

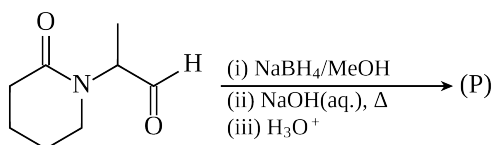
JEE MAIN ALDEHYDES, KETONES AND CARBOXYLIC ACIDS — PYQS

Max. Marks: 332

Questions: 83

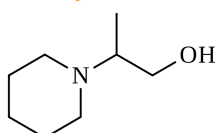
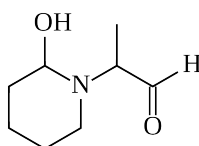
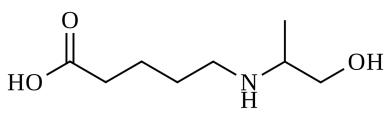
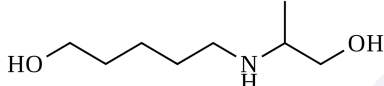
Section A (MCQ) — 69 questions

Q.1 Consider the following reaction.



The major product (P) formed is :

[JEE Main 2026 (Online) 8th April Evening Shift]

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

Scan or tap for the full solution



Q.2 'x' is the product which is obtained by the hydrolysis of prop-1-yne in the presence of mercuric sulphate under dilute acidic medium at 333 K. 'y' is the product which is obtained by the reaction of ethane nitrile with methyl magnesium bromide in dry ether followed by hydrolysis. IUPAC name of product obtained from 'x' and 'y' in the presence of barium hydroxide followed by heating is :

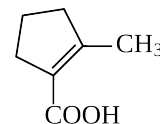
[JEE Main 2026 (Online) 6th April Evening Shift]

- (1) 2-Methylpent-4-en-3-one
- (2) 4-Methylpent-3-en-2-one
- (3) 4-Methylpent-1-ene
- (4) 2-Methylpent-3-one



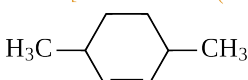
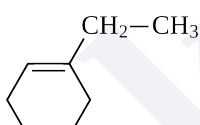
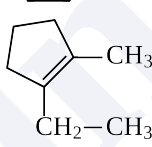
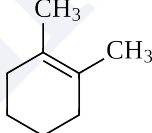
Solution

Q.3 "P" is a hydrocarbon of molecular formula: C_8H_{14} . On ozonolysis, "P" forms "Q". "Q" on treatment with alkali under reflux condition produces "R", which on treatment with $I_2/NaOH$ gives a yellow precipitate. Acidification of the solution gives "S". The structure of "S" is given below:-



The correct structure of P is

[JEE Main 2026 (Online) 5th April Morning Shift]

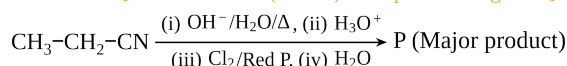
- (1) 
- (2) 
- (3) 
- (4) 

Scan or tap for the full solution



Q.4 Complete the following reaction sequence and give the name of major product 'P'.

[JEE Main 2026 (Online) 5th April Evening Shift]



- (1) 2-Chloropropanoic acid
- (2) 3-Chloropropanoic acid
- (3) 1-Chloropropane
- (4) 2-Chloropropane



Solution

Q.5 Given below are two statements:

Statement-I: The condensation reaction between $CH_3-CH=O$ and $H_2N-\underset{\substack{| \\ H}}{\underset{\substack{|| \\ O}}{C}}-NH_2$ under optimum

pH will produce $CH_3-CH=N-\underset{\substack{| \\ O}}{\underset{\substack{|| \\ O}}{C}}-N-NH_2$

Statement-II: The molecule, $Ph-\underset{\substack{| \\ O-CH_3}}{\underset{\substack{| \\ O-H}}{CH}}$ will generate $Ph-CH=O$ in the presence of dilute acid.

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

[JEE Main 2026 (Online) 5th April Evening Shift]

- (1) Both Statement-I and Statement-II are true

- (2) Both Statement-I and Statement-II are false
 (3) Statement-I is true but Statement-II is false
 (4) Statement-I is false but Statement-II is true

Scan or tap for the full solution



Q.6 An organic compound “x” where molar ratio of C, O and H are equal, on treatment with 50% KOH under reflux followed by acidification produced “y”. The most likely structure of “y” is:
 [Molar mass of ‘x’ is 58 g mol⁻¹]

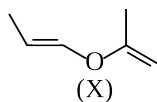
[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) $\text{CH}_2=\text{CH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$ (2) $\text{CH}_3-\text{CH}=\text{CH}-\text{CH}=\text{O}$
 (3) $\text{O}=\text{C}-\text{OH}$
 $\quad \quad \quad |$
 $\quad \quad \quad \text{CH}_2-\text{OH}$ (4) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$

Scan or tap for the full solution



Q.7 A molecule (X) with following structure under mild acidic condition is hydrolysed to produce (Y) and (Z). Identify the correct statements about (Y) and (Z).



- A. Both (Y) and (Z) have same molar mass.
 B. (Y) and (Z) can be distinguished from each other by NaHCO₃.
 C. (Y) and (Z) react with HCN with same rates.
 D. (Y) and (Z) undergo addition reaction with 2,4-DNP.

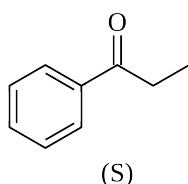
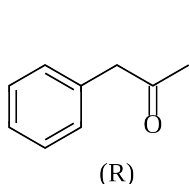
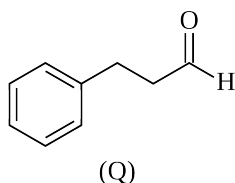
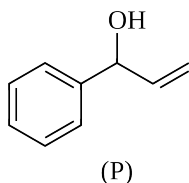
Choose the **correct** answer from the options given below : [JEE Main 2026 (Online) 2nd April Evening Shift]

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

Scan or tap for the full solution



Q.8 Given below are the four isomeric compounds (P, Q, R, S)



Identify correct statements from below.

- A. Q, R and S will give precipitate with 2,4-DNP.

- B. P and Q will give positive Baeyer's test.
 C. Q and R will give sooty flame.
 D. R and S will give yellow precipitate with I₂/NaOH.
 E. Q alone will deposit silver with Tollens' reagent.
 Choose the correct option.

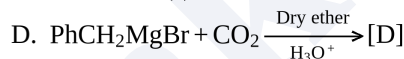
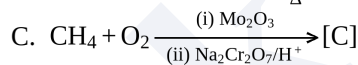
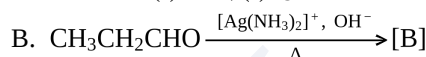
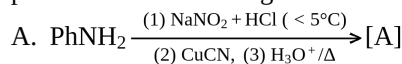
[JEE Main 2026 (Online) 28th January Morning Shift]

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

Scan or tap for the full solution



Q.9 The correct order of acidic strength of the major products formed in the given reactions, is :



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

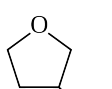
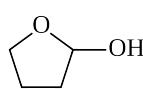
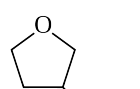
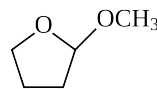
[JEE Main 2026 (Online) 28th January Evening Shift]

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

Scan or tap for the full solution



Q.10 A student is given one compound among the following compounds that gives positive test with Tollens' reagent.



The compound is :

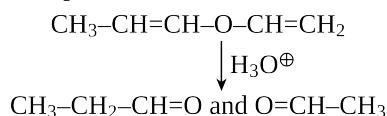
[JEE Main 2026 (Online) 24th January Morning Shift]

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

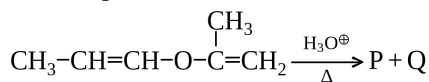
Scan or tap for the full solution



- Q.11** The unsaturated ether on acidic hydrolysis produces carbonyl compounds as shown below :-



Based on this, predict the solution/reagent that will help to distinguish "P" and "Q" obtained in the following reaction :-



[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) Saturated NaHSO_3 solution
- (2) Fehling solution
- (3) Lucas reagent
- (4) 2,4-DNP reagent



Solution

- Q.12** Given below are two statements :

Statement-I: Cross aldol condensation between two different aldehydes will always produce four different products.

Statement-II: When semicarbazide reacts with a mixture of benzaldehyde and acetophenone under optimum pH, it forms a condensation product with acetophenone only.

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

[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) Statement-I is true but Statement-II is false
- (2) Both Statement-I and Statement-II are false
- (3) Both Statement-I and Statement-II are true
- (4) Statement-I is false but Statement-II is true

Scan or tap for the full solution



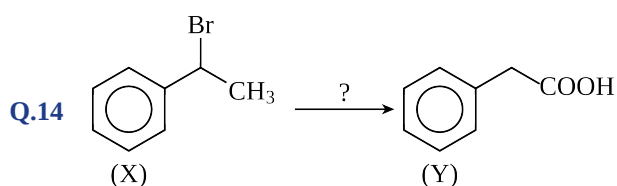
- Q.13** 'x' is the product which is obtained from propanenitrile and stannous chloride in the presence of hydrochloric acid followed by hydrolysis. 'y' is the product which is obtained from the but-2-ene by the ozonolysis followed by hydrolysis. From the following, which product is not obtained when one mole of 'x' and one mole of 'y' react with each other in the presence of alkali followed by heating?

[JEE Main 2026 (Online) 23rd January Morning Shift]

- (1) 2-Methylpent-2-enal
- (2) 2-Methylbut-2-enal
- (3) 3-Methylbut-2-enal
- (4) Pent-2-enal



Solution



The correct sequence of reagents for the above conversion of X to Y is :

[JEE Main 2026 (Online) 23rd January Morning Shift]

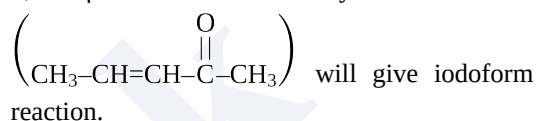
- (1) (i) NaOH(aq) , (ii) Jones reagent, (iii) H_3O^+
- (2) (i) NaOEt , (ii) $\text{B}_2\text{H}_6/\text{H}_2\text{O}_2$, (iii) Jones reagent
- (3) (i) Jones reagent, (ii) NaOEt , (iii) Hot KMnO_4/KOH
- (4) (i) $\text{B}_2\text{H}_6/\text{H}_2\text{O}_2$, (ii) NaOEt , (iii) Jones reagent

Scan or tap for the full solution



- Q.15** Which of the following statements are TRUE about Haloform reaction?

- A. Sodium hypochlorite reacts with KI to give KOI.
- B. KOI is a reducing agent.
- C. α , β -unsaturated methyl ketone



- D. Isopropyl alcohol will not give iodoform test.
 - E. Methanoic acid will give positive iodoform test.
- Choose the correct answer from the options given below :

[JEE Main 2026 (Online) 23rd January Evening Shift]

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

Scan or tap for the full solution



- Q.16** Iodoform test can differentiate between

- A. Methanol and Ethanol
- B. CH_3COOH and $\text{CH}_3\text{CH}_2\text{COOH}$
- C. Cyclohexene and cyclohexanone
- D. Diethyl ether and Pentan-3-one
- E. Anisole and acetone

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

[JEE Main 2026 (Online) 23rd January Evening Shift]

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

Scan or tap for the full solution



- Q.17** Match the **LIST-I** with **LIST-II**

List-I Reagents		List-II Name of Reaction involving carbonyl compounds	
A.	$\text{NH}_2\text{-NH}_2$, KOH	I.	Tollens' Test
B.	$\text{Ag(NH}_3\text{)}_2\text{OH}$	II.	Clemmensen Reduction
C.	Aq. CuSO_4 , Sodium Potassium tartrate, KOH	III.	Wolff-Kishner Reduction
D.	Zn-Hg , HCl	IV.	Fehling's Test

Choose the correct answer from the options given below :

[JEE Main 2026 (Online) 22nd January Morning Shift]

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



Solution

Q.18 The compound A, $C_8H_8O_2$ reacts with acetophenone to form a single product via cross-Aldol condensation. The compound A on reaction with conc. NaOH forms a substituted benzyl alcohol as one of the two products. The compound A is :

[JEE Main 2026 (Online) 22nd January Evening Shift]

- (1) 2-hydroxy acetophenone
 (2) 4-hydroxy benzaldehyde
 (3) 4-methyl benzoic acid
 (4) 4-methoxy benzaldehyde



Solution

Q.19 An organic compound "P" of molecular formula $C_6H_{12}O_3$ gives positive iodoform test but negative Tollens' test. When "P" is treated with dilute acid, it produces "Q". "Q" gives positive Tollens' test and also iodoform test. The structure of "P" is :

[JEE Main 2026 (Online) 21st January Morning Shift]

- (1) $H-\overset{\overset{O}{\parallel}}{C}-CH_2-CH_2-\underset{\underset{OCH_3}{\mid}}{CH}-OCH_3$
 (2) $CH_3-\overset{\overset{O}{\parallel}}{C}-\underset{\underset{OCH_3}{\mid}}{CH}-\underset{\underset{OCH_3}{\mid}}{CH_2}$
 (3) $CH_3-\overset{\overset{O}{\parallel}}{C}-CH_2-\underset{\underset{OCH_3}{\mid}}{CH}-OCH_3$
 (4) $CH_3-\overset{\overset{O}{\parallel}}{C}-\underset{\underset{OCH_3}{\mid}}{C}-CH_3$

Scan or tap for the full solution



Q.20 Match List - I with List - II.

List - I Reagents		List - II Reaction Name (Involving aldehydes)	
A.	$H_2, Pd-BaSO_4$	I.	Etard Reaction
B.	$SnCl_2, HCl$	II.	Rosenmund Reduction
C.	CrO_2Cl_2, CS_2	III.	Gattermann-Koch Reaction
D.	$CO, HCl, Anhyd. AlCl_3$	IV.	Stephen Reaction

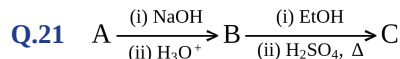
Choose the correct answer from the options given below :

[JEE Main 2026 (Online) 21st January Evening Shift]

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



Solution



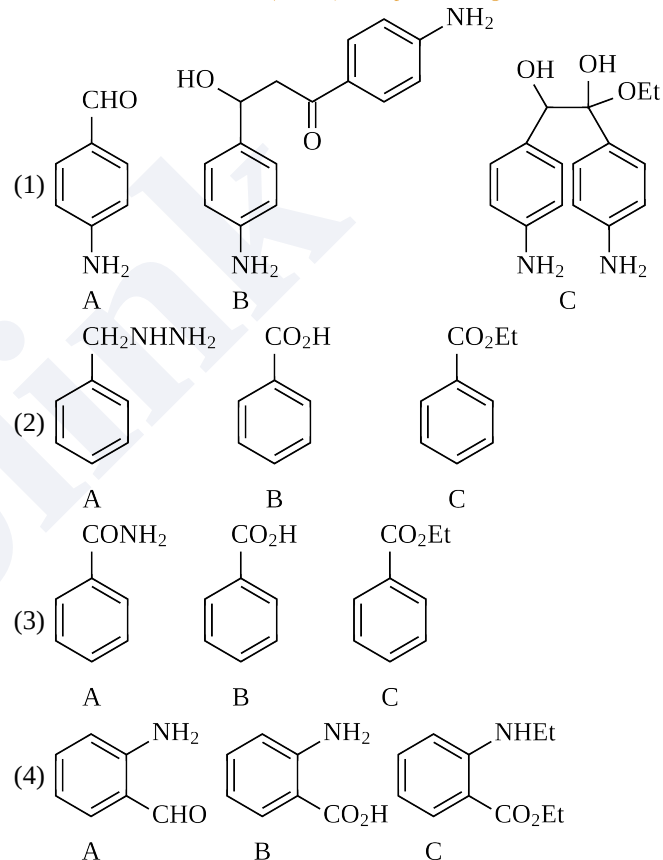
'A' shows positive Lassaigne's test for N and its molar mass is 121.

'B' gives effervescence with aq $NaHCO_3$.

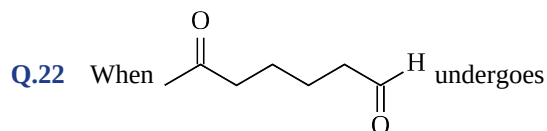
'C' gives fruity smell.

Identify A, B and C from the following.

[JEE Main 2025 (Online) 8th April Evening Shift]

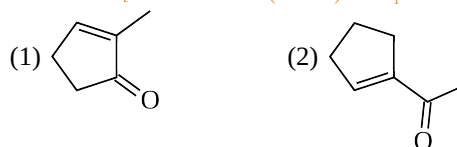


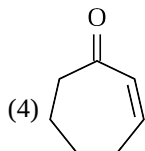
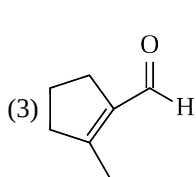
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intramolecular aldol condensation, the major product formed is :

[JEE Main 2025 (Online) 8th April Evening Shift]



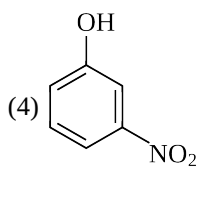
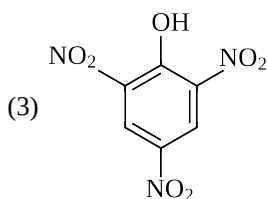
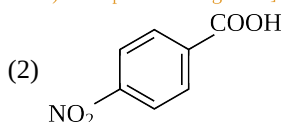
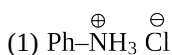


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Q.23 Which of the following compounds is least likely to give effervescence of CO_2 in presence of aq. NaHCO_3 ?

[JEE Main 2025 (Online) 7th April Morning Shift]

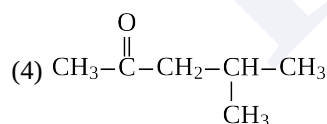
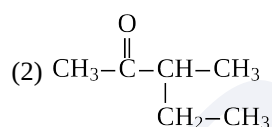
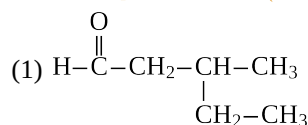


Scan or tap for the full solution



Q.24 "P" is an optically active compound with molecular formula $\text{C}_6\text{H}_{12}\text{O}$. When "P" is treated with 2,4-dinitrophenylhydrazine, it gives a positive test. However, in presence of Tollens' reagent, "P" gives a negative test. Predict the structure of "P".

[JEE Main 2025 (Online) 7th April Evening Shift]

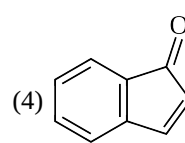
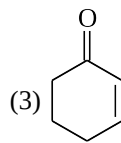
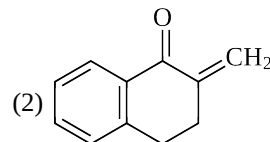
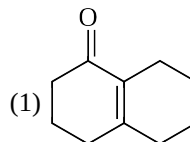


Scan or tap for the full solution



Q.25 Aldol condensation is a popular and classical method to prepare α , β -unsaturated carbonyl compounds. This reaction can be both intermolecular and intramolecular. Predict which one of the following is not a product of intramolecular aldol condensation?

[JEE Main 2025 (Online) 4th April Morning Shift]



Scan or tap for the full solution



Q.26 Which among the following compounds give yellow solid when reacted with NaOI/NaOH ?

- A. $\text{CH}_3-\overset{\text{OH}}{\text{CH}}-\text{C}_2\text{H}_5$ B. $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{OH}$
 C. $\text{CH}_3-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-\text{C}_2\text{H}_5$ D. $\text{CH}_3-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-\text{OH}$
 E. $\text{CH}_3-\text{CH}_2-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-\text{H}$

Choose the correct answer from the options given below : [JEE Main 2025 (Online) 4th April Evening Shift]

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



Solution

Q.27 Number of molecules from below which cannot give iodoform reaction is :

Ethanol, Isopropyl alcohol, Bromoacetone, 2-Butanol, 2-Butanone, Butanal, 2-Pentanone, 3-Pentanone, Pentanal and 3-Pentanol.

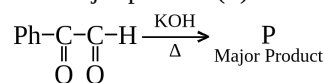
[JEE Main 2025 (Online) 3rd April Morning Shift]

- (1) 4 (2) 3 (3) 5 (4) 2

Scan or tap for the full solution



Q.28 The major product (P) in the following reaction is :



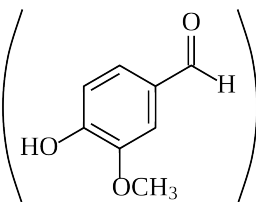
[JEE Main 2025 (Online) 3rd April Evening Shift]

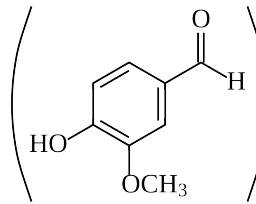
- (1) $\text{Ph}-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-\text{COO}^- \text{K}^+$
 (2) $\text{Ph}-\overset{\text{OH}}{\text{CH}}-\text{CH}_2\text{OH}$
 (3) $\text{Ph}-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-\text{H}-\text{COO}^- \text{K}^+$
 (4) $\text{Ph}-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-\text{CH}_2\text{OH}$

Scan or tap for the full solution



Q.29 Given below are two statements:

Statement-I: Vanillin  will react with NaOH and also with Tollens' reagent.

Statement-II: Vanillin  will undergo self aldol condensation very easily.

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

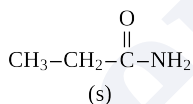
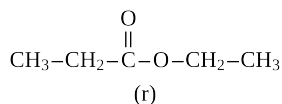
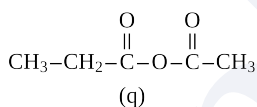
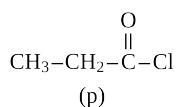
[JEE Main 2025 (Online) 2nd April Morning Shift]

- (1) Statement-I is correct but Statement-II is incorrect
- (2) Both Statement-I and Statement-II are correct
- (3) Both Statement-I and Statement-II are incorrect
- (4) Statement-I is incorrect but Statement-II is correct

Scan or tap for the full solution



Q.30 Consider the following molecules:



The correct order of rate of hydrolysis is :

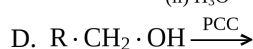
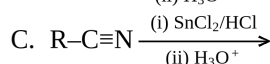
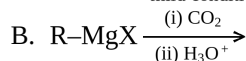
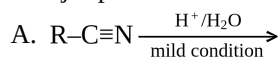
[JEE Main 2025 (Online) 2nd April Morning Shift]

- (1) $p > q > r > s$
- (2) $r > q > p > s$
- (3) $p > r > q > s$
- (4) $q > p > r > s$

Scan or tap for the full solution



Q.31 Consider the following reactions. From these reactions which reaction will give carboxylic acid as a major product?



Choose the correct answer from the options given below: [JEE Main 2025 (Online) 2nd April Evening Shift]

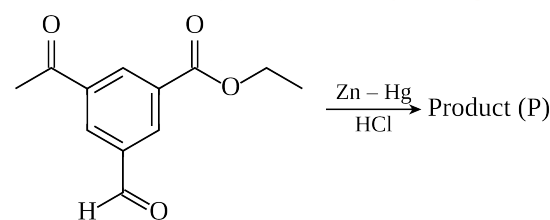
- (1) A, B and E only
- (2) A and D only
- (3) B, C and E only
- (4) B and E only

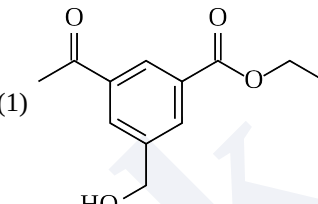
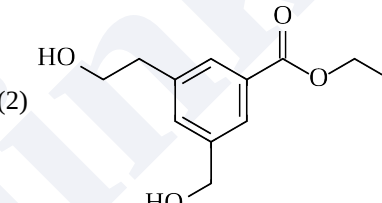
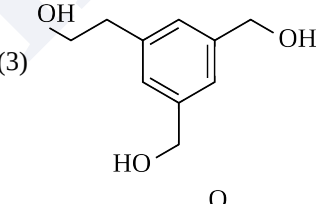
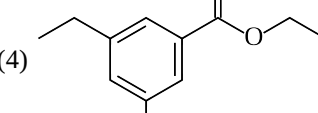
Scan or tap for the full solution



Q.32 The product (P) formed in the following reaction is :

[JEE Main 2025 (Online) 29th January Morning Shift]



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

Scan or tap for the full solution



Q.33 Both acetaldehyde and acetone (individually) undergo which of the following reactions?

- A. Iodoform Reaction
- B. Cannizzaro Reaction
- C. Aldol Condensation
- D. Tollens' Test
- E. Clemmensen Reduction

Choose the correct answer from the options given below:

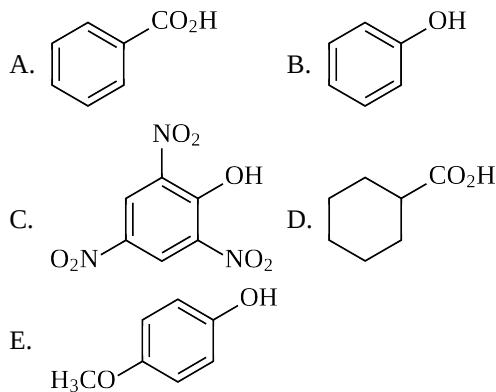
[JEE Main 2025 (Online) 28th January Morning Shift]

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

Scan or tap for the full solution



Q.34 The compounds that produce CO_2 with aqueous NaHCO_3 solution are:



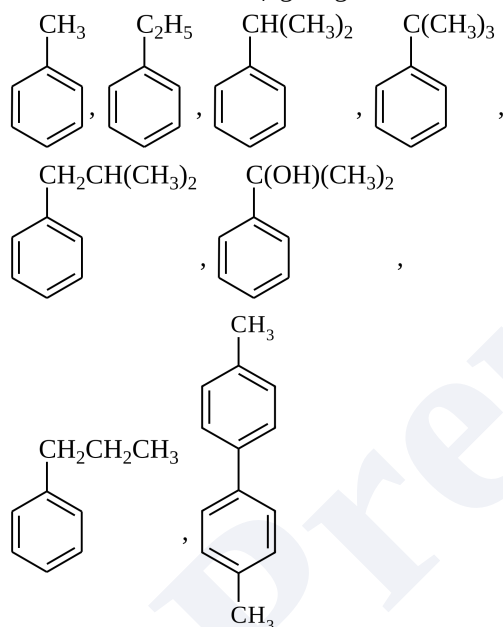
Choose the correct answer from the options given below:

[JEE Main 2025 (Online) 28th January Morning Shift]

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

Scan or tap for the full solution 

Q.35 The total number of compounds from below when treated with hot KMnO_4 , giving benzoic acid is:



[JEE Main 2025 (Online) 28th January Evening Shift]

- (1) 4 (2) 3 (3) 5 (4) 6

Scan or tap for the full solution 

Q.36 Which of the following arrangements with respect to their reactivity in nucleophilic addition reaction is correct?

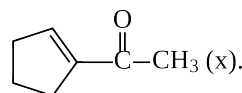
[JEE Main 2025 (Online) 24th January Morning Shift]

- (1) acetophenone < benzaldehyde < p-tolualdehyde < p-nitrobenzaldehyde
(2) acetophenone < p-tolualdehyde < benzaldehyde < p-nitrobenzaldehyde
(3) p-nitrobenzaldehyde < benzaldehyde < p-tolualdehyde < acetophenone

- (4) benzaldehyde < acetophenone < p-nitrobenzaldehyde < p-tolualdehyde

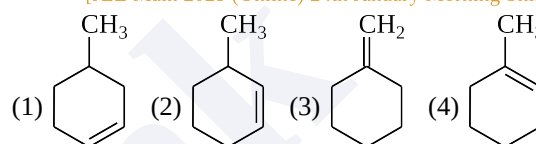
Scan or tap for the full solution 

Q.37 Aman has been asked to synthesise the molecule



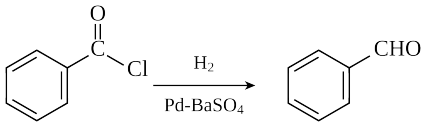
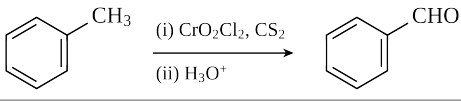
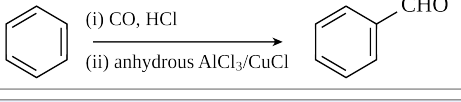
He thought of preparing the molecule using an aldol condensation reaction. He found a few cyclic alkenes in his laboratory. He thought of performing ozonolysis reaction on alkene to produce a dicarbonyl compound followed by aldol reaction to prepare "x". Predict the suitable alkene that can lead to the formation of "x".

[JEE Main 2025 (Online) 24th January Morning Shift]



Scan or tap for the full solution 

Q.38 Match List - I with List - II.

List - I	
A.	$\text{RCN} \xrightarrow[\text{(ii) H}_3\text{O}^+]{\text{(i) SnCl}_2, \text{HCl}} \text{RCHO}$
B.	
C.	
D.	
List - II	
I.	Etard reaction
II.	Gatterman-Koch reaction
III.	Rosenmund reduction
IV.	Stephen reaction

Choose the correct answer from the options given below :

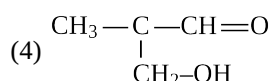
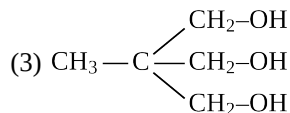
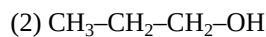
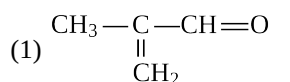
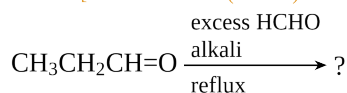
[JEE Main 2025 (Online) 24th January Evening Shift]

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

Scan or tap for the full solution 

Q.39 The major product of the following reaction is :

[JEE Main 2025 (Online) 23rd January Morning Shift]

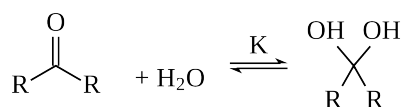


Scan or tap for the full solution

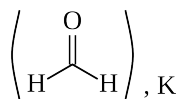


Q.40 Given below are two statements:

Consider the following reaction

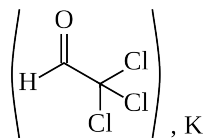


Statement-I: In the case of formaldehyde



is about 2280, due to small substituents, hydration is faster.

Statement-II: In the case of trichloro acetaldehyde



is about 2000 due to -I effect of -Cl.

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

[JEE Main 2025 (Online) 23rd January Evening Shift]

(1) Statement-I is true but Statement-II is false

(2) Both Statement-I and Statement-II are true

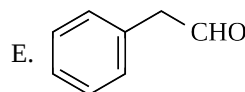
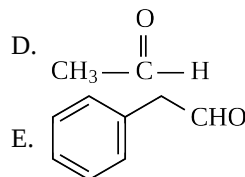
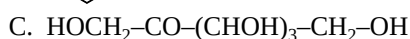
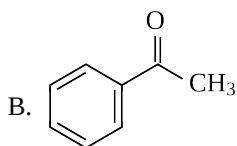
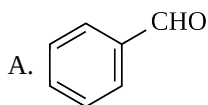
(3) Statement-I is false but Statement-II is true

(4) Both Statement-I and Statement-II are false

Scan or tap for the full solution



Q.41 The compounds which give positive Fehling's test are :



Choose the correct answer from the options given below :

[JEE Main 2025 (Online) 22nd January Morning Shift]

(1) A, C and D Only

(2) A, B and C Only

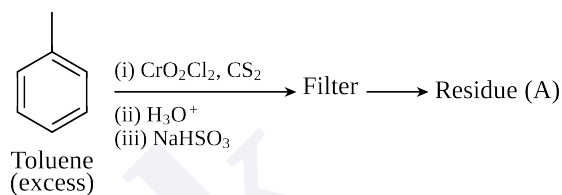
(3) A, D and E Only

(4) C, D and E Only

Scan or tap for the full solution



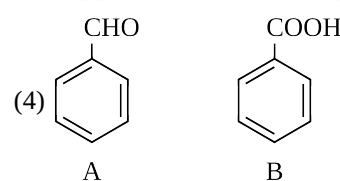
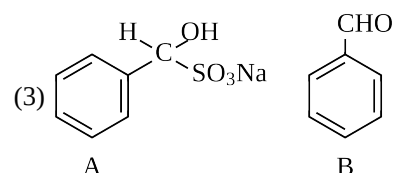
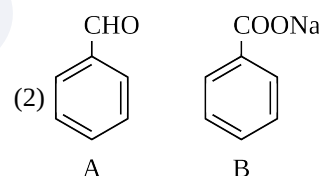
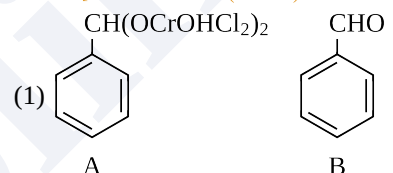
Q.42



Residue (A) + HCl (dil) $\rightarrow$ Compound (B)

Structure of residue (A) and compound (B) formed respectively is :

[JEE Main 2025 (Online) 22nd January Evening Shift]

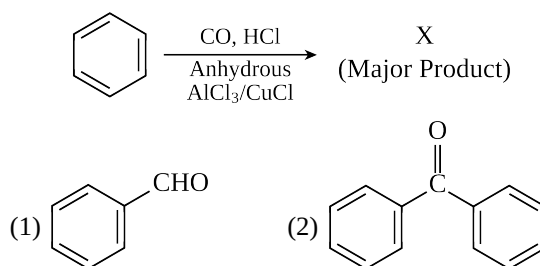


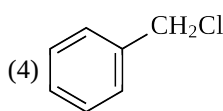
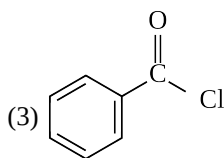
Scan or tap for the full solution



Q.43 Identify major product "X" formed in the following reaction :

[JEE Main 2024 (Online) 9th April Morning Shift]

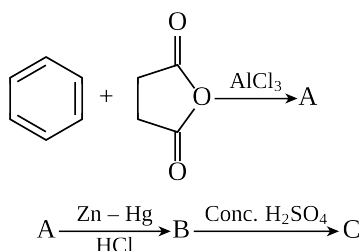




Scan or tap for the full solution

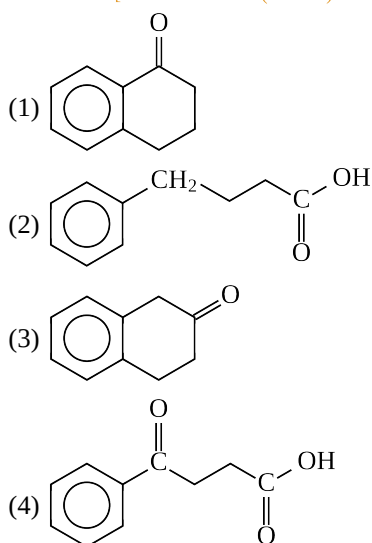


Q.44



What is the structure of C?

[JEE Main 2024 (Online) 9th April Morning Shift]

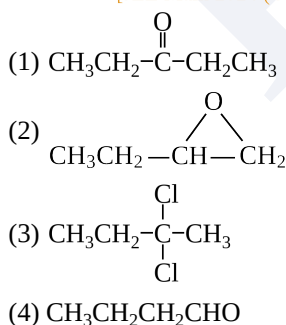


Scan or tap for the full solution



Q.45 Which of the following compounds can give positive iodoform test when treated with aqueous KOH solution followed by potassium hypoiodite.

[JEE Main 2024 (Online) 9th April Evening Shift]



Scan or tap for the full solution



Q.46 Which of the following compounds will give silver mirror with ammoniacal silver nitrate?

- A. Formic acid B. Formaldehyde
C. Benzaldehyde D. Acetone

Choose the correct answer from the options given below : [JEE Main 2024 (Online) 9th April Evening Shift]

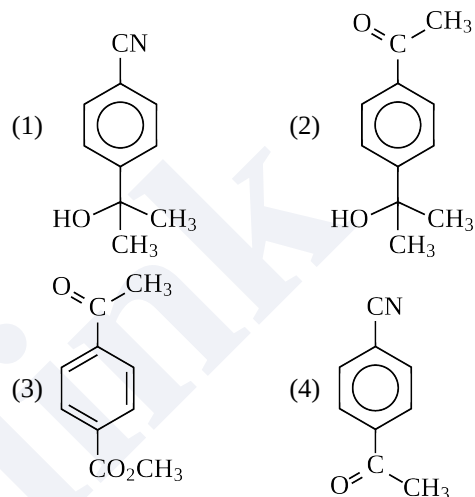
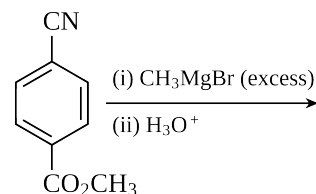
- (1) B and C only (2) C and D only
(3) A, B and C only (4) A only

Scan or tap for the full solution



Q.47 Major product of the following reaction is

[JEE Main 2024 (Online) 9th April Evening Shift]

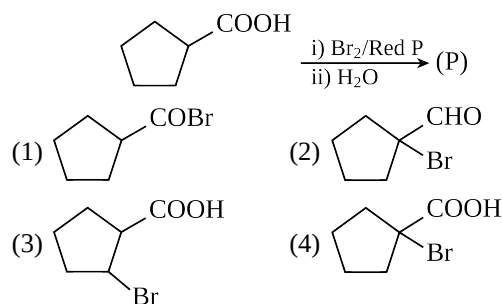


Scan or tap for the full solution



Q.48 Identify the product (P) in the following reaction:

[JEE Main 2024 (Online) 8th April Morning Shift]

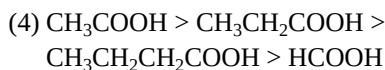


Scan or tap for the full solution



Q.49 The correct sequence of acidic strength of the following aliphatic acids in their decreasing order is: $\text{CH}_3\text{CH}_2\text{COOH}$, CH_3COOH , $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$, HCOOH [JEE Main 2024 (Online) 8th April Evening Shift]

- (1) $\text{HCOOH} > \text{CH}_3\text{CH}_2\text{CH}_2\text{COOH} > \text{CH}_3\text{CH}_2\text{COOH} > \text{CH}_3\text{COOH}$
(2) $\text{HCOOH} > \text{CH}_3\text{COOH} > \text{CH}_3\text{CH}_2\text{COOH} > \text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$
(3) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH} > \text{CH}_3\text{CH}_2\text{COOH} > \text{CH}_3\text{COOH} > \text{HCOOH}$

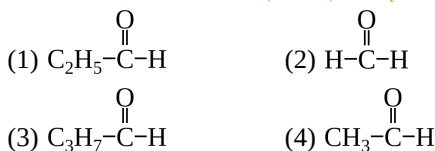


Scan or tap for the full solution



Q.50 Which among the following aldehydes is most reactive towards nucleophilic addition reactions?

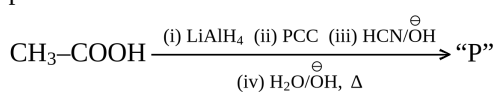
[JEE Main 2024 (Online) 6th April Morning Shift]



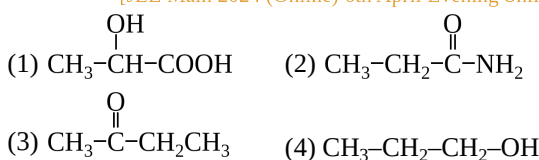
Scan or tap for the full solution



Q.51 Consider the given reaction, identify the major product P.



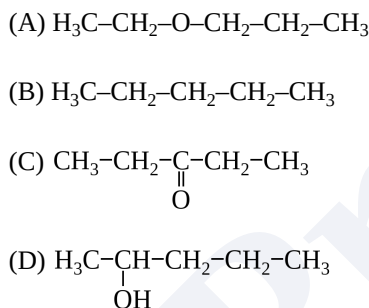
[JEE Main 2024 (Online) 6th April Evening Shift]



Scan or tap for the full solution



Q.52 For the Compounds :



The increasing order of boiling point is :

Choose the correct answer from the options given

below : [JEE Main 2024 (Online) 5th April Morning Shift]

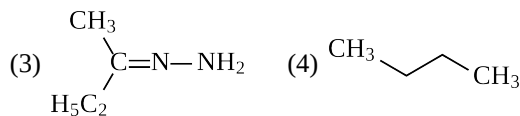
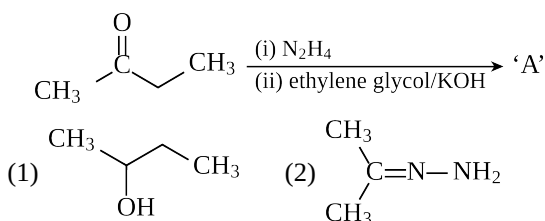
- (1) (D) < (C) < (A) < (B)
 (2) (B) < (A) < (C) < (D)
 (3) (A) < (B) < (C) < (D)
 (4) (B) < (A) < (D) < (C)



Solution

Q.53 Identify 'A' in the following reaction :

[JEE Main 2024 (Online) 5th April Morning Shift]

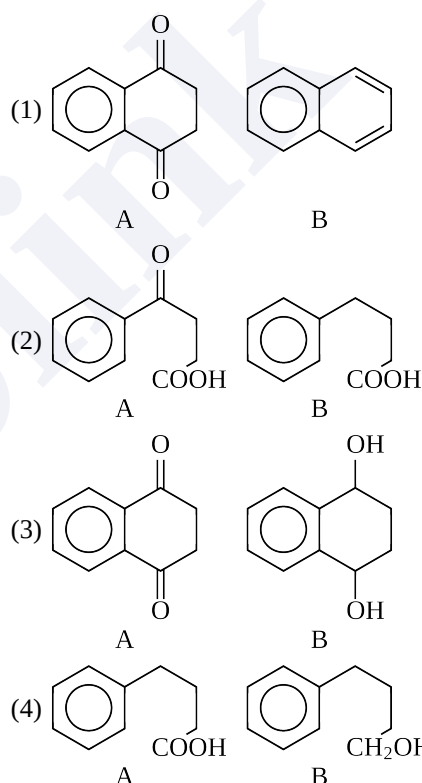
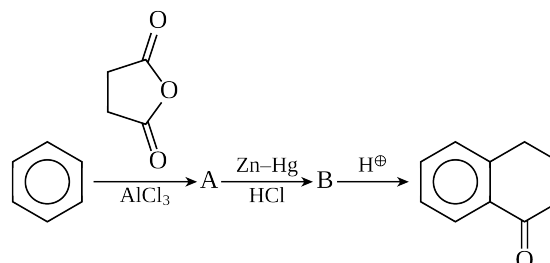


Scan or tap for the full solution

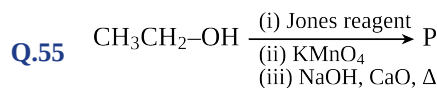


Q.54 Identify A and B in the given chemical reaction sequence :

[JEE Main 2024 (Online) 5th April Evening Shift]



Scan or tap for the full solution



Consider the above reaction sequence and identify the major product P.

[JEE Main 2024 (Online) 5th April Evening Shift]

- (1) Methanoic acid (2) Methoxymethane
 (3) Methane (4) Methanal

Scan or tap for the full solution



Q.56 Given below are two statements :

Statement-I: Acidity of α -hydrogens of aldehydes and ketones is responsible for Aldol reaction.

Statement-II: Reaction between benzaldehyde and ethanal will NOT give Cross - Aldol product.

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

[JEE Main 2024 (Online) 4th April Morning Shift]

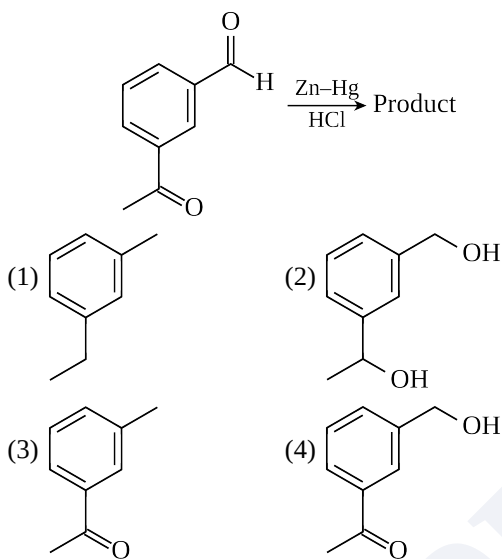
- (1) Both Statement-I and Statement-II are incorrect
 (2) Statement-I is correct but Statement-II is incorrect
 (3) Both Statement-I and Statement-II are correct
 (4) Statement-I is incorrect but Statement-II is correct

Scan or tap for the full solution



Q.57 Identify the product in the following reaction:

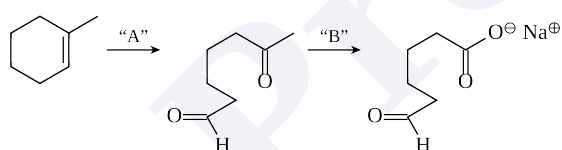
[JEE Main 2024 (Online) 4th April Morning Shift]



Scan or tap for the full solution



Q.58



In the above chemical reaction sequence "A" and "B" respectively are

[JEE Main 2024 (Online) 4th April Evening Shift]

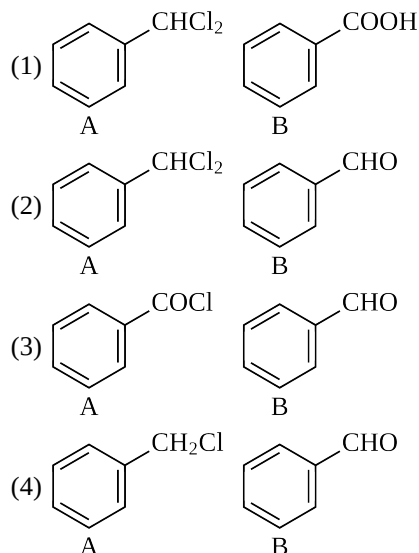
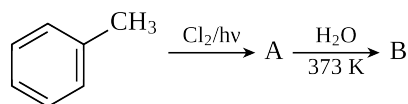
- (1) H_2O , H^+ and $\text{NaOH}_{(\text{alc})}/\text{I}_2$
 (2) O_3 , $\text{Zn}/\text{H}_2\text{O}$ and KMnO_4
 (3) H_2O , H^+ and KMnO_4
 (4) O_3 , $\text{Zn}/\text{H}_2\text{O}$ and $\text{NaOH}_{(\text{alc})}/\text{I}_2$



Solution

Q.59 Identify A and B in the following sequence of reaction

[JEE Main 2024 (Online) 1st February Morning Shift]



Scan or tap for the full solution



Q.60 Match List - I with List - II.

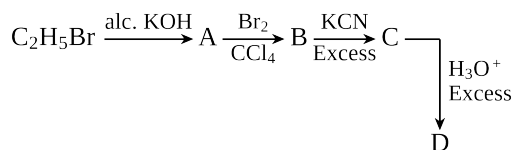
List I (Reactions)		List II (Reagents)	
A.	$\text{CH}_3(\text{CH}_2)_5\text{C}(=\text{O})\text{OC}_2\text{H}_5 \longrightarrow \text{CH}_3(\text{CH}_2)_5\text{CHO}$	I.	CH_3MgBr , H_2O
B.	$\text{C}_6\text{H}_5\text{COC}_6\text{H}_5 \longrightarrow \text{C}_6\text{H}_5\text{CH}_2\text{C}_6\text{H}_5$	II.	$\text{Zn}(\text{Hg})$ and conc. HCl
C.	$\text{C}_6\text{H}_5\text{CHO} \longrightarrow \text{C}_6\text{H}_5\text{CH}(\text{OH})\text{CH}_3$	III.	NaBH_4 , H^+
D.	$\text{CH}_3\text{COCH}_2\text{COOC}_2\text{H}_5 \longrightarrow \text{CH}_3\text{C}(\text{OH})(\text{H})\text{CH}_2\text{COOC}_2\text{H}_5$	IV.	DIBAL-H , H_2O

Choose the correct answer from the options given below :

[JEE Main 2024 (Online) 1st February Morning Shift]

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

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Q.61

Acid **D** formed in above reaction is :

[JEE Main 2024 (Online) 1st February Evening Shift]

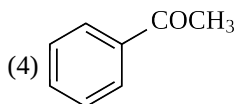
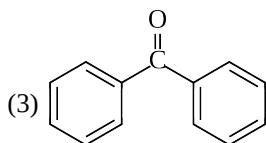
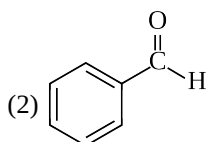
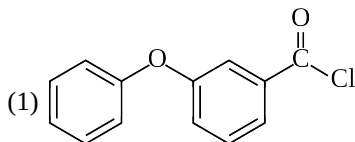
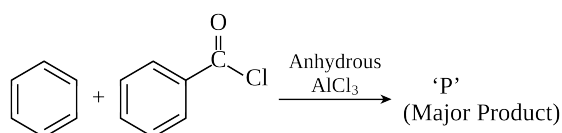
- (1) Malonic acid (2) Oxalic acid
 (3) Succinic acid (4) Gluconic acid

Scan or tap for the full solution



Q.62 Identify major product 'P' formed in the following reaction.

[JEE Main 2024 (Online) 31st January Evening Shift]

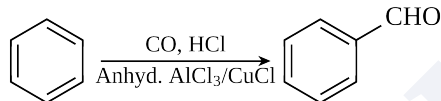


Scan or tap for the full solution



Q.63 Identify the name reaction.

[JEE Main 2024 (Online) 31st January Evening Shift]

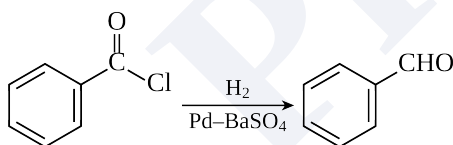


- (1) Stephen Reaction
- (2) Etard Reaction
- (3) Gattermann - Koch Reaction
- (4) Rosenmund Reduction



Solution

Q.64



This reduction reaction is known as:

[JEE Main 2024 (Online) 30th January Morning Shift]

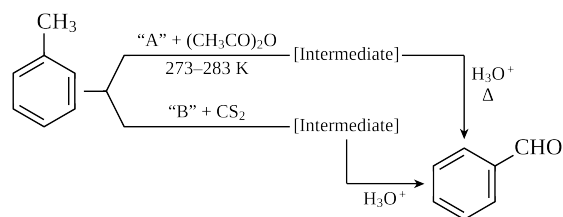
- (1) Wolff-Kishner reduction
- (2) Etard reduction
- (3) Stephen reduction
- (4) Rosenmund reduction



Solution

Q.65 In the given reactions, identify the reagent A and reagent B.

[JEE Main 2024 (Online) 30th January Morning Shift]



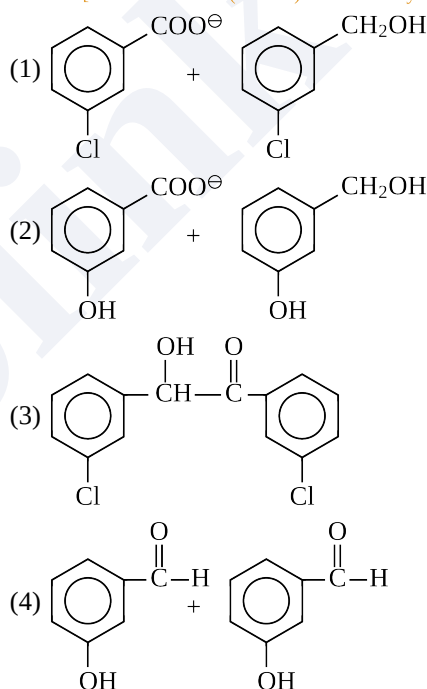
- (1) A - CrO₃ B - CrO₃
- (2) A - CrO₃ B - CrO₂Cl₂
- (3) A - CrO₂Cl₂ B - CrO₃
- (4) A - CrO₂Cl₂ B - CrO₂Cl₂



Solution

Q.66 m-chlorobenzaldehyde on treatment with 50% KOH solution yields :

[JEE Main 2024 (Online) 30th January Evening Shift]

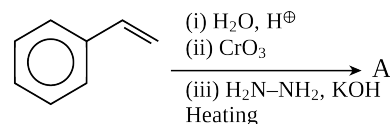


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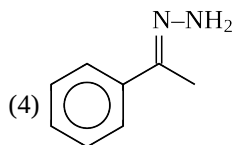


Q.67 The final product A formed in the following multistep reaction sequence is

[JEE Main 2024 (Online) 29th January Morning Shift]



- (1)
- (2)
- (3)

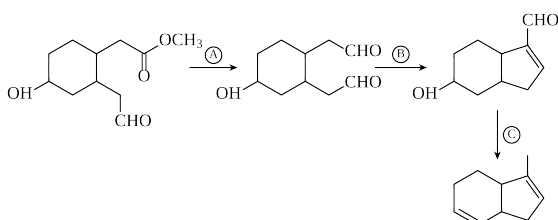


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Q.68 Identify the reagents used for the following conversion

[JEE Main 2024 (Online) 29th January Evening Shift]



- (1) A = LiAlH_4 , B = $\text{NaOH}_{(\text{aq})}$, C = $\text{NH}_2\text{-NH}_2/\text{KOH}$, ethylene glycol
 (2) A = DIBAL-H, B = $\text{NaOH}_{(\text{aq})}$, C = $\text{NH}_2\text{-NH}_2/\text{KOH}$, ethylene glycol
 (3) A = LiAlH_4 , B = $\text{NaOH}_{(\text{alc})}$, C = Zn/HCl
 (4) A = DIBAL-H, B = $\text{NaOH}_{(\text{alc})}$, C = Zn/HCl

Scan or tap for the full solution



Q.69 Match List-I with List-II and choose the correct option.

[JEE Main 2024 (Online)]

List-I		List-II	
A.	Wurtz reaction	I.	$\text{HCHO} + \text{conc. NaOH}$
B.	Kolbe's reaction	II.	$\text{R-X} + \text{Na}$ in dry ether
C.	Cannizzaro reaction	III.	Toluene + CrO_2Cl_2
D.	Etard reaction	IV.	Sodium phenoxide + CO_2

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



Solution

Section B (Numerical) — 14 questions

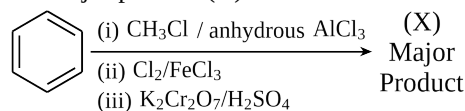
Q.70 'x' is the product which is obtained from benzene by reacting it with carbon monoxide and hydrogen chloride in the presence of cuprous chloride. 'y' is the major product obtained from the benzene by reacting it with ethanoyl chloride in the presence of anhydrous AlCl_3 . Product (major) obtained by heating x and y in the presence of alkali is z. Total number of π (pi) electrons in z is _____.

[JEE Main 2026 (Online) 8th April Evening Shift]

Scan or tap for the full solution



Q.71 Consider the following sequence of reactions to give the major product (X)



P g of the major product (X) formed is reacted with NaHCO_3 solution to liberate a gas which occupied 11.2 dm^3 at STP.

P = _____ g.

(Given molar mass in g mol^{-1} H : 1, C : 12, O : 16, Cl : 35.5)

[JEE Main 2026 (Online) 4th April Morning Shift]

Scan or tap for the full solution



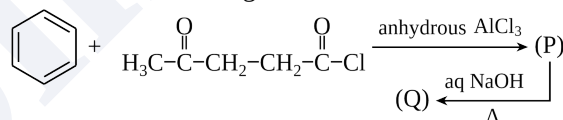
Q.72 Grignard reagent RMgBr (P) reacts with water and forms a gas (Q). One gram of Q occupies 1.4 dm^3 at STP. (P) on reaction with dry ice in dry ether followed by H_3O^+ forms a compound (Z). 0.1 mole of (Z) will weigh _____ g. (Nearest integer)

[JEE Main 2026 (Online) 24th January Evening Shift]

Scan or tap for the full solution



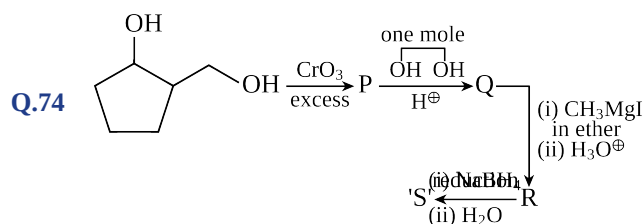
Q.73 Consider the following reaction of benzene.



In compound (Q), the percentage of oxygen is _____ %. (Nearest integer)

[JEE Main 2026 (Online) 23rd January Evening Shift]

Scan or tap for the full solution



0.1 mole of compound 'S' will weigh _____ g.

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

[JEE Main 2025 (Online) 29th January Morning Shift]

Scan or tap for the full solution



Q.75 In the Claisen-Schmidt reaction to prepare dibenzalacetone from 5.3 g of benzaldehyde, a total of 3.51 g of product was obtained. The percentage yield in this reaction was _____ %.

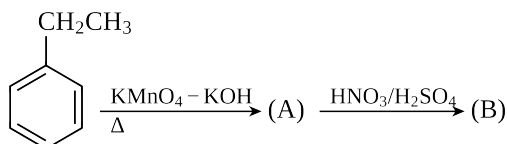
[JEE Main 2025 (Online) 29th January Evening Shift]

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Q.76 Major product B of the following reaction has _____ π -bond.

[JEE Main 2024 (Online) 8th April Morning Shift]



Scan or tap for the full solution



- Q.77** Two moles of benzaldehyde and one mole of acetone under alkaline conditions using aqueous NaOH after heating gives x as the major product. The number of π bonds in the product x is _____.

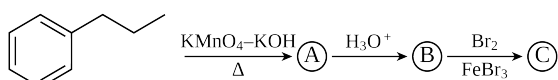
[JEE Main 2024 (Online) 8th April Evening Shift]

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- Q.78** The product C in the following sequence of reactions has _____ π bonds.

[JEE Main 2024 (Online) 5th April Evening Shift]



Scan or tap for the full solution



- Q.79** In the Claisen-Schmidt reaction to prepare 351 g of dibenzalacetone using 87 g of acetone, the amount of benzaldehyde required is _____ g. (Nearest integer)

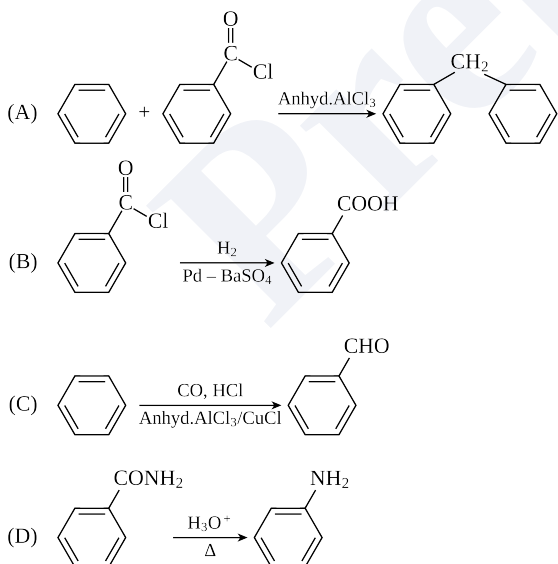
[JEE Main 2024 (Online) 5th April Evening Shift]

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- Q.80** The number of the correct reaction(s) among the following is _____.

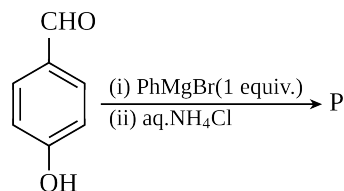
[JEE Main 2024 (Online) 4th April Morning Shift]



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- Q.81** The product of the following reaction is P.



The number of hydroxyl groups present in the product P is _____.

[JEE Main 2024 (Online) 31st January Morning Shift]

Scan or tap for the full solution



- Q.82** The compound formed by the reaction of ethanal with semicarbazide contains _____ number of nitrogen atoms.

[JEE Main 2024 (Online) 30th January Morning Shift]

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- Q.83** From the compounds given below, number of compounds which give positive Fehling's test is _____.

Benzaldehyde, Acetaldehyde, Acetone, Acetophenone, Methanal, 4-nitrobenzaldehyde, cyclohexane carbaldehyde.

[JEE Main 2024 (Online) 29th January Morning Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 69 questions

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	2	4	1	4	3	4	4	1	4	2
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	2	3	2	4	3	2	4	3	4	3	2
Ques.	23	24	25	26	27	28	29	30	31	32	33
Ans.	4	2	2	1	1	3	1	1	4	4	3
Ques.	34	35	36	37	38	39	40	41	42	43	44
Ans.	4	3	2	4	2	3	2	4	3	1	1
Ques.	45	46	47	48	49	50	51	52	53	54	55
Ans.	3	3	2	4	2	2	1	2	4	2	3
Ques.	56	57	58	59	60	61	62	63	64	65	66
Ans.	2	1	4	2	3	3	3	3	4	2	1
Ques.	67	68	69								
Ans.	1	4	1								

Section B (Numerical) — 14 questions

Ques.	70	71	72	73	74	75	76
Ans.	16	78	6	10	13	60	5
Ques.	77	78	79	80	81	82	83
Ans.	9	4	318	1	0	3	3