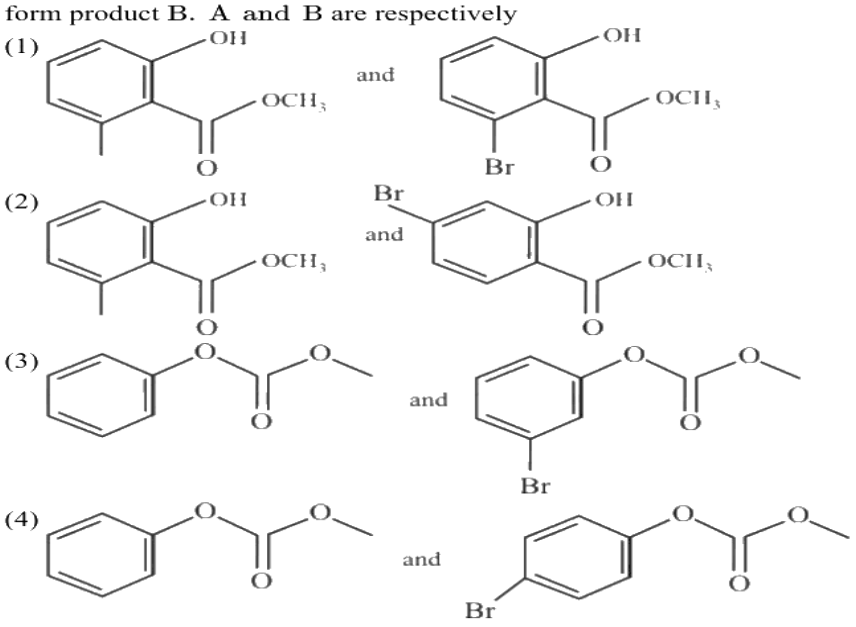
Answer: (C) · Checked by our team

Q132 JEE Main 2018 · 8 Apr · Offline MCQ

Phenol reacts with methyl chloroformate in the presence of NaOH to form product A. A reacts with Br_2 to form product B. A and B are respectively

(see the figure above)

Q55. Phenol reacts with methyl chloroformate in the presence of NaOH to form product A. A reacts with Br_2 to form product B. A and B are respectively



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

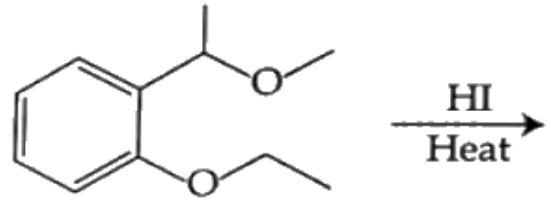
Answer: (D) · Key from source paper

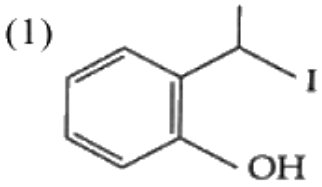
Q133 JEE Main 2018 · 8 Apr · Offline MCQ

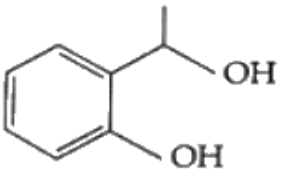
The major product formed in the following reaction is:

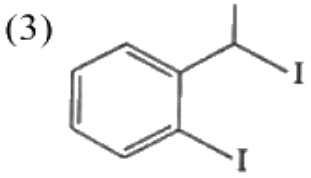
(see the figure above)

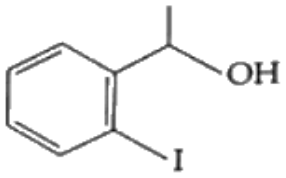
Q56. The major product formed in the following reaction is:



(1) 

(2) 

(3) 

(4) 

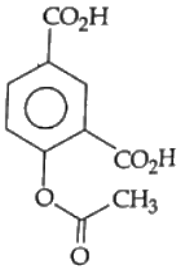
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

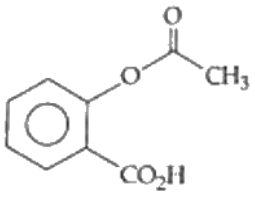
Answer: (A) · Key from source paper

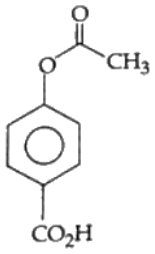
Q134 JEE Main 2018 · 8 Apr · Offline MCQ

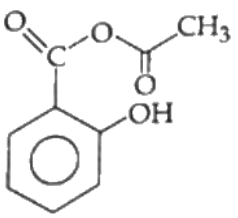
Phenol on treatment with CO_2 in the presence of NaOH followed by acidification produces compound X as the major product. X on treatment with $(CH_3CO)_2O$ in the presence of catalytic amount of H_2SO_4 produces:
(see the figure above)

Q57. Phenol on treatment with CO_2 in the presence of NaOH followed by acidification produces compound X as the major product. X on treatment with $(CH_3CO)_2O$ in the presence of catalytic amount of H_2SO_4 produces:

(1) 

(2) 

(3) 

(4) 

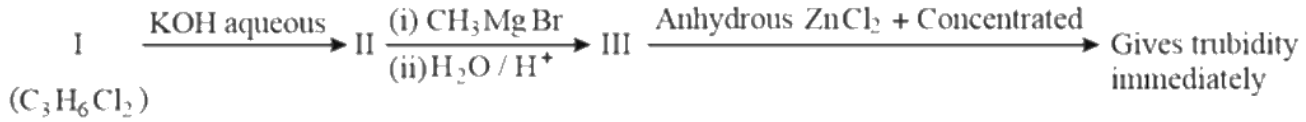
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (B) · Key from source paper

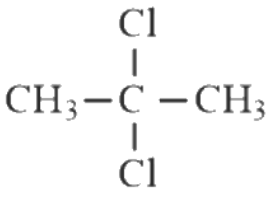
Q135 JEE Main 2017 · 9 Apr · Online MCQ

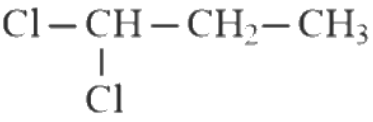
In the following reaction sequence:
(see the figure above)
Compound I is

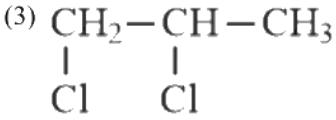
Q56. In the following reaction sequence:

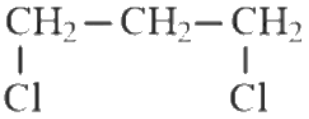


Compound I is

(1) 

(2) 

(3) 

(4) 

(A) $CH_3 - \overset{Cl}{\underset{Cl}{C}} - CH_3$
(B) $Cl - \underset{Cl}{CH} - CH_2 - CH_3$
(C) $\underset{Cl}{CH_2} - \underset{Cl}{CH} - CH_3$
(D) $\underset{Cl}{CH_2} - CH_2 - \underset{Cl}{CH_2}$

Answer: (A) $CH_3 - \overset{Cl}{\underset{Cl}{C}} - CH_3$ · Key from source paper

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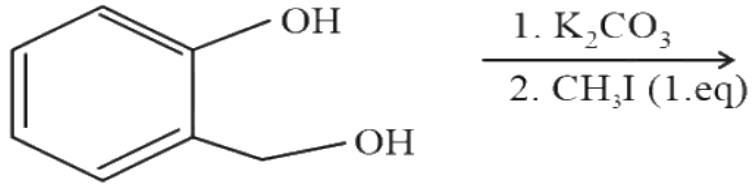
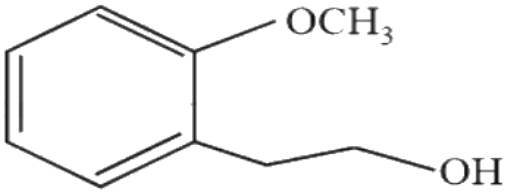
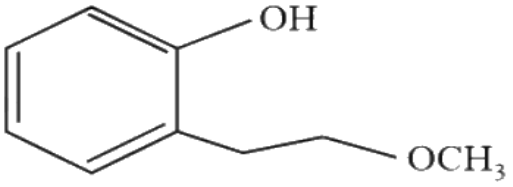
Q136 JEE Main 2017 · 8 Apr · Online MCQ

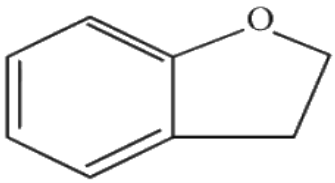
The major product of the following reaction is:
(see the figure above)

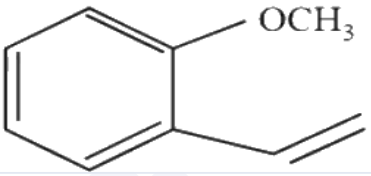
Q56. The major product of the following reaction is:



(1)


(2)


(3)


(4)


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q137 JEE Main 2014 · 19 Apr · Online MCQ

Which of the following compounds will not be soluble in sodium bicarbonate?

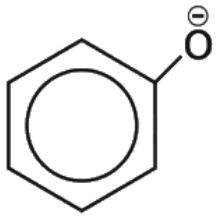
(A) 2, 4, 6 - Trinitrophenol
(B) Benzene sulphonic acid
(C) o - Nitrophenol
(D) Benzoic acid

Answer: (C) o - Nitrophenol · Key from source paper

Q138 JEE Main 2014 · 19 Apr · Online MCQ

see figure

Q54. Which one of the following substituents at para-position is most effective in stabilizing the phenoxide



ion ?

(1) $-CH_3$
(2) $-OCH_3$
(3) $-COCH_3$
(4) $-CH_2OH$

(A) $-CH_3$
(B) $-OCH_3$
(C) $-COCH_3$
(D) $-CH_2OH$

Answer: (C) $-COCH_3$ · Key from source paper

Q139 JEE Main 2014 · 19 Apr · Online MCQ

Williamson synthesis of ether is an example of :

(A) Nucleophilic substitution
(B) Electrophilic addition
(C) Nucleophilic addition
(D) Electrophilic substitution

Answer: (A) Nucleophilic substitution · Key from source paper

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Q140 JEE Main 2014 · 12 Apr · Online MCQ

In the Victor-Meyer's test, the colour given by 1°, 2° and 3° alcohols are respectively:

(A) Red, colourless, blue
(B) Red, blue, colourless
(C) Colourless, red, blue
(D) Red, blue, violet

Answer: (B) Red, blue, colourless · Key from source paper

Q141 JEE Main 2014 · 12 Apr · Online MCQ

Phthalic acid reacts with resorcinol in the presence of concentrated H_2SO_4 to give:

(A) Phenolphthalein
(B) Alizarin
(C) Coumarin
(D) Fluorescein

Answer: (D) Fluorescein · Key from source paper

Q142 JEE Main 2014 · 11 Apr · Online MCQ

Which one of the following statements is not correct?

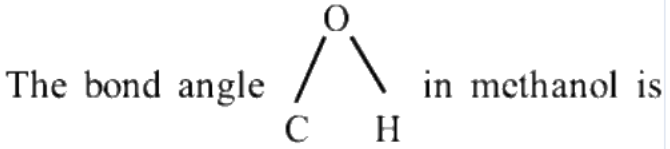
EdLoop JEE

Q56. Which one of the following statements is not correct?

(1) Alcohols are weaker acids than water

(2) Acid strength of alcohols decreases in the following $RCH_2OH > R_2CHOH > R_3COH$

(3) Carbon-oxygen bond length in methanol, CH_3OH is shorter than that of $C - O$ bond length in phenol.

(4) 

(A) Alcohols are weaker acids than water

(B) Acid strength of alcohols decreases in the following $RCH_2OH > R_2CHOH > R_3COH$

(C) Carbon-oxygen bond length in methanol, CH_3OH is shorter than that of $C - O$ bond length in phenol.

(D) The bond angle *(see the figure above)* in methanol is $108.9°$.

Answer: (C) Carbon-oxygen bond length in methanol, CH_3OH is shorter than that of $C - O$ bond length in phenol. · Key from source paper

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Q143 JEE Main 2014 · 9 Apr · Online MCQ

Allyl phenyl ether can be prepared by heating :

(A) $CH_2 = CH - Br + C_6H_5 - CH_2 - ONa$

(B) $C_6H_5 - CH = CH - Br + CH_3 - ONa$

(C) $CH_2 = CH - CH_2 - Br + C_6H_5ONa$

(D) $C_6H_5Br + CH_2 = CH - CH_2 - ONa$

Answer: (C) $CH_2 = CH - CH_2 - Br + C_6H_5ONa$ · Key from source paper

---

Q144 JEE Main 2014 · 6 Apr · Offline MCQ

The most suitable reagent for the conversion of $R - CH_2 - OH \rightarrow R - CHO$ is :

(A) $KMnO_4$

(B) $K_2Cr_2O_7$

(C) CrO_3

(D) PCC (Pyridinium Chlorochromate)

Answer: (D) PCC (Pyridinium Chlorochromate) · Key from source paper

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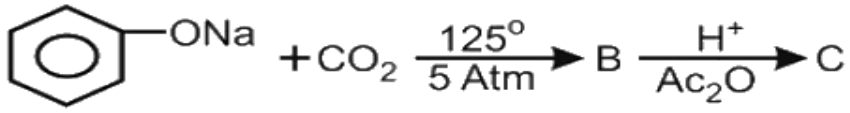
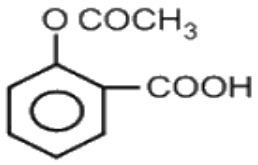
Q145 JEE Main 2014 · 6 Apr · Offline MCQ

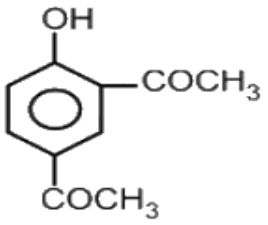
What is the product "C" after following reactions -

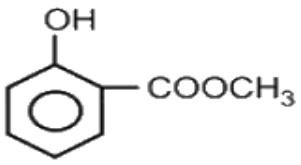
(see the figure above)

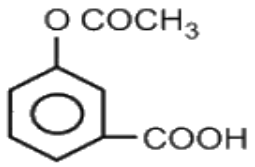
Q56. What is the product "C" after following reactions -



(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q146 JEE Main 2013 · 25 Apr · Online · MCQ

Phenol on heating with $CHCl_3$ and NaOH gives salicylaldehyde. The reaction is called:

(A) Reimer - Tiemann reaction
(B) Claisen reaction
(C) Cannizzaro's reaction
(D) Hell - Volhard - Zelinsky reaction

Answer: (A) Reimer - Tiemann reaction · Key from source paper

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Q147 JEE Main 2013 · 23 Apr · Online · MCQ

The reaction of phenol with benzoyl chloride to give phenyl benzoate is known as :

(A) Claisen reaction
(B) Schotten-Baumann reaction
(C) Reimer-Tiemann reaction
(D) Gatterman-Koch reaction

Answer: (B) Schotten-Baumann reaction · Key from source paper

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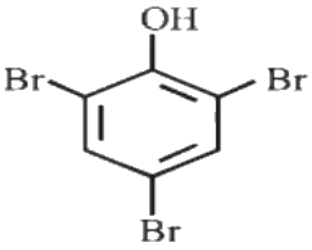
Q148 JEE Main 2013 · 22 Apr · Online · MCQ

What is the structure of the major product when phenol is treated with bromine water?
(see the figure above)

Q55. What is the structure of the major product when phenol is treated with bromine water?

(1)



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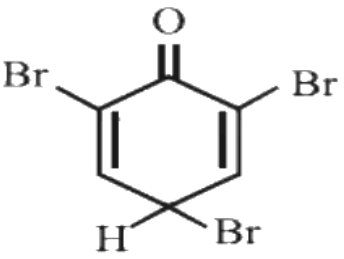

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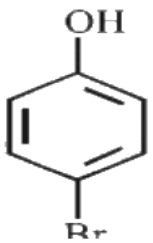

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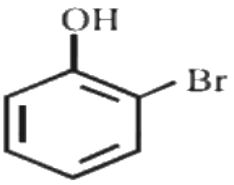

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q149 JEE Main 2013 · 22 Apr · Online · MCQ

Amongst the following alcohols which would react fastest with conc. HCl and $ZnCl_2$?

(A) pentanol
(B) 2-methyl butanol
(C) 2-pentanol
(D) 2-methyl butan-2-ol

Answer: (D) 2-methyl butan-2-ol · Key from source paper

Q150 JEE Main 2013 · 22 Apr · Online · MCQ

In Williamson synthesis of mixed ether having a primary and a tertiary alkyl group if tertiary halide is used, then :

(A) Rate of reaction will be slow due to slow cleavage of carbon-halogen bond.
(B) Alkene will be the main product.
(C) Simple ether will form instead of mixed ether.
(D) Expected mixed ether will be formed.

Answer: (B) Alkene will be the main product. · Key from source paper

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Q151 JEE Main 2013 · 9 Apr · Online · MCQ

Rate of dehydration of alcohols follows the order:

(A) $2^\circ > 1^\circ > CH_3OH > 3^\circ$
(B) $3^\circ > 2^\circ > 1^\circ > CH_3OH$
(C) $2^\circ > 3^\circ > 1^\circ > CH_3OH$
(D) $CH_3OH > 1^\circ > 2^\circ > 3^\circ$

Answer: (B) $3^\circ > 2^\circ > 1^\circ > CH_3OH$ · Key from source paper

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Q152 JEE Main 2013 · 9 Apr · Online MCQ

An ether (A), $C_5H_{12}O$, when heated with excess of hot concentrated HI produced two alkyl halides which when treated with NaOH yielded compounds (B) and (C). Oxidation of (B) and (C) gave a propanone and an ethanoic acid respectively. The IUPAC name of the ether (A) is :

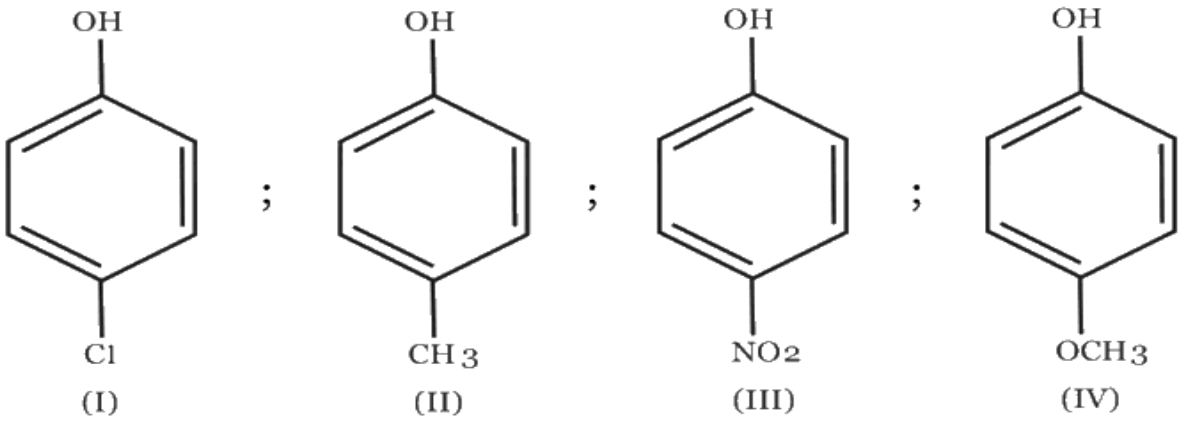
(A) 2−ethoxypropane
(B) ethoxypropane
(C) methoxybutane
(D) 2−methoxybutane

Answer: (A) 2−ethoxypropane · Key from source paper

Q153 JEE Main 2013 · 7 Apr · Offline MCQ

Arrange the following compounds in order of decreasing acidity :
(see the figure above)

Q45. Arrange the following compounds in order of decreasing acidity :



(1) III > I > II > IV
(2) IV > III > I > II
(3) II > IV > I > III
(4) I > II > III > IV

(A) III > I > II > IV
(B) IV > III > I > II
(C) II > IV > I > III
(D) I > II > III > IV

Answer: (A) III > I > II > IV · Key from source paper

Q154 JEE Main 2013 · 7 Apr · Offline MCQ

An unknown alcohol is treated with the "Lucas reagent" to determine whether the alcohol is primary, secondary or tertiary. Which alcohol reacts fastest and by what mechanism:

(A) Secondary alcohol by S_N2
(B) Tertiary alcohol by S_N2
(C) Secondary alcohol by S_N1
(D) Tertiary alcohol by S_N1

Answer: (D) Tertiary alcohol by S_N1 · Key from source paper

Q155 AIEEE 2012 · 19 May · Online MCQ

Reagent used to convert allyl alcohol to acrolein is

(A) MnO_2
(B) H_2O_2
(C) OsO_4
(D) $KMnO_4$

Answer: (A) MnO_2 · Key from source paper

Q156 AIEEE 2011 MCQ

Which of the following reagents may be used to distinguish between phenol and benzoic acid ?

(A) Tollen's reagent
(B) Molisch reagent
(C) Neutral $FeCl_3$
(D) Aqueous NaOH

Answer: (C) Neutral $FeCl_3$ · Key from source paper

Q157 AIEEE 2011 MCQ

Phenol is heated with a solution of mixture of KBr and $KBrO_3$. The major product obtained in the above reaction is

(A) 3-Bromophenol
(B) 4-Bromophenol
(C) 2, 4, 6- Tribromophenol
(D) 2-Bromophenol

Answer: (C) 2, 4, 6- Tribromophenol · Key from source paper

Q158 AIEEE 2010 MCQ

From amongst the following alcohols the one that would react fastest with conc. HCl and anhydrous $ZnCl_2$, is

(A) 2-Butanol
(B) 2-Methylpropan-2-ol
(C) 2-Methylpropanol
(D) 1-Butanol

Answer: (B) 2-Methylpropan-2-ol · Key from source paper

Q159 AIEEE 2009 MCQ

The major product obtained on interaction of phenol with sodium hydroxide and carbon dioxide is :

(A) benzoic acid
(B) salicylaldehyde
(C) salicylic acid
(D) phthalic acid

Answer: (C) salicylic acid · Key from source paper

Q160 AIEEE 2009 MCQ

A liquid was mixed with ethanol and a drop of concentrated H_2SO_4 was added. A compound with a fruity smell was formed. The liquid was:

(A) CH_3OH
(B) HCHO
(C) CH_3COCH_3
(D) CH_3COOH

Answer: (D) CH_3COOH · Key from source paper

Q161 AIEEE 2007 MCQ

see figure

Q78. In the following sequence of reactions,

$$CH_3CH_2OH \xrightarrow{P+I_2} A \xrightarrow[ether]{Mg} B \xrightarrow{HCHO} C \xrightarrow{H_2O} D$$

the compound ' D ' is

(1) butanal
(2) $n-$butyl alcohol
(3) $n-$propyl alcohol
(4) propanal

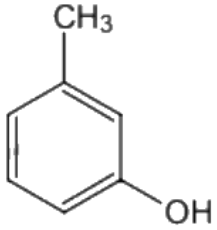
(A) butanal
(B) $n-$butyl alcohol
(C) $n-$propyl alcohol
(D) propanal

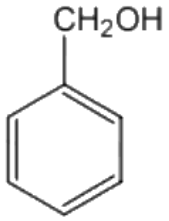
Answer: (C) $n-$propyl alcohol · Key from source paper

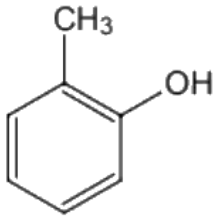
Q162 AIEEE 2006 MCQ

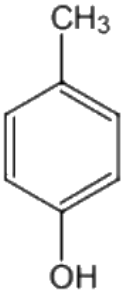
The structure of the compound that gives a tribromo derivative on treatment with bromine water is

Q105. The structure of the compound that gives a tribromo derivative on treatment with bromine water is

(1) 

(2) 

(3) 

(4) 

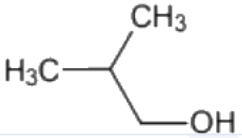
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · Key from source paper

Q163 AIEEE 2006 MCQ

Among the following the one that gives positive iodoform test upon reaction with I_2 and NaOH is

Q107. Among the following the one that gives positive iodoform test upon reaction with I_2 and NaOH is

(1) $CH_3CH_2CH(OH)CH_2CH_3$
(2) $C_6H_5CH_2CH_2OH$
(3) 

(4) $PhCHOHCH_3$

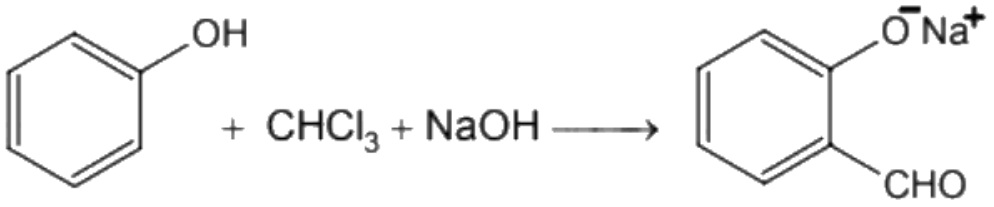
(A) $CH_3CH_2CH(OH)CH_2CH_3$
(B) $C_6H_5CH_2CH_2OH$
(C) *see figure*
(D) $PhCHOHCH_3$

Answer: (D) $PhCHOHCH_3$ · Key from source paper

Q164 AIEEE 2006 MCQ

see figure

Q108.



The electrophile involved in the above reaction is

(1) dichloromethyl cation ($\overset{\oplus}{C}HCl_2$)

(2) dichlorocarbene ($:CCl_2$)

(3) trichloromethyl anion ($\overset{\ominus}{C}Cl_3$)

(4) formyl cation ($\overset{\oplus}{C}HO$)

(A) dichloromethyl cation ($\overset{\oplus}{C}HCl_2$)

(B) dichlorocarbene ($:CCl_2$)

(C) trichloromethyl anion ($\overset{\ominus}{C}Cl_3$)

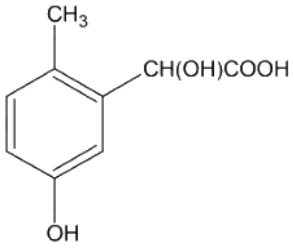
(D) formyl cation ($\overset{\oplus}{C}HO$)

Answer: (B) dichlorocarbene ($:CCl_2$) · Key from source paper

Q165 AIEEE 2005 MCQ

p-cresol reacts with chloroform in alkaline medium to give the compound A which adds hydrogen cyanide to form, the compound B. The latter on acidic hydrolysis gives chiral carboxylic acid. The structure of the carboxylic acid is

Q145. p-cresol reacts with chloroform in alkaline medium to give the compound A which adds hydrogen cyanide to form, the compound B. The latter on acidic hydrolysis gives chiral carboxylic acid. The structure of the carboxylic acid is

(1)


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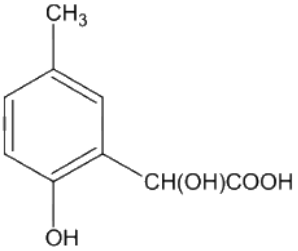

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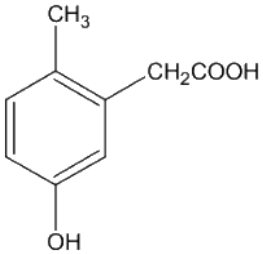

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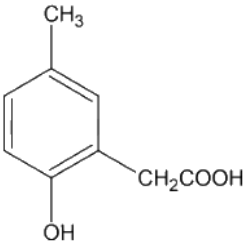


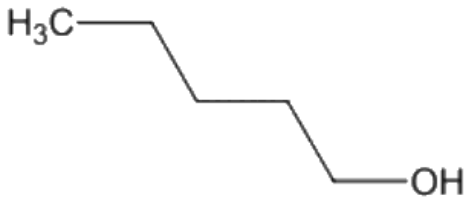
(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

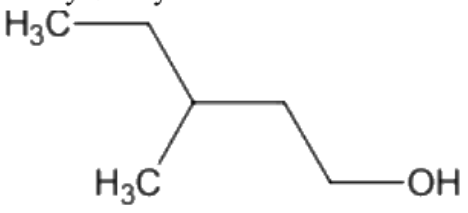
Answer: (B) · Key from source paper

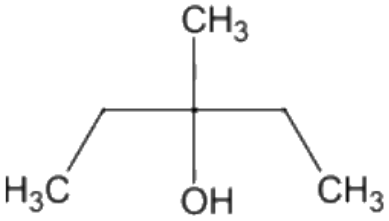
Q166 AIEEE 2004 MCQ

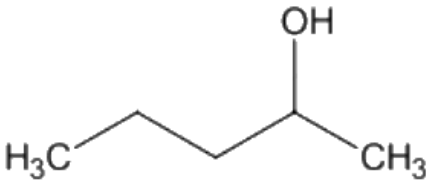
Among the following compound which can be dehydrated very easily is

Q142. Among the following compound which can be dehydrated very easily is

(1) 

(2) 

(3) 

(4) 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Key from source paper

Q167 AIEEE 2003 MCQ

An ether is more volatile than an alcohol having the same molecular formula. This is due to

(A) alcohols having resonance structures
(B) inter-molecular hydrogen bonding in ethers
(C) inter-molecular hydrogen bonding in alcohols
(D) dipolar character of ethers

Answer: (C) inter-molecular hydrogen bonding in alcohols · Key from source paper

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Q168 AIEEE 2003 MCQ

During dehydration of alcohols to alkenes by heating with conc. H_2SO_4 the initiation step is

(A) formation of carbocation
(B) elimination of water
(C) formation of an ester
(D) protonation of alcohol molecule

Answer: (D) protonation of alcohol molecule · Key from source paper

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