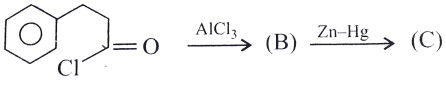
CHEMISTRY

BOOKS - CENGAGE CHEMISTRY (HINGLISH)

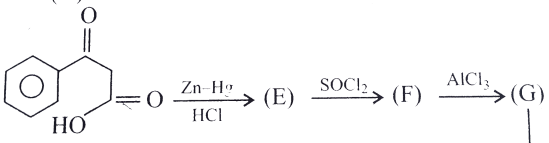
REDUCTION AND OXIDATION REACTION OF ORGANIC COMPOUNDS

Illustration

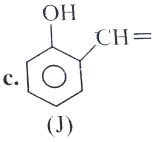
1. Complete the following reactions:

a. 

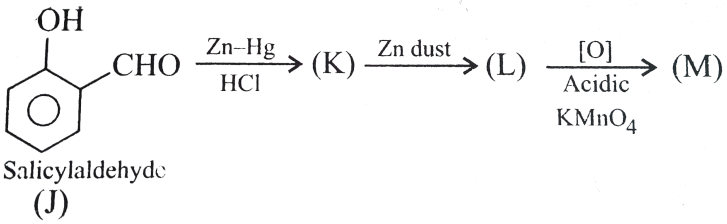
(A)

b. 

(D)

c. 

(J)

c. 

Salicylaldehyde
(J)

d. Propane nitrile $\underset{(N)}{}$ $\xrightarrow[(ii)\,H_3O^{\oplus}]{(i)\,PhMgBr}$ (O) $\xrightarrow[HCl]{Zn-Hg}$ (P)

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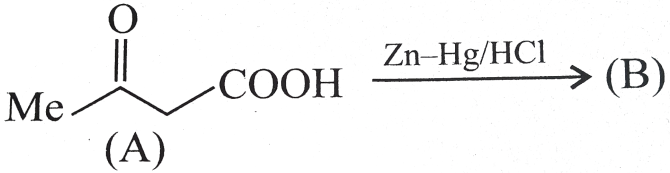
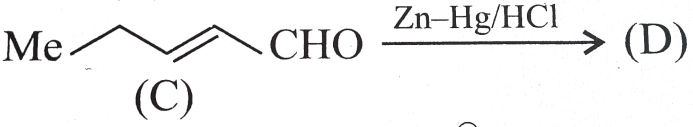
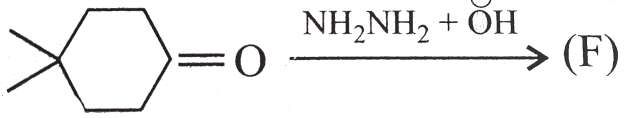
2. Give the products of the following and the name of the reactions:

a. 

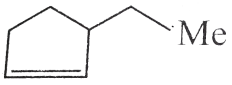
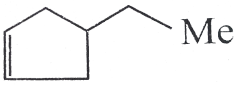
(A)

b. 

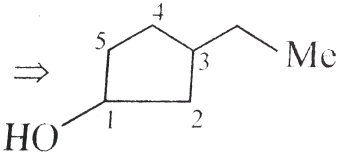
(C)

c. 

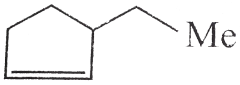
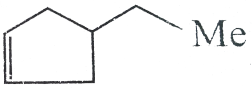
(E)

I ⇒  or 

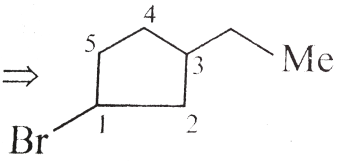
(3-Ethyl cyclopentene) (4-Ethyl cyclopentene)

H ⇒ 

(3-Ethyl cyclopentanol)

K ⇒  or 

(3-Ethyl cyclopentene) (4-Ethyl cyclopentene)

L ⇒ 

(1-Bromo-3-ethylcyclopentane)

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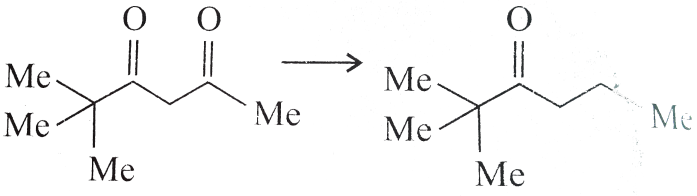
3. Convert the following:

i. 

ii. 

How will you decide whether Clemmensen, Wolff-Kishner, or Raney Ni desulphurisation is the most efficacious for reducing a carbonyl compound?

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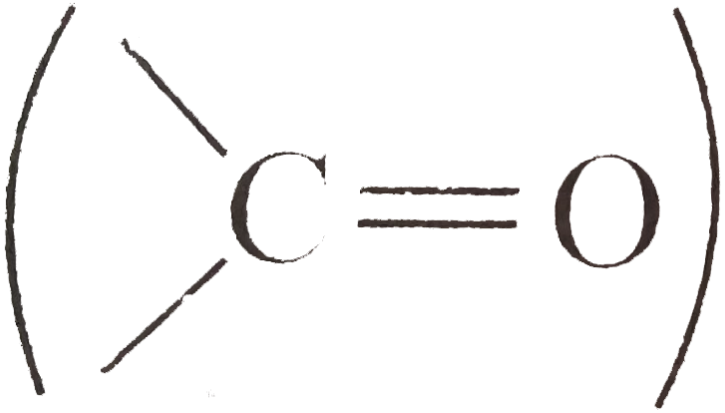
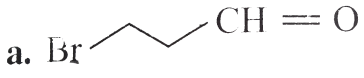
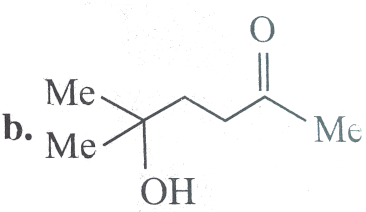
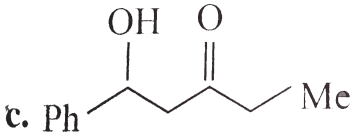
4. Selects the best way for reducing

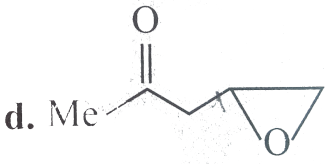


group in each of the following:

a. 

b. 

c. 

d. 

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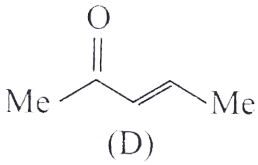
5. Complete the following:

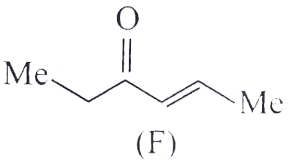
a. $Me-(C\equiv C)_3-\overset{\overset{O}{\|}}{C}-CH=CH_2 \xrightarrow{NaBH_4} (B)$

(A)

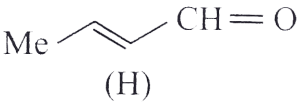
$(C) \xleftarrow{H^{\oplus}}$

b.  $\xrightarrow[1\ atm]{H_2 + Pd + C}$ (E)

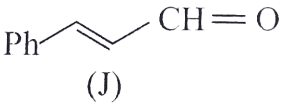
(D)

c.  $\xrightarrow[Pressure]{H_2 + Ni}$ (G)

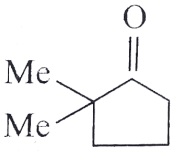
(F)

d.  $\xrightarrow{LAH}$ (J)

(H)

e.  $\xrightarrow{LAH}$ (K)

(J)

f.  + $PhCH=O \xrightarrow[(ii)\ \Delta]{(i)\ \overset{\ominus}{O}H}$ (N) $\xrightarrow{LAH + AlCl_3}$ (O) $\xrightarrow{O_3/Red.}$ (P) + (Q)

(L) (M)

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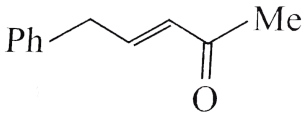
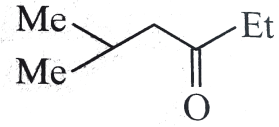
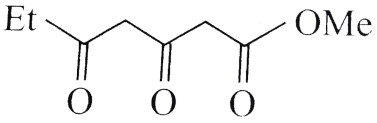
6. Which alcohol is prepared from the following ketones via MPV reduction?

a. 

b. 

c. 

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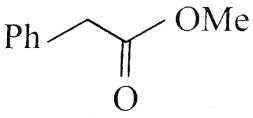
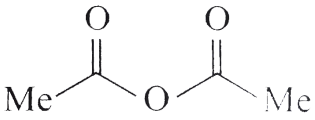
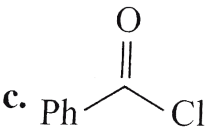
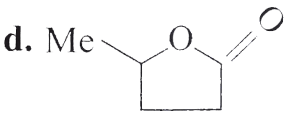
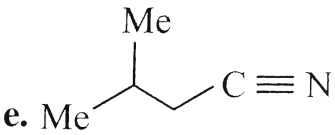
7. Give the products of LAH with:

a. 

b. 

c. 

d. 

e. 

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8. Give the products of the following:

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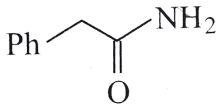
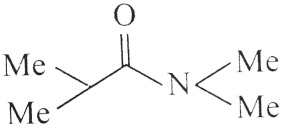
9. Give the product of the reaction of LAH with:

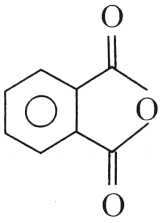
a.



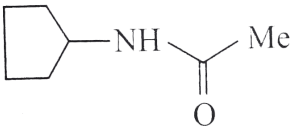
b.



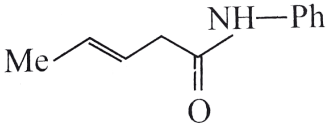
c.



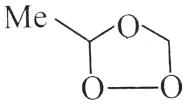
d.



e.



f.



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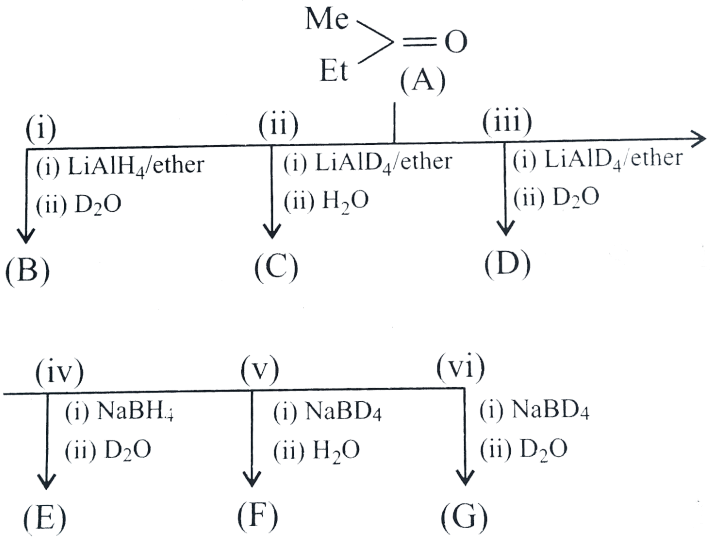
10. Complete the following reduction reactions with LAH and $NaBH_4$:



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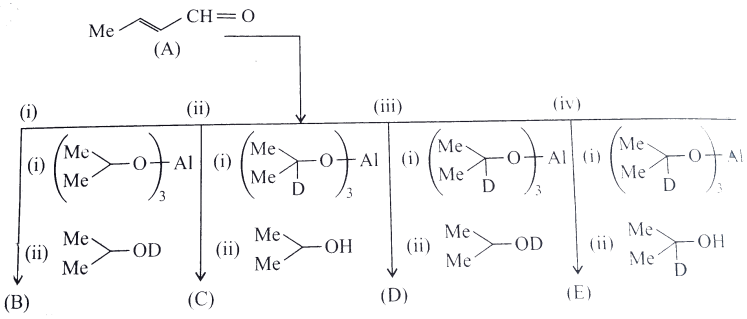
11. Complete the following MPV reductions:



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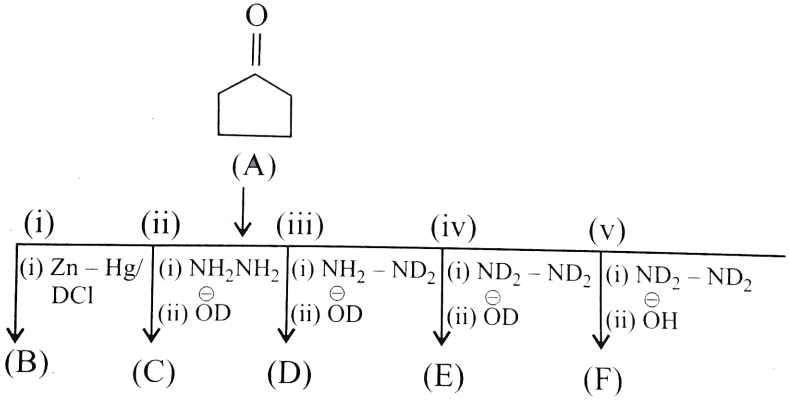
12. Complete the following Clemmensen and Wolff-Kishner reductions:



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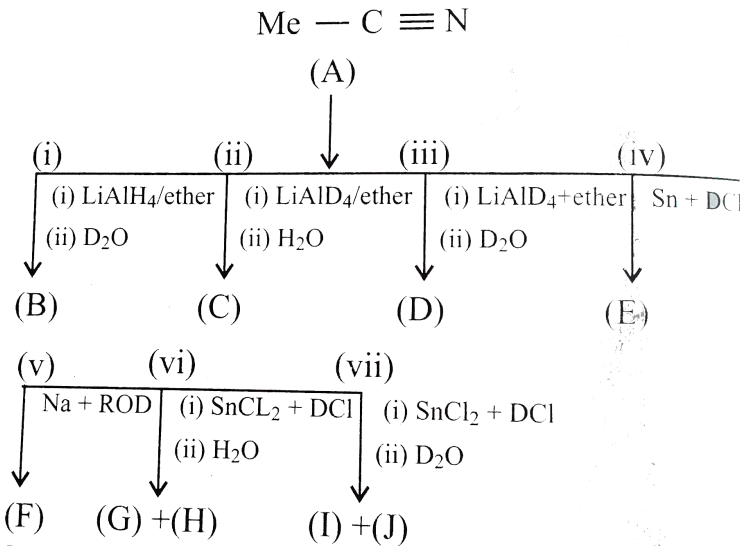
13. Complete the following Mendius and Stephen's reductions:



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14. Complete the following Bouveault- Blane (B.B) reduction:

a. $\underset{(A)}{MeCH} = O \xrightarrow{Na+PrOD} (B)$

b. $Me_2 \underset{(C)}{C} = O \xrightarrow{K+n-BuOD} (D)$

$\underset{(E)}{MeCOOEt} \xrightarrow{Cs+EtOD} (F)$

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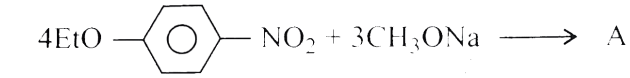
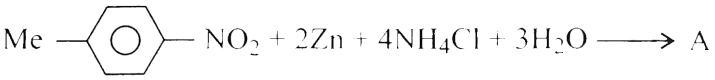
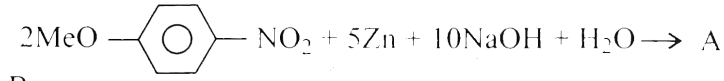
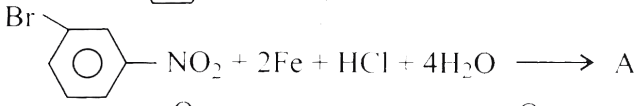
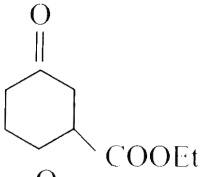
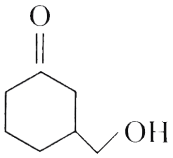
15. Complete the following reactions: a.

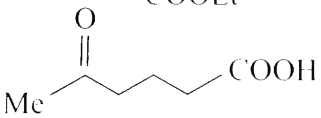
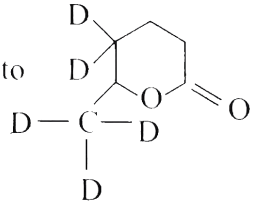
a. 

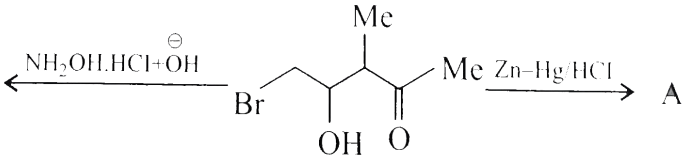
b. 

c. 

d. 

e. Convert  to 

f. Convert  to 

g. 

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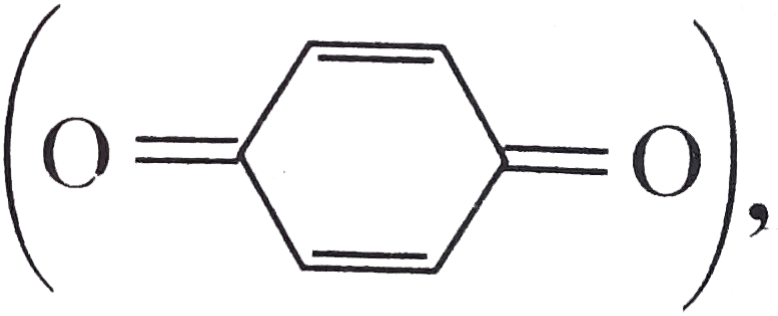
16. Give the products of

a. p-Benzoquinone



and

b. $PhCH = CH - CHO$ with

i. $H_2 + Pt$

ii. $H_2 + Pd - C(1atm)$

iii. LAH

iv. $NaBH_4$

v. $Zn + HAc$

vi. $NH_2NH_2 + KOH + glycol + \Delta$

vii. $HI + P$

viii. $LAH + AlCl_3$

ix. $(Me_2CHO-)_3Al + Me_2CHOH$

x. Li or $Na, liq.\ NH_3 + EtOH$

xi. $Na + EtOH$

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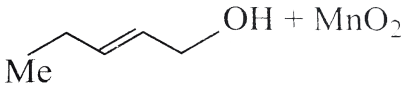
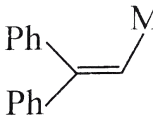
17. Give the product of each of the following reactions:

a.



b.



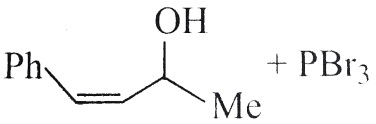
+ BH_3 THF, followed by H_2O_2, OH

c. $Ph_2CHOH + H_2/Pd\ (HClO_4)$

d. $PhCOCH_2CH_2Br + LiAlD_4$, followed by H_2O

e. $m\text{-}NO_2 — C_6H_4CH_2COOH + LAH$

f.



+ PBr_3

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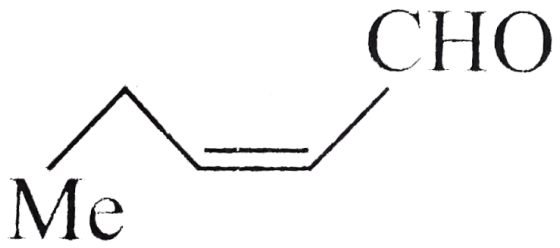
18. Select the most suitable alcohol and oxidant to parpare the following compounds.

a. $Me_3C—COOH$

b.



c.

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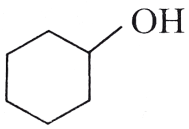
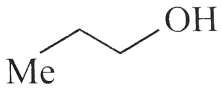
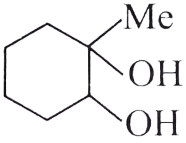
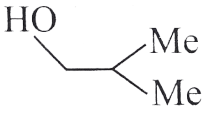
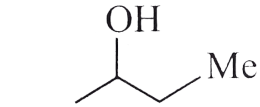
19. Give the product of tthe following with chromate oxidation.

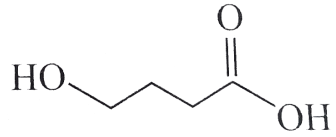
a. 

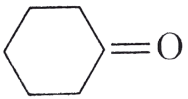
b. 

c. 

d. 

e. 

f. 

g. 

a.

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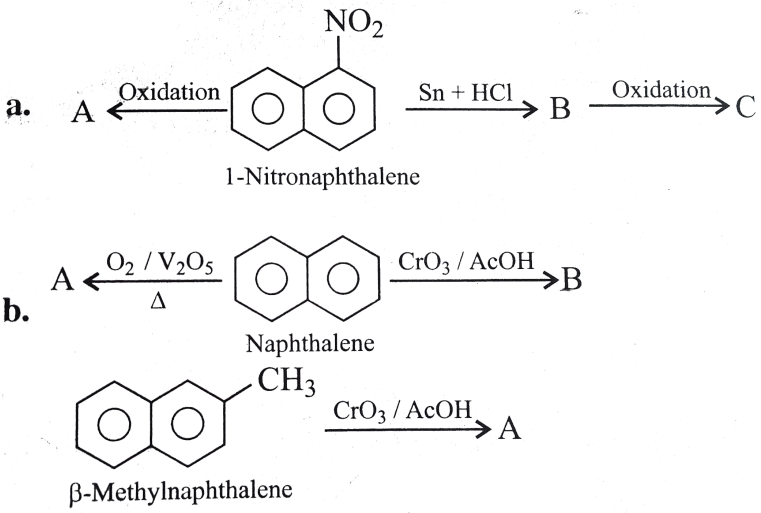
20. Find the following A,B, and C product of the reaction



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21. Distinguish between acetaldehye and benzaldehyde.

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22. Which of the following compounds is/not oxidised by Fehling's solution?

a. Acetaldehyde

b. Phenylacetaldehyde

c. Benzaldehyde

d. p-Methyl benzaldehyde

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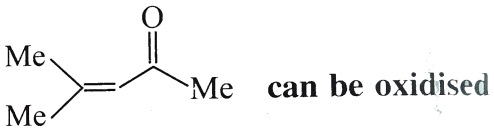
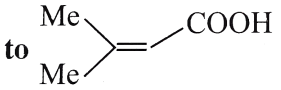
23.  can be oxidised to  by:

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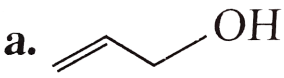
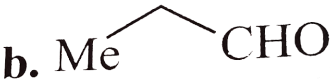
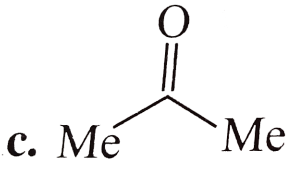
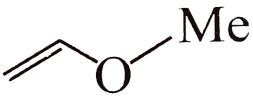
24. An organic compound of molecular formula C_3H_6O did not give a silver mirror with Tollens reagent but gave a positive Brady's test

and positive iodoform test. It may be:

a. 

b. 

c. 

d. 

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25. a. Ketone (A) which undergoes haloform reaction gives compound (B) on reduction. (B) on heating with sulphuric acid gives compounds (C) which forms monozonide (D). (D) on hydrolysis in the presence of Zn dust gives only acetaldehyde. Identify (A), (B), (C).

b. $C_6H_{14}O(A)$ on heating with KOH and I_2 gives yellow precipitate (A) on dehydration using Al_2O_3 gives (B) which on catalytic hydration gives (C) which gives Lucas test readily. Identify (A), (B), and (C).

c. Compound (A) $C_5H_{10}O$ forms a phenylhydrazone and gives a negative Tollens and negative iodoform tests. (A) on reduction gives

n-pentane. Identify A.

d. One gram mixture of CH_3OH and CH_3CHO reacts with Bendict's reagent to give a red precipitate. The mass of the red precipitate obtained is $\frac{1}{43}gm$. Calculate the $\%$ of CH_3CHO in the mixture.

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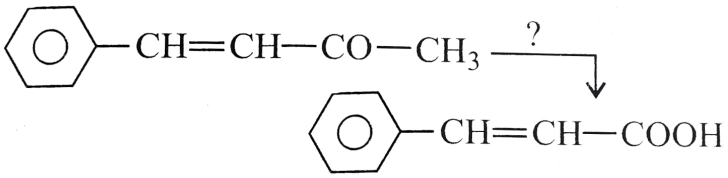
26. Complete the following reaction



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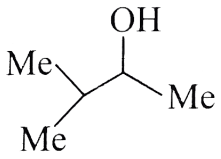
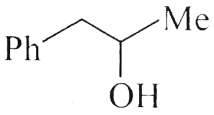
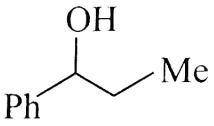
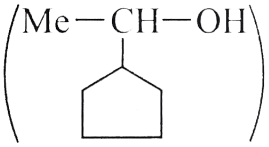
27. Which of the following give(s) iodoform test? Give their oxidation products after acidification.

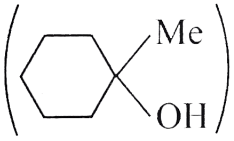
a. 

b. 

c. 

d. CH_3CH_2OH

e. Cyclopentylmethyl carbinol 

f. 1-Methyl cyclohexanol 

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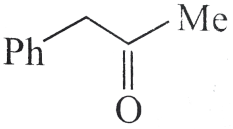
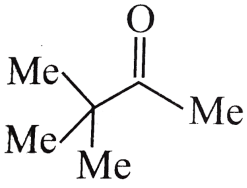
28. Give the oxidation products of reaction of the following with KOI.

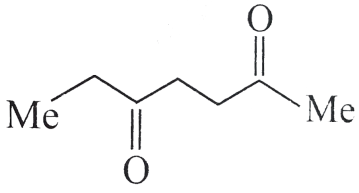
a. CH_3CH_2CHO

b. C_2H_5OH

c. PhCHO

d. 

e. 

f. 

g. $PhCH_2OH$

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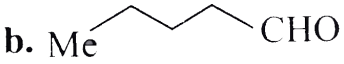
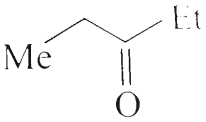
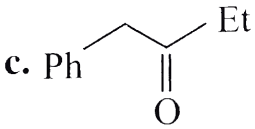
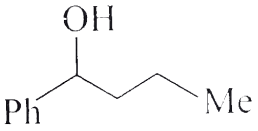
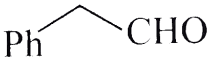
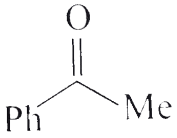
29. Give a simple test to distinguish between the compounds in each of the following paris.

a. $PhCH{=}CHCH_2OH$ and $PhCH{=}CH-CHO$

b.  and 

c.  and 

d.  and 

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30. Compound $X, C_9H_{10}O$, is intert to Br_2 in CCl_4. Vigorous oxidation with hot alkaline $KMnO_4$ yields benzoic acid. X gives a precipitate with Bragy's regent. Write all possible structures for X.

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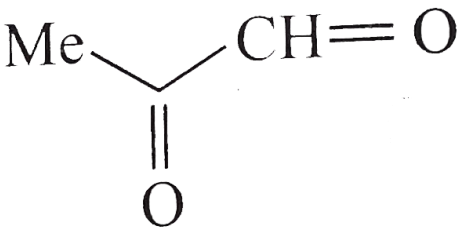
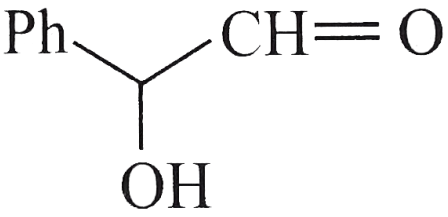
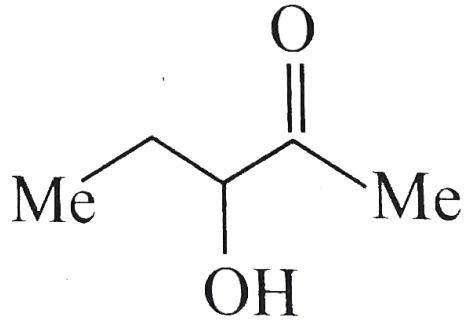
31. Give the products of the periodate oxidation of:

a. 

b. **1,2-Cyclohexane dione**

c. 

d. 

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32. Identify the compound A that gives each the following products on oxidative cleavage with HIO_4.

a. $PhCHO + MeCOMe$

b. Cyclopentanone $+ HCHO$

c. $2HCHO + HCOOH$

d. $5HCOOH + HCHO$

e. $3HCOOH + 2HCHO + CO_2$

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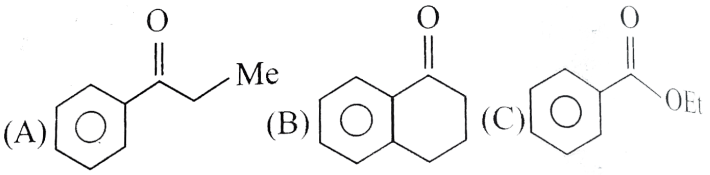
Solved Example

1. Give the products of the following compounds reduced with:

a. $NaBH_4 / MeOH$

b. LAH / ether

c. H_2 / Ni, Δ, 100 atm or $H_2 / Pt + Al_2O_3$, Δ, 35 atm.



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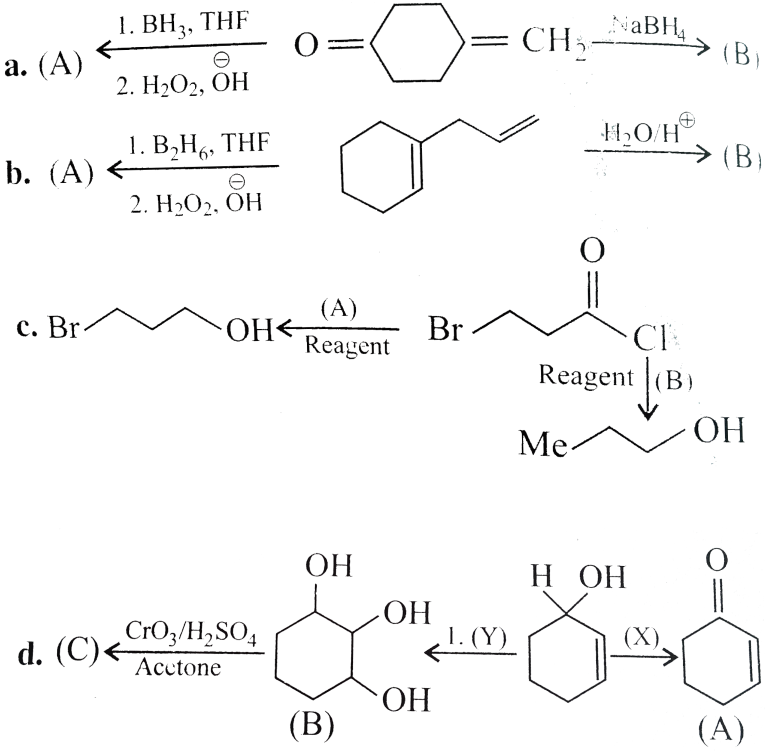
2. Complete the following reactions:



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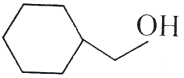
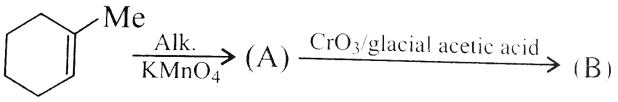
3. Complete the following:

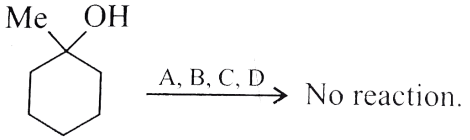
i. Give the oxidation product of

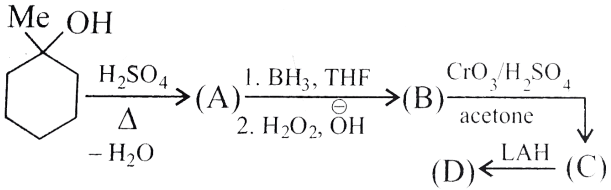
i. Give the oxidation products of  **with:**

a. $Na_2Cr_2O_7/H_2SO_4$ **b.** CrO_3/H_2SO_4, **acetone**

c. CrO_3**/pyridine** **d. PCC**

ii. 

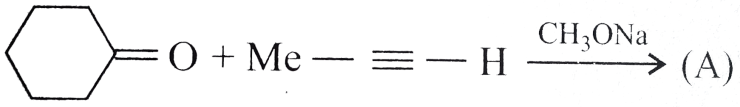
iii. 

iv. 

v. Distinguish between allyl alcohol (A) and n-propyl alcohol (B).

vi. Complete the following:

a. $Me_2CO + Me{-}{\equiv}{-}Me \xrightarrow{CH_3ONa} (A)$

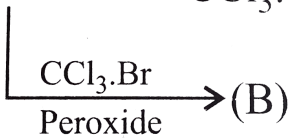
b. 

c. $CH_3CHO + HC \equiv CD \xrightarrow{CH_3ONa} (A)$

c. $CH_3CHO + HC \equiv CD \xrightarrow{CH_3ONa} (A)$

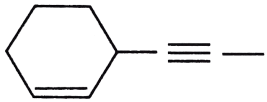
d. $Me - \equiv - H + CCl_3.Br \longrightarrow (A)$

d.



vii. Write the stereochmical products of the following:

a.

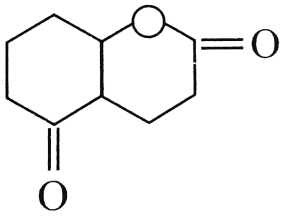


$\xrightarrow{HCO_3H}$ (A)

$\xrightarrow{\text{Aq. } KMnO_4, \Delta}$ (B)(Mix.)

$\xrightarrow{O_3, H_2O}$ (C)(Mix.)

b.



$\xrightarrow{NaBH_4/MeOH}$ (A)

$\xrightarrow{LAH}$ (B)

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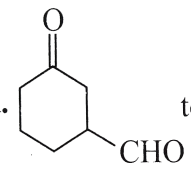
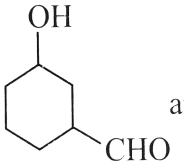
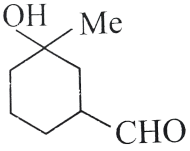
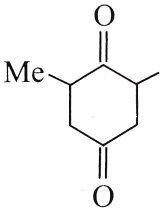
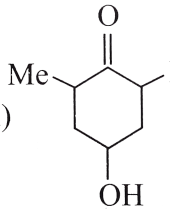
4. Convert the following:

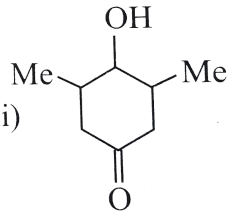
a. 

to (i) 

and (ii) 

b. 

to (i) 

and (ii) 

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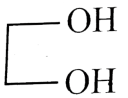
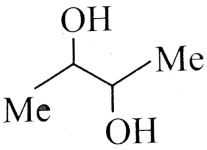
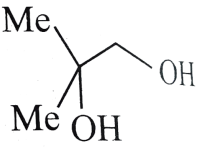
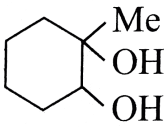
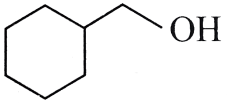
5.

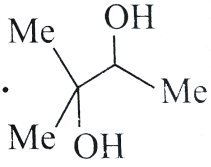
a. 

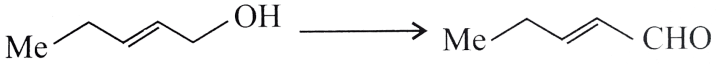
b. 

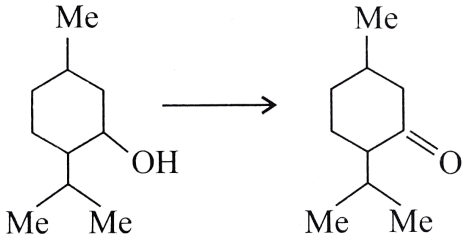
c. 

i. 

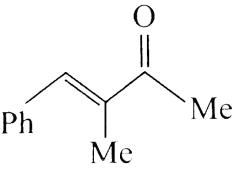
ii. 

iii. 

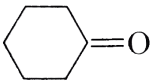
a. 

b. 

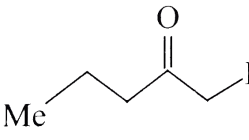
a. B (mixture) $\xleftarrow[\Delta]{KMnO_4/H^{\oplus}}$ R–CH=CH–CHO $\xrightarrow[\text{reagent}]{\text{Tollens}}$ A

b. 

$\xrightarrow[H^{\oplus}]{KOCl}$ C (mixture)

c. 

$\xrightarrow[\Delta]{KMnO_4}$ D

d. 

$\xrightarrow[\Delta]{KMnO_4/H^{\oplus}}$

E ($C_2 - C_3$ cleavage) +F ($C_3 - C_4$ cleavage)

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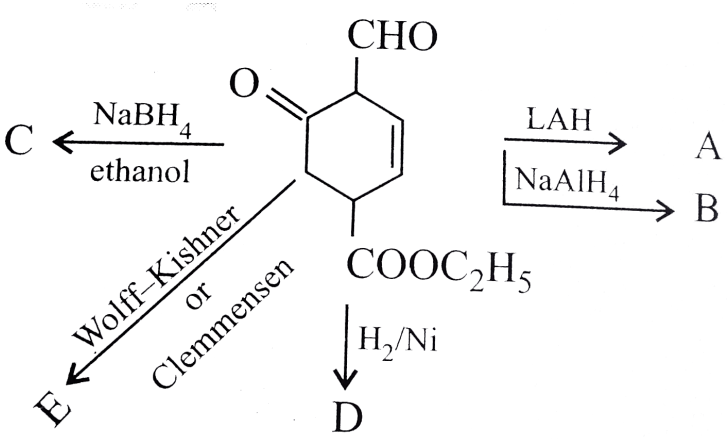
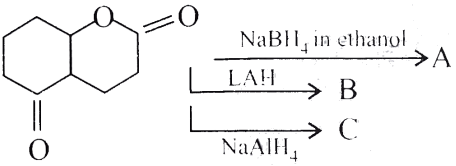
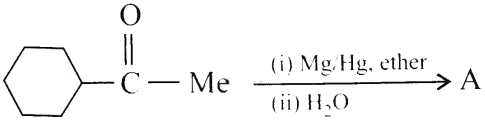
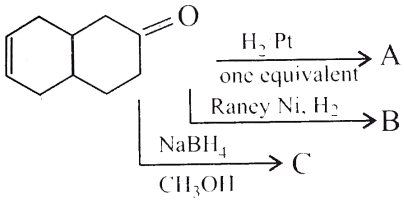
6. Complete the following reactions:

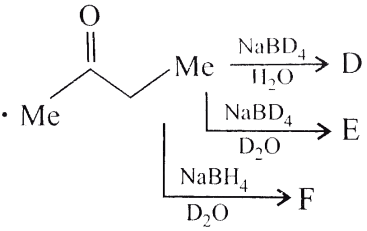


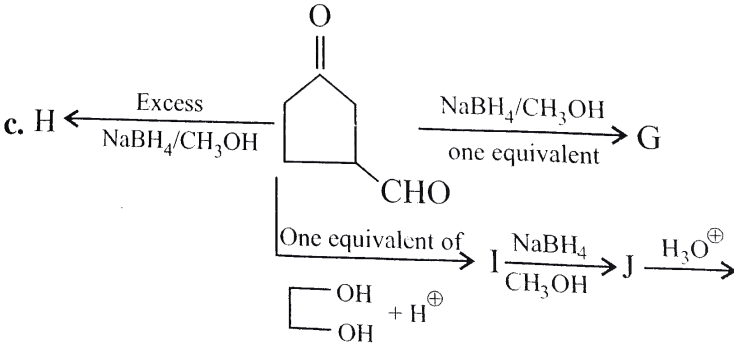
ii. 

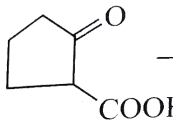
iii. 

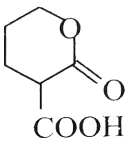
iv. Identify the following:

a. 

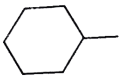
b. 

c. 

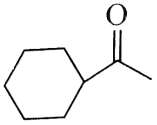
v. **a.** 

$\xrightarrow[H_2O]{B_2H_6}$ A **b.** 

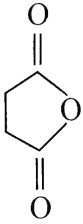
$\xrightarrow[H_2O]{B_2H_6}$ B

vi. **a.** 

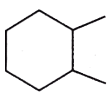
$\xrightarrow[H_2O]{2CH_3Li}$ A

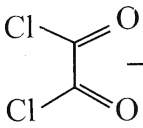
b. 

+ HO  → B

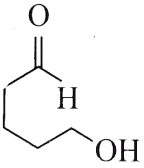
c. 

$+ CH_3O^{\ominus} \xrightarrow{H_3O^{\oplus}}$ C

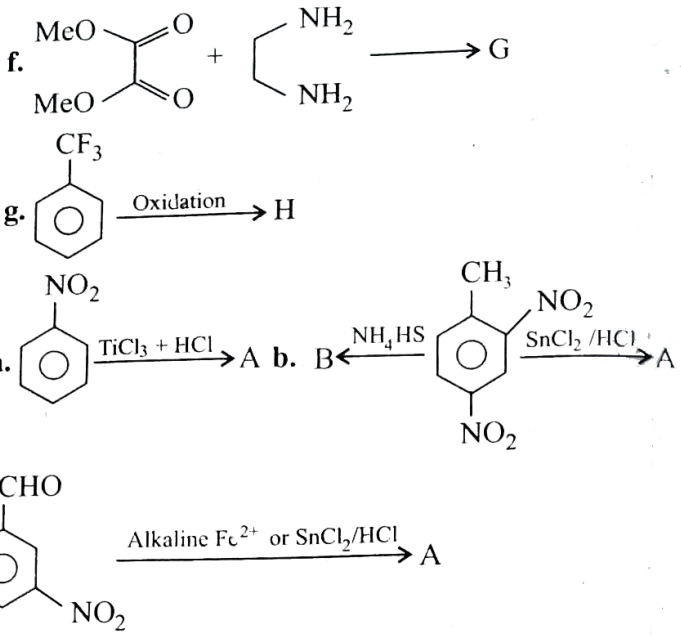
d. 

+ 

→ D

e. 

$\xrightarrow[NH_3(aq.)]{Ag^{\oplus}}$ E $\xrightarrow[\Delta]{H^{\oplus}}$ F



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EXAMPLE

1. Give the products of nitrobenzene when it is reacted with the following:

a. Pd/H_2

b. P/HI

c. Fe / HCl

d. PPh_3

e. $PhNH_2$

f. $PhCH_2CN$

g. NH_2OH

h. $RMgBr / H_2O$

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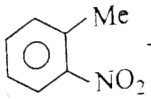
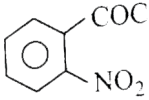
Exercise

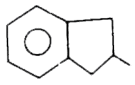
1. Complete the follwing:

a. 

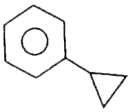
$\xrightarrow[\Delta]{NaOH}$ (A) + (B)

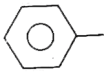
b. 

$\xrightarrow[EtOH]{KOH,\Delta}$ (A)

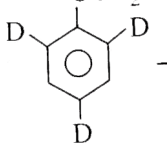
c. 

$\xrightarrow[\Delta]{Cr_2O_7^{2-}, H^{\oplus}}$ (A)

d. 
$\xrightarrow{KMnO_4}$ (B)

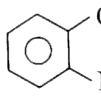
e. 

$\xrightarrow{KMnO_4}$ (C)

f. 

$\xrightarrow{200°C}$ (D)

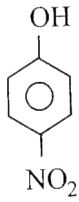
(Name the reaction and write the mechanism.)

g. 

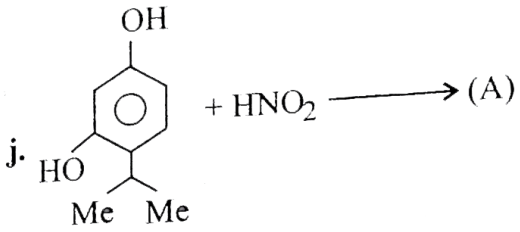
+ $CH_3COOH \longrightarrow$ (A)

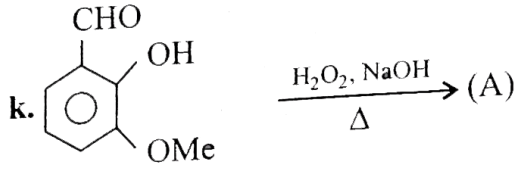
h. (B) $\xleftarrow{HCl}$ 

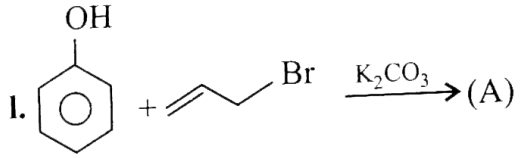
+ H_2SO_3 + $H_2O \longrightarrow$ (A)

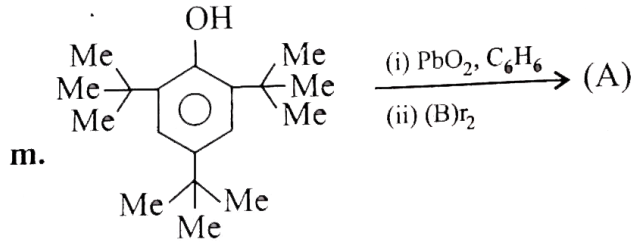
i. 

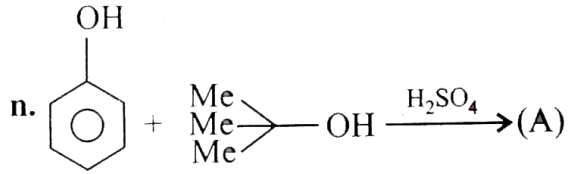
+ $CH_2(OEt)_2$ $\xrightarrow[H_2SO_4]{Conc.\ HCl}$ ( )

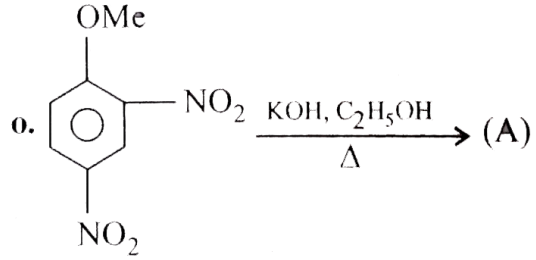
j. 

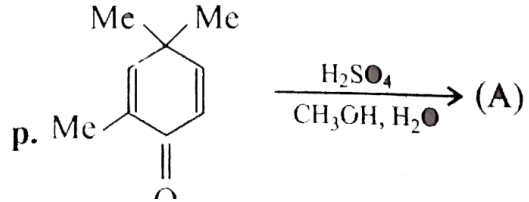
k. 

l. 

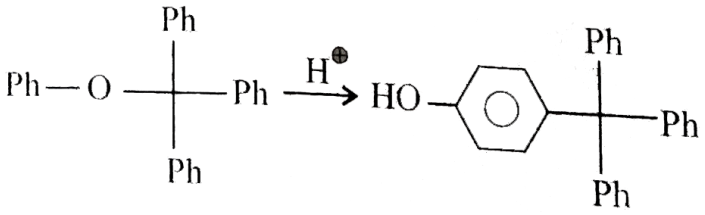
m. 

n. 

o. 

p. 

q. Discuss the mechanism:



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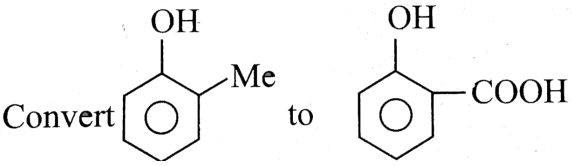
2. Convert 

(Note that $KMnO_4$ can cause cleavage of the ring in the presence of the activating) $(-OH)$ group.

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3. In which of the following compounds does intramolecular H-bonding occure?

a. *o*-Nitro phenol

b, *o*-Cresol

c. *o*-Hydrox benzoic acid

d. Salicylaldehyde

e. *o*-Fluoro phenol

f. *o*-Hydrox-benzonitrile

g. Methyl salicylate (oil of wintergreen)

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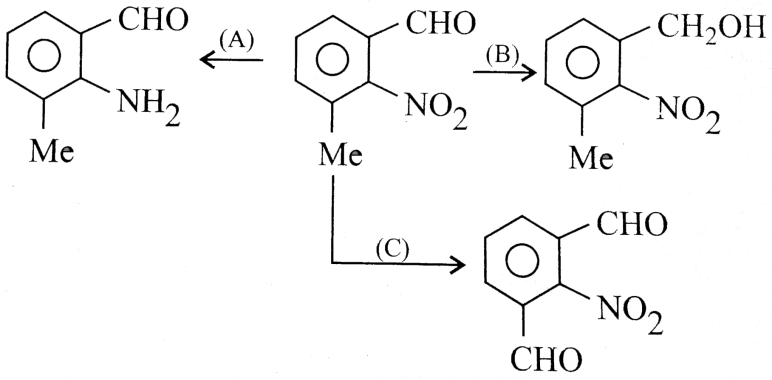
4. Identify (A), (B), (C),



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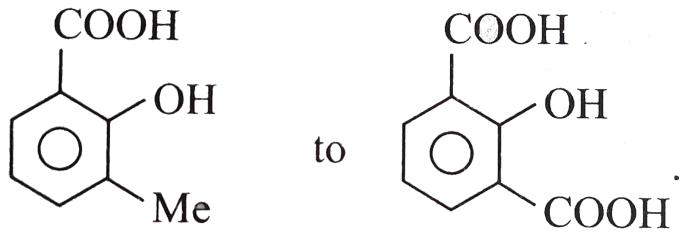
5. Convert 

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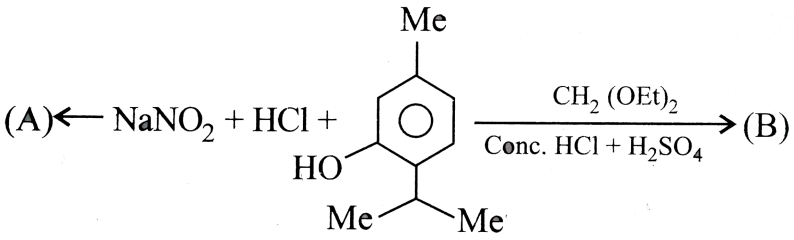
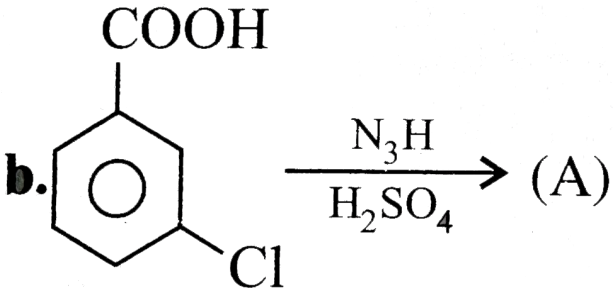
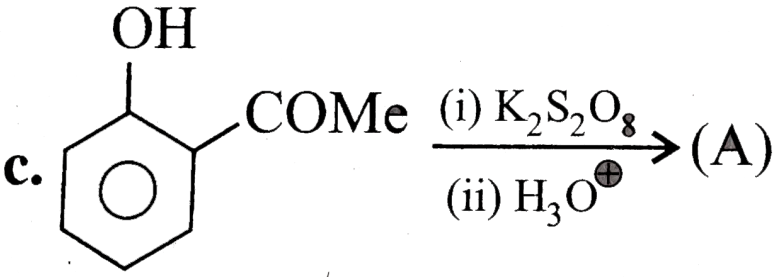
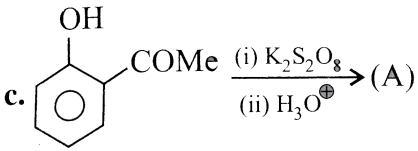
6. Complete the following:

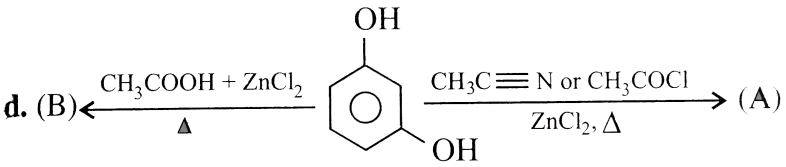






b.





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7. Certain cyclic 1, 3-diketone give, under Clemmensen reduction, a fully reduced product along with a monoketone with ring contraction. Explain.

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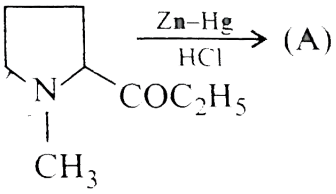
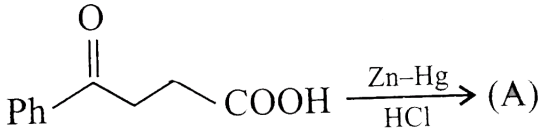
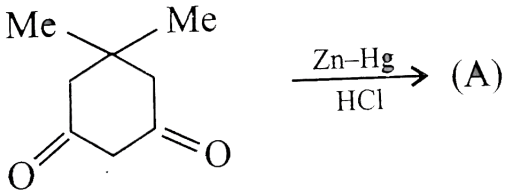
8. a. $CH_3-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{O}{\|}}{C}-CH_3 \xrightarrow[HCl]{Zn-Hg} (A)$

b. 

c. $Ph-\overset{\overset{O}{\|}}{C}-COOH \xrightarrow[HCl]{Zn-Hg} (A)$

d. $Ph-\overset{\overset{O}{\|}}{C}-CH_2COOH \xrightarrow[HCl]{Zn-Hg} (A)$

e. 

f. 

8.

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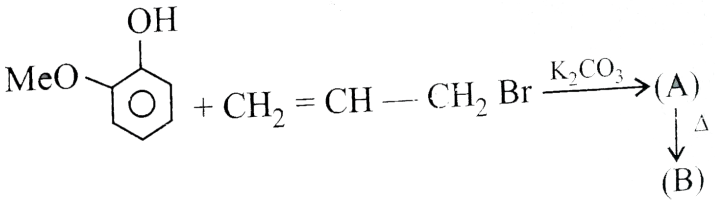
9. 

9.

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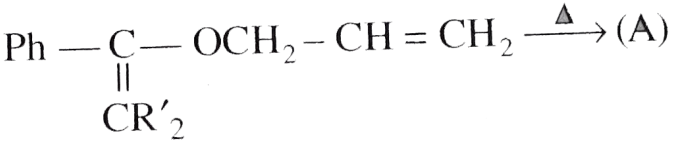
10. 

10.

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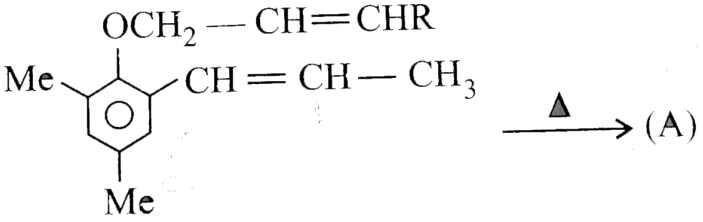
11. 

11.

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Exercise (Linked Comprehension)

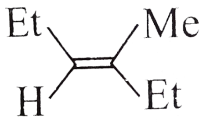
1. (A) $A(C_7H_{14}) \xrightarrow{O_3 / Red} B(C_3H_6O) + C$

(B) Gives positive Tollens test but negative iodform test.

(C) Give negative Tollens test but positive iodoform test.

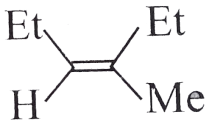
The compound (A) is:

a.



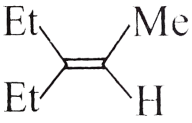
A. a.

b.



B. b.

c.



C. c.

D. d.Both (a) and (b)

Answer: D

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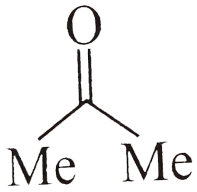
2. (A) $A(C_7H_{14}) \xrightarrow{O_3 / Red} B(C_3H_6O) + C$

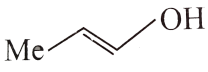
(B) Gives positive Tollens test but negative iodform test.

(C) Give negative Tollens test but positive iodoform test.

The compound (B) is:

A. a. a. 

B. b. b. 

C. c. c. 

D. d.Both (b) and (c)

Answer: D

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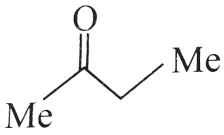
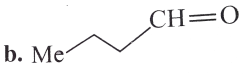
3. (A) $A(C_7H_{14}) \xrightarrow{O_3 / Red} B(C_3H_6O) + C$

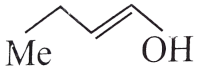
(B) Gives positive Tollens test but negative iodform test.

(C) Give negative Tollens test but positive iodoform test.

The compound (C) is:

A. a. a. 

B. b. b. 

C. c. c. 

D. d.Both (a) and (c)

Answer: D

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4. (A) $A(C_7H_{14}) \xrightarrow{O_3 / Red} B(C_3H_6O) + C$

(B) Gives positive Tollens test but negative iodform test.

(C) Give negative Tollens test but positive iodoform test.

The compound (B) can be converted to (C) by using the reagents:

A. a.i. $EtMgBr / H_3O^{\oplus}$, ii. $AcidicKMnO_4$

B. b.i. $MeMgBr / H_3O^{\oplus}$, ii. $AcidicKMnO_4$

C. c.i. $EtMgBr / H_3O^{\oplus}$, ii. $AqueousKMnO_4$

D. d.i. $MeMgBr / H_3O^{\oplus}$, ii. $AqueousKMnO_4$

Answer: B

Watch Video Solution

5. (A)$(C_8H_{14}) \xrightarrow[AcidicKMnO_4]{[O]} (B) + (C) + (D)$

(A) requires $2mol$ of H_2 for its saturation.

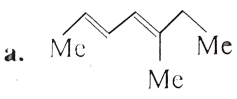
(B) reduces ammoniacal $AgNO_3$ and gives yellow colour with $NaOH + I_2$.

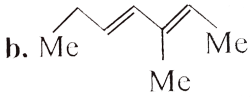
(C) does not reduce Tollens reagent but gives iodoform test.

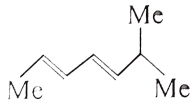
(D) on dehydration with conc. H_2SO_4 gives a mixture of colourless

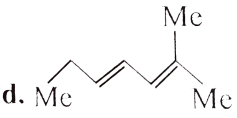
gases.

The compound (A) is:

A. a. a. 

B. b. b. 

C. c. c. 

D. d. d. 

Answer: A

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6. (A)$(C_8H_{14}) \xrightarrow[AcidicKMnO_4]{[O]} (B) + (C) + (D)$

(A) requires $2mol$ of H_2 for its saturation.

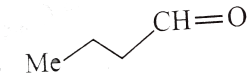
(B) reduces ammoniacal $AgNO_3$ and gives yellow colour with

$NaOH + I_2$.

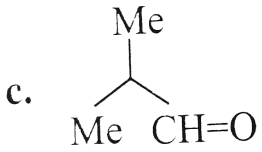
(C) does not reduce Tollens reagent but gives iodoform test.

(D) on dehydration with conc. H_2SO_4 gives a mixture of colourless gases.

The compound (B) is:

A. a. 

B. Me-CH=O

C. c. 

D. d. 

Answer: B

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7. (A)$(C_8H_{14}) \xrightarrow[AcidicKMnO_4]{[O]} (B) + (C) + (D)$

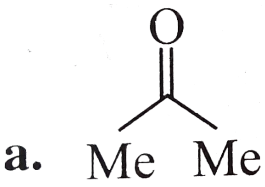
(A) requires $2mol$ of H_2 for its saturation.

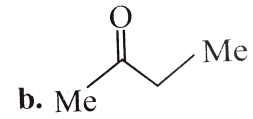
(B) reduces ammoniacal $AgNO_3$ and gives yellow colour with $NaOH + I_2$.

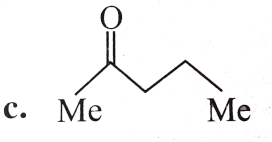
(C) does not reduce Tollens reagent but gives iodoform test.

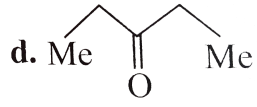
(D) on dehydration with conc. H_2SO_4 gives a mixture of colourless gases.

The compound (C) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B

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8. (A)$(C_8H_{14}) \xrightarrow[AcidicKMnO_4]{[O]} (B) + (C) + (D)$

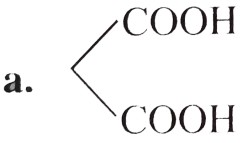
(A) requires $2mol$ of H_2 for its saturation.

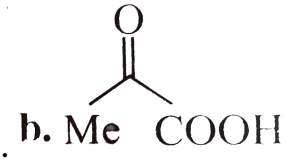
(B) reduces ammoniacal $AgNO_3$ and gives yellow colour with $NaOH + I_2$.

(C) does not reduce Tollens reagent but gives iodoform test.

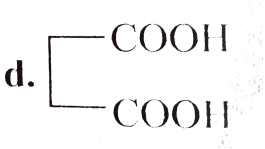
(D) on dehydration with conc. H_2SO_4 gives a mixture of colourless gases.

The compound (D) is:

A. a. 

B. b. 

C. c. $HOOC - COOH$

d. 

D. d.

Answer: C

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9. (A) $(C_8H_{14}) \xrightarrow[AcidicKMnO_4]{[O]} (B) + (C) + (D)$

(A) requires $2mol$ of H_2 for its saturation.

(B) reduces ammoniacal $AgNO_3$ and gives yellow colour with $NaOH + I_2$.

(C) does not reduce Tollens reagent but gives iodoform test.

(D) on dehydration with conc. H_2SO_4 gives a mixture of colourless gases.

The mixture of colourless gases is:

A. a. CO_2

B. b.CO

C. c.$CO_2 + CO$

D. d.$CO_2 + CO + H_2O$

Answer: D

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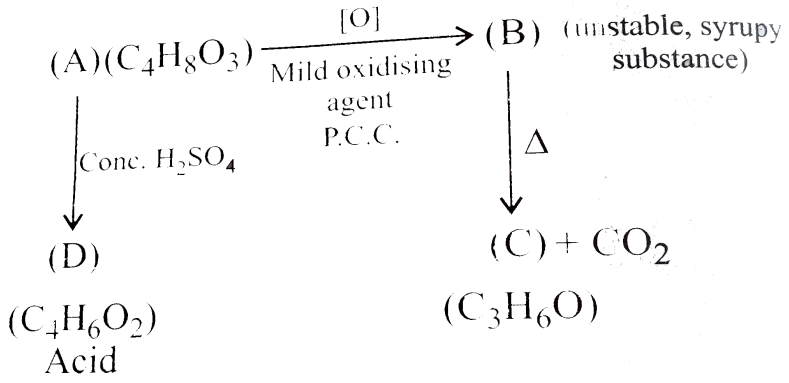
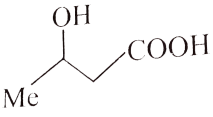
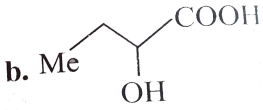
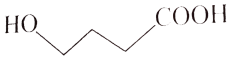
10.

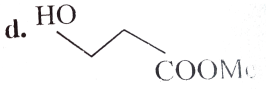


The compound (A) is:

A. a. a. 

B. b. b. 

C. c. c. 

D. d. d. 

Answer: A

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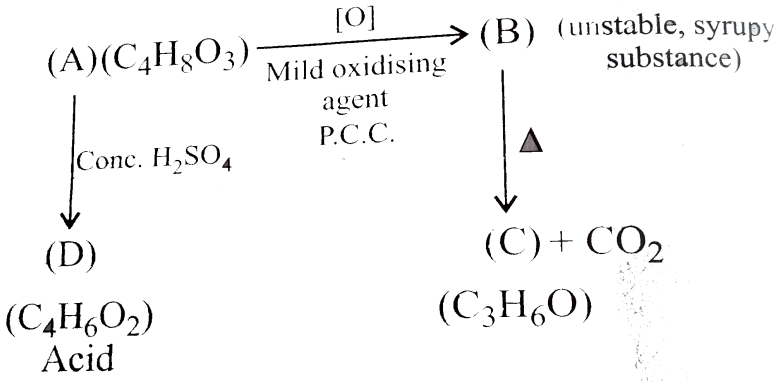
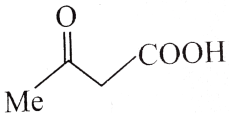
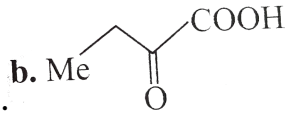
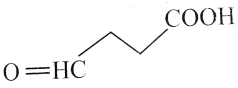
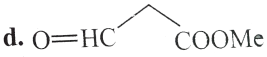
11. 

The compound (B) is:

A. a. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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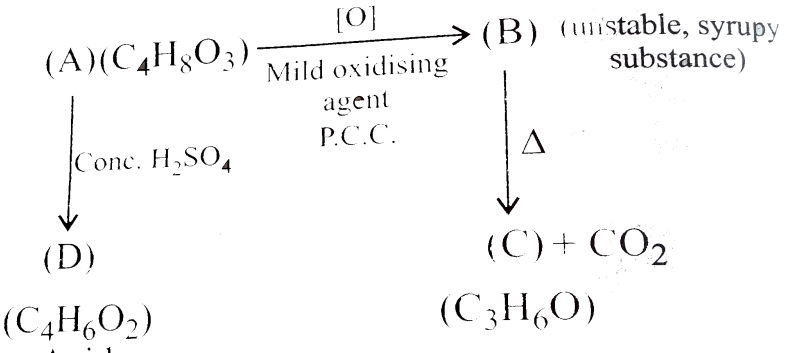
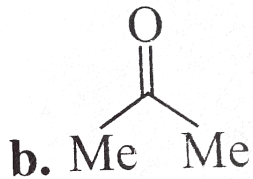
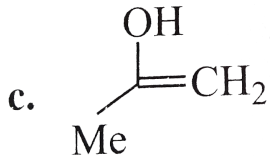
12.

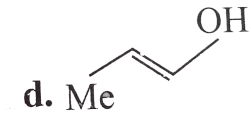


The compound (C) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B

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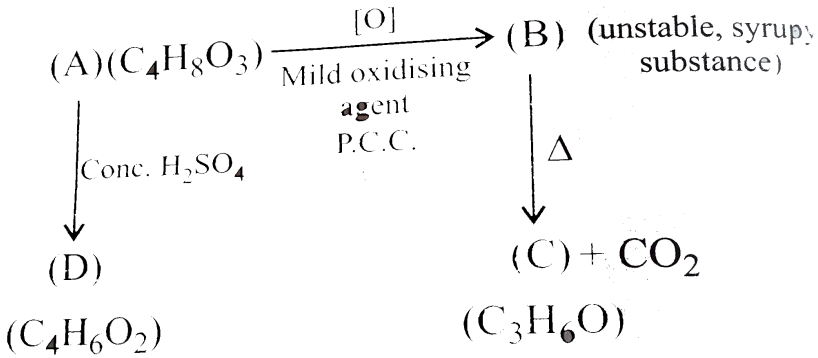
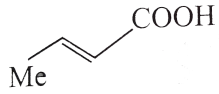
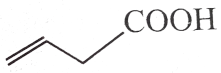
13. 

The compound (D) is:

A. a. 

B. b. 

C. c. 

D. d.Both (a) and (b)

Answer: A

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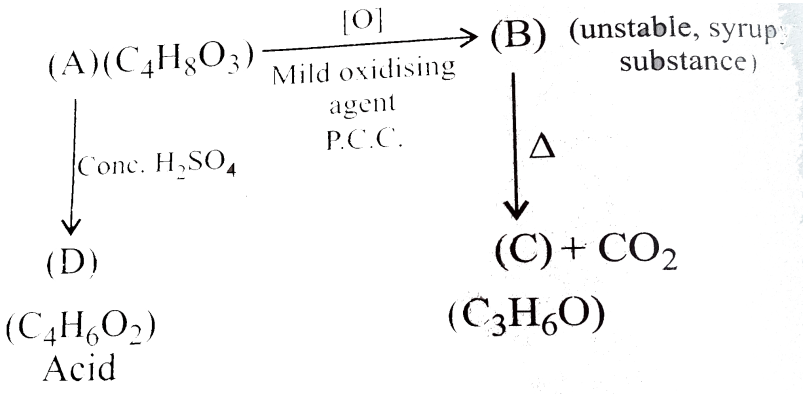
14. Complete the following reaction



A. a.i. Acidic $KMnO_4$, ii. $Ca(OH)_2$ and heat

B. b.i. Aqueous $KMnO_4$, ii. $Ba(OH)_2$ and heat

C. c. Acidic $KMnO_4$, ii. $NaOH$ and heat

D. d. Aqueous $KMnO_4$, ii. $NaOH$ and heat

Answer: A

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15. (A)$(C_9H_{12}O) \xrightarrow[HotKMnO_4]{[O]} PhCOOH$

i. (A) does not decolourise Br_2 in CCl_4, reacts with Na to give a colourless and odourless gas (B).

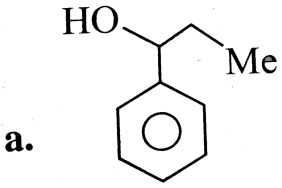
ii. (A) does not give iodoform test.

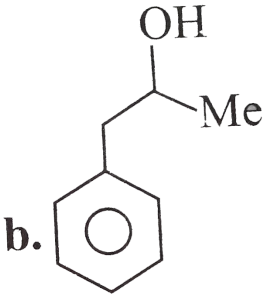
iii. (A) is a chiral compound and oxidation of (A) with CrO_3/Py gives a chiral compound (C).

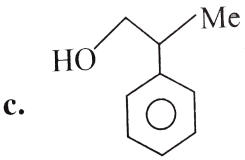
iv. The colour of $Cr_2O_7^{2-}$ change to blue-green when added to

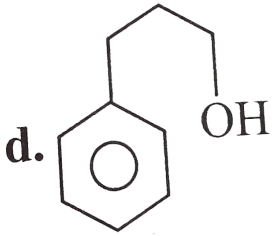
compound (A).

The structure of compound (A) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: C

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16. (A)$(C_9H_{12}O) \xrightarrow[HotKMnO_4]{[O]} PhCOOH$

i. (A) does not decolourise Br_2 in CCl_4, reacts with Na to give a colourless and odourless gas (B).

ii. (A) does not give iodoform test.

iii. (A) is a chiral compound and oxidation of (A) with CrO_3 / Py gives a chiral compound (C).

iv. The colour of $Cr_2O_7^{2-}$ change to blue-green when added to compound (A).

The colourless and odourless gas (B) is:

A. a.CO

B. b.CO_2

C. c.H_2

D. d.H_2O

Answer: C

Watch Video Solution

17. (A)$(C_9H_{12}O) \xrightarrow[HotKMnO_4]{[O]} PhCOOH$

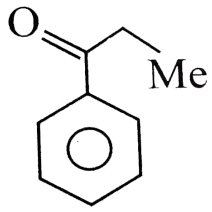
i. (A) does not decolourise Br_2 in CCl_4, reacts with Na to give a colourless and odourless gas (B).

ii. (A) does not give iodoform test.

iii. (A) is a chiral compound and oxidation of (A) with CrO_3 / Py gives a chiral compound (C).

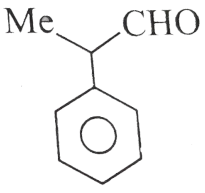
iv. The colour of $Cr_2O_7^{2-}$ change to blue-green when added to compound (A).

The compound (C) is:



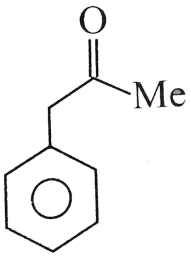
a.

A. a.



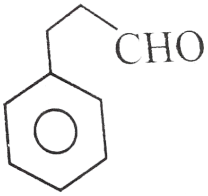
b.

B. b.



c.

C. c.



d.

D. d.

Answer: B

Watch Video Solution

18. (A)$(C_9H_{12}O) \xrightarrow[HotKMnO_4]{[O]} PhCOOH$

i. (A) does not decolourise Br_2 in CCl_4, reacts with Na to give a colourless and odourless gas (B).

ii. (A) does not give iodoform test.

iii. (A) is a chiral compound and oxidation of (A) with CrO_3 / Py gives a chiral compound (C).

iv. The colour of $Cr_2O_7^{2-}$ change to blue-green when added to compound (A).

The colour of $Cr_2O_7^{2-}$ changes from orange to blue-green when added to compound (A). The blue-green colour is due to the formation of:

A. a.Cr^{2+}

B. b.Cr^{3+}

C. c.CrO_4^{2-}

D. d.CrO_5

Answer: B

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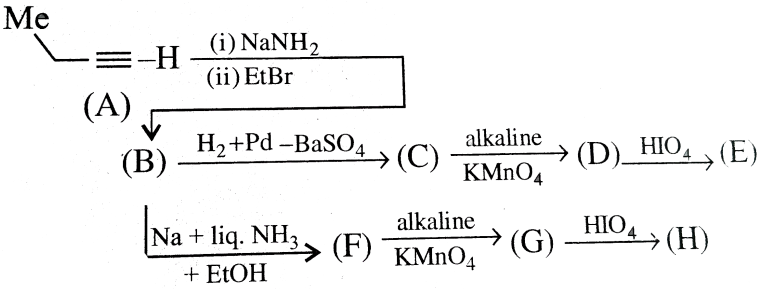
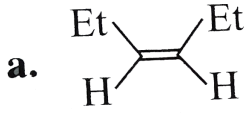
19.

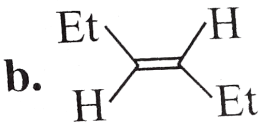


The compound (C) is:

A. a.



B. b.



C. $Et - \equiv - Et$

D. d.Both (a) and (b)

Answer: A

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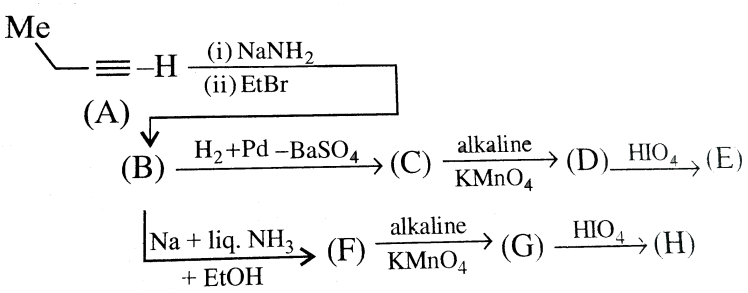
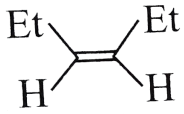


20.

The compound (F) is:

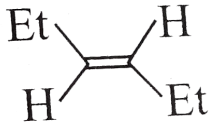
A. a.

a.



B. b.

b.



C. $Et - \equiv - Et$

D. d.Both (a) and (b)

Answer: B

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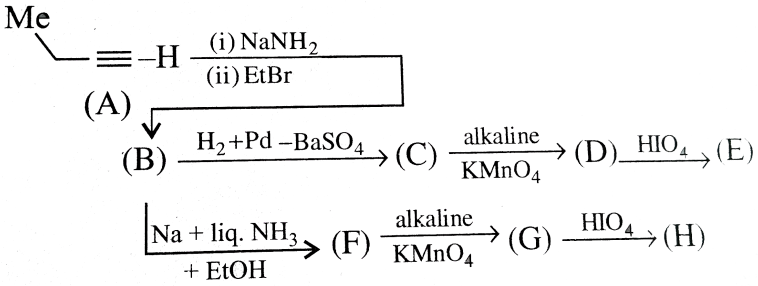
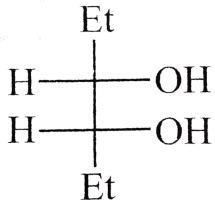
21.



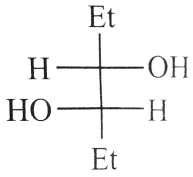
The compound (D) is:

a.



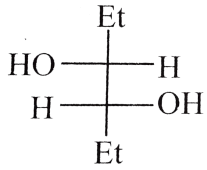
A. a.

b.



B. b.

c.



C. c.

D. d.Both (b) and (c)

Answer: A

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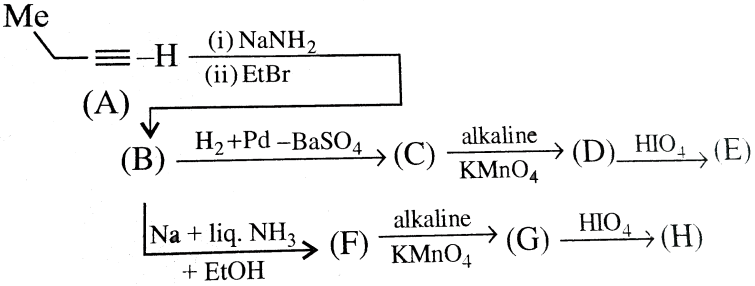
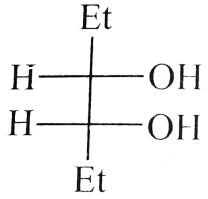
22.



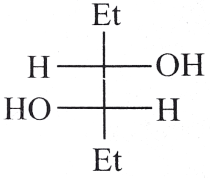
The compound (G) is:

a.



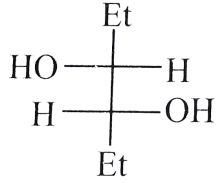
A. a.

b.



B. b.

c.



C. c.

D. d.Both (b) and (c)

Answer: D

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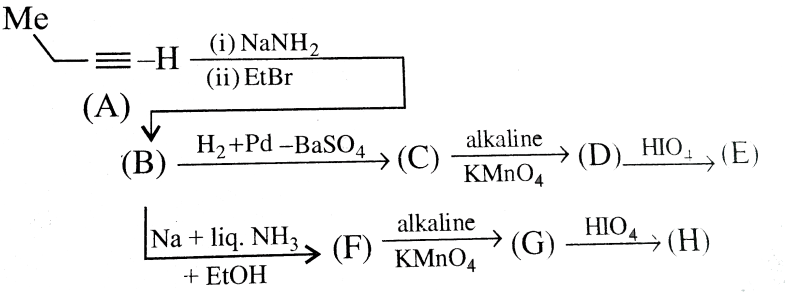
23.



The compound (E) is:

A. a.

B. b. b. Two moles of Me–COOH.

C. c.One mole of (a) and one mol of (b).

D. d. No reaction.

Answer: A

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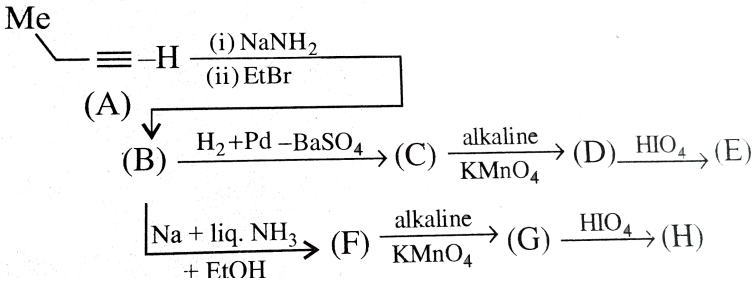
24.



The compound (H) is:

A. a. a. Two moles of Me–CHO.

B. b. b. Two moles of Me–COOH.

C. c.One mole of (a) and one mol of (b).

D. d. No reaction.

Answer: D

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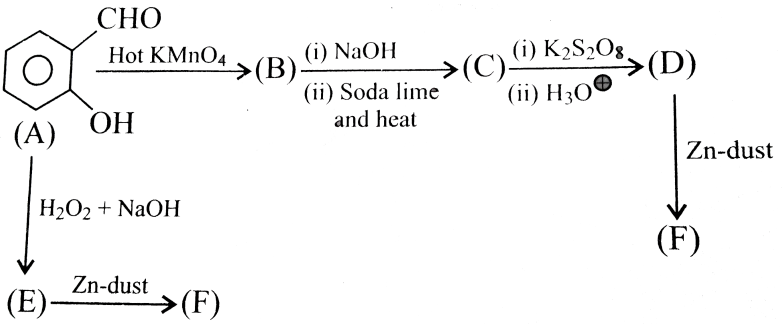
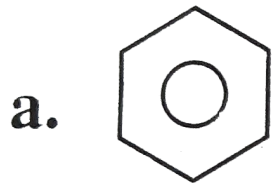
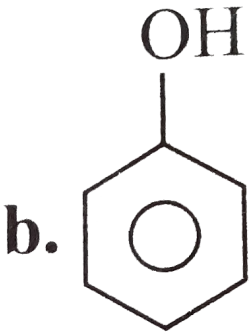


25.

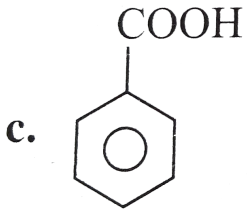
The compound (C) is:



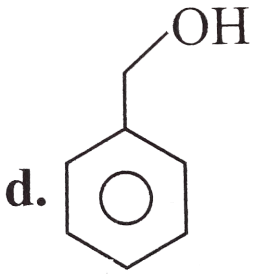
A. a.



B. b.



C. c.



D. d.

Answer: B

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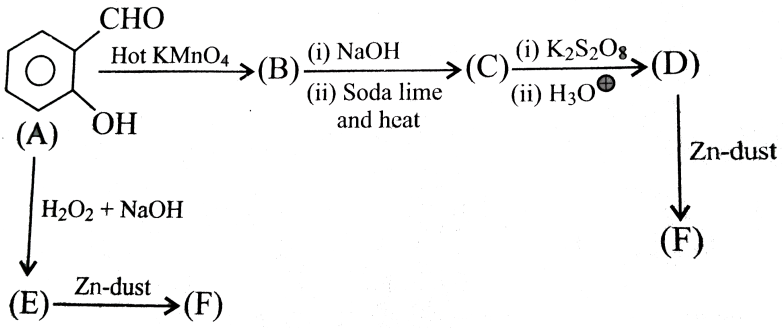
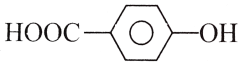
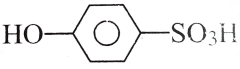
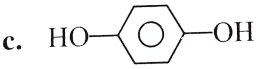
26.

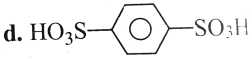


The compound (D) is:

A. a. 

B. b. 

C. c. c. 

D. d. d. 

Answer: C

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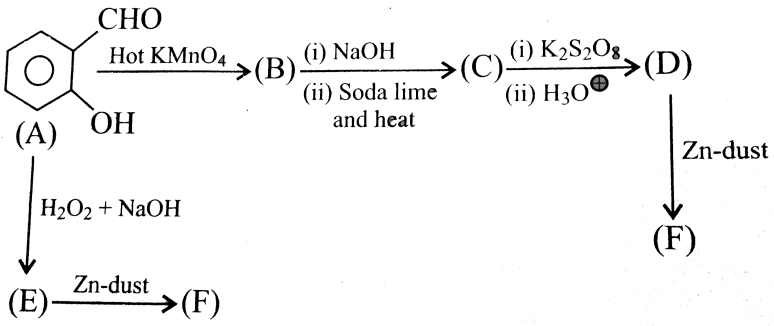
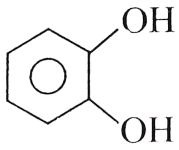
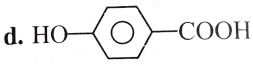
27. 

The compound (E) is:

A. a.Benzene

B. b.Phenol

C. c. c. 

D. d. d. 

Answer: C

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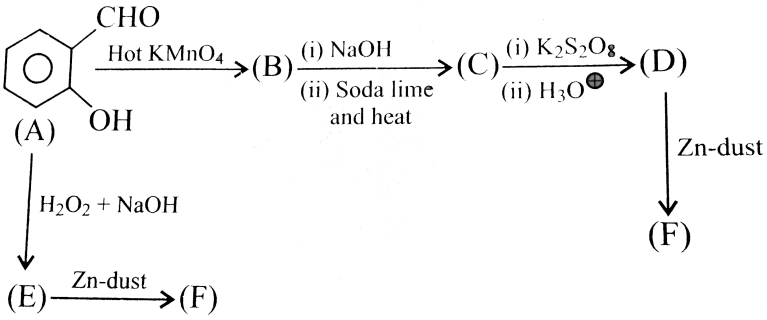
28.



In the formation of compoud (E) from (A), the name of the reaction is:

A. a.Elbs persulphate oxidation

B. b.Mannich reaction

C. c.Dakin's reaction

D. d.Oppenauer oxidation

Answer: C

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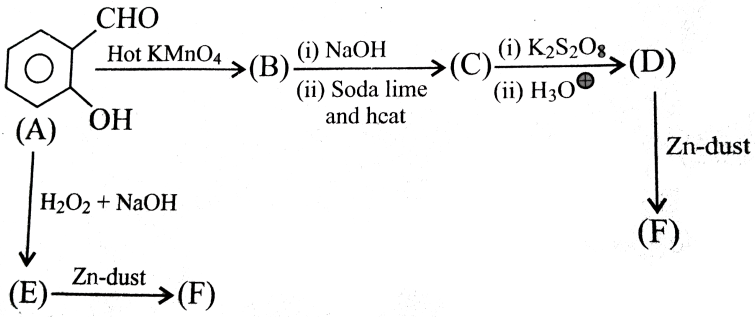
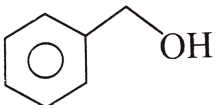
29.



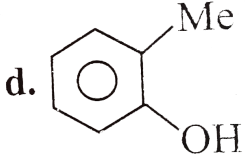
The compound (F) is:

A. a.Benzene

B. b.Phenol

C. c. c. 

d.



D. d.

Answer: A

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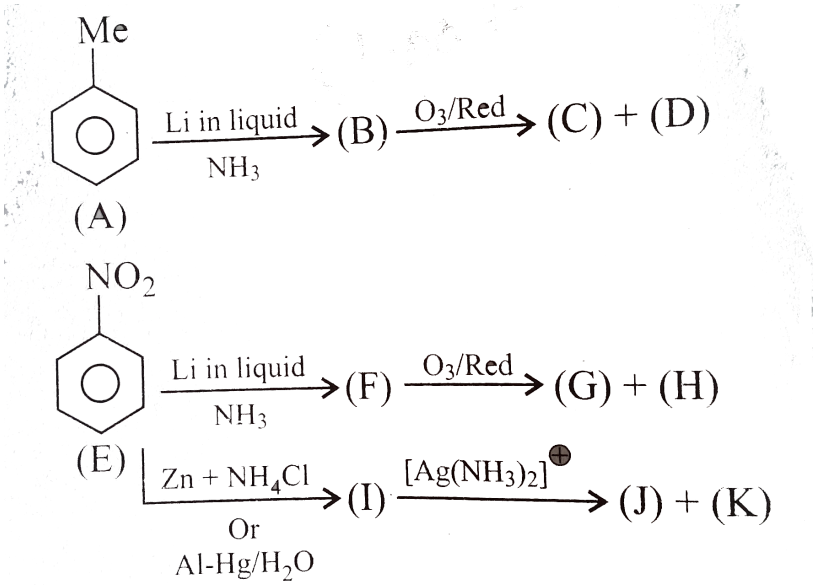
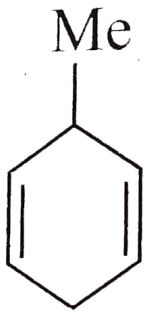
30.



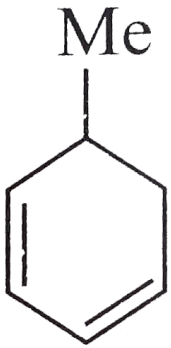
The compound (B) is:

a.



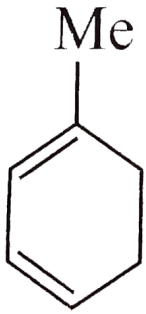
A. a.

b.

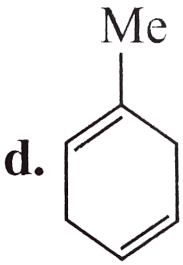


B. b.

c.



C. c.



D. d.

Answer: D

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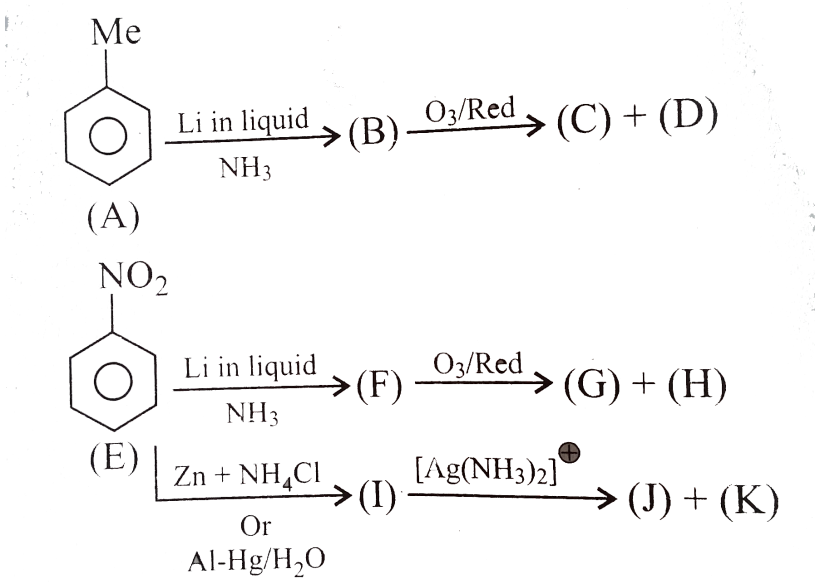
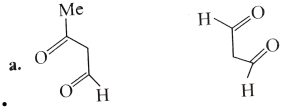
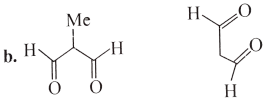
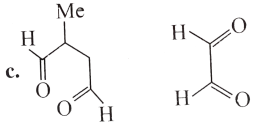


31.

The compound (C) and (D), respectively, are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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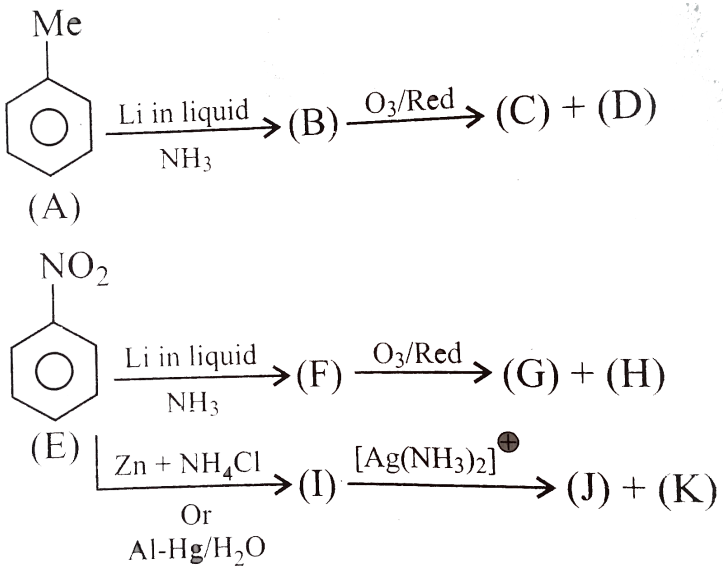
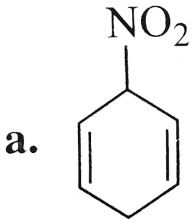
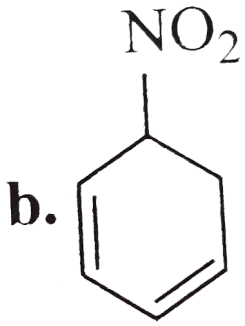


32.

The compound (F) is:

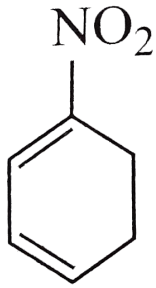


A. a.



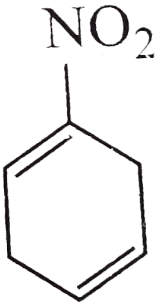
B. b.

c.



C. c.

d.



D. d.

Answer: A

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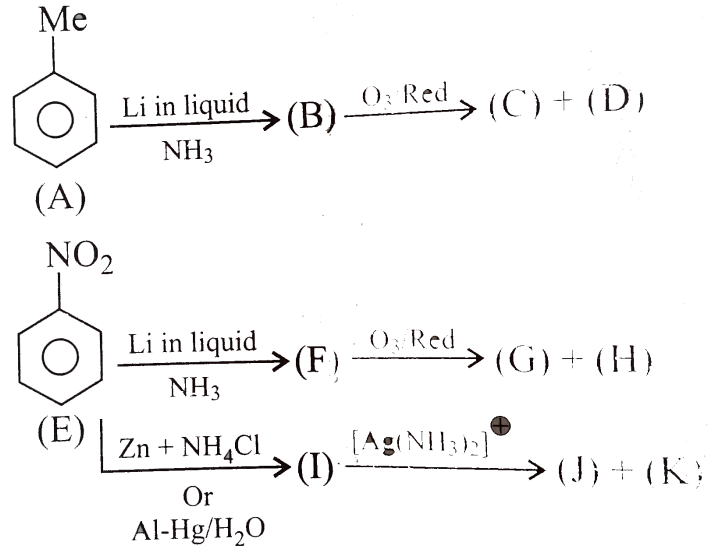
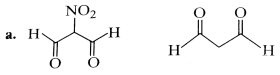


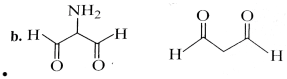
33.

The compound (G) and (H), respectively, are:

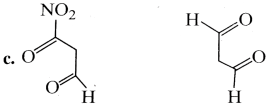
A. a.



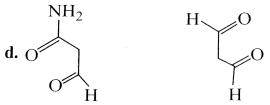
B. b.



C. c.



D. d.



Answer: B

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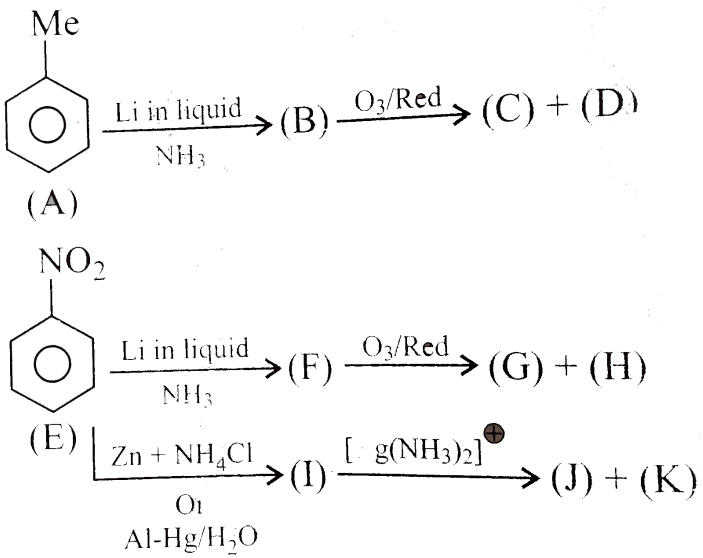
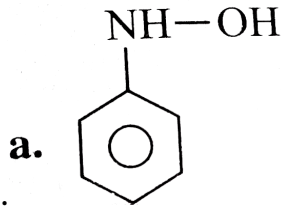
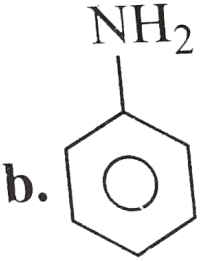


34.

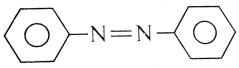
The compound (I) is:

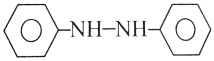


A. a.



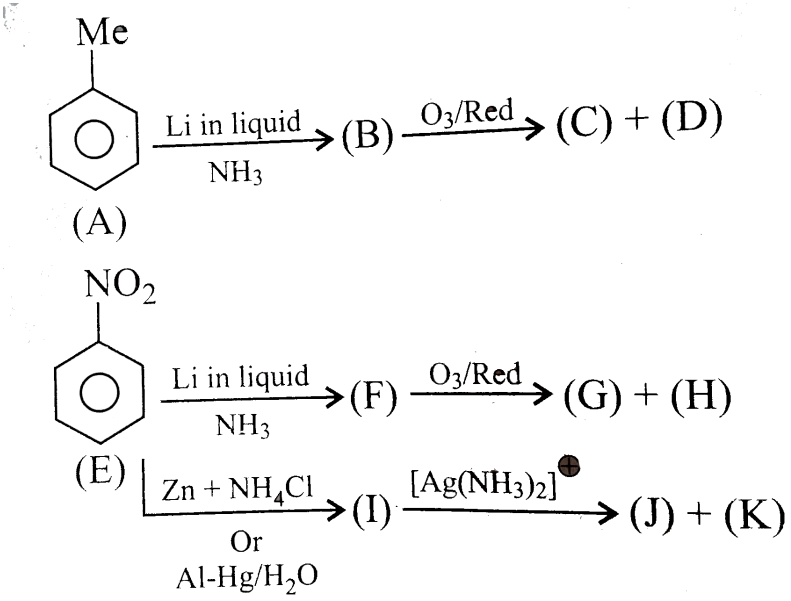
B. b.

C. c. c. 

D. d. d. 

Answer: A

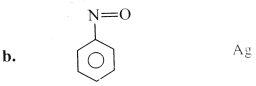
Watch Video Solution

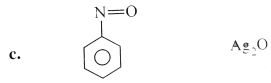


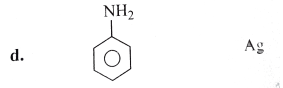
35.

The compound (J) and (K), respectively, are:

A. a. $\overset{(J)}{Noreaction}, \overset{(K)}{Noreaction}$

B. b. 

C. c. 

D. d. 

Answer: B

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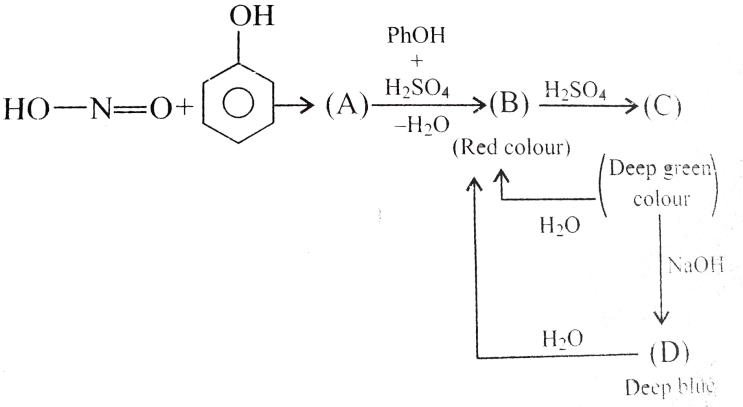
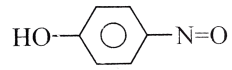
36.

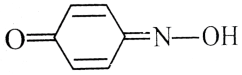


The compound (A) is:

a. 

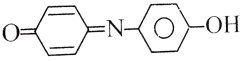
p-Nitrosophenol
(Benzenoid form)

A. a.

b. 

p-Nitrosophenol
(Quinoid form)

B. b.

c. 

C. c.

D. d.Both (a) and (b).

Answer: D

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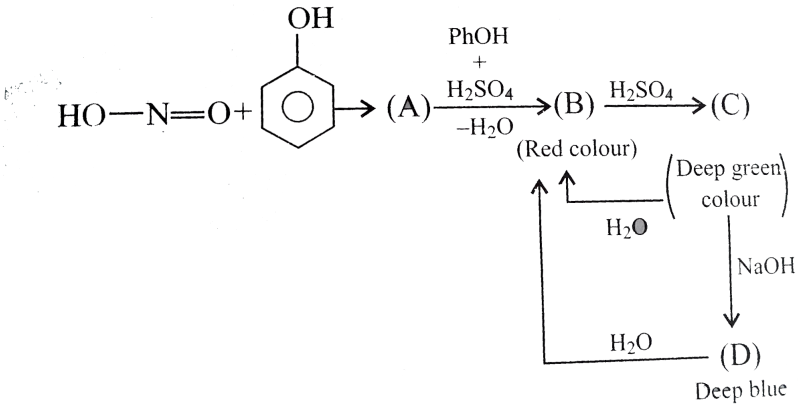
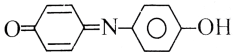


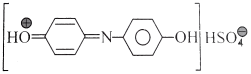
37.

The red colour of compound (B) is due to the formation of:

a. 

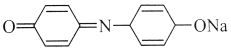
Indophenol

A. a.

b. 

Indophenol hydrogen sulphate

B. b.

c. 

Indophenol sodium salt

C. c.

D. d.Both (a) and (b).

Answer: A

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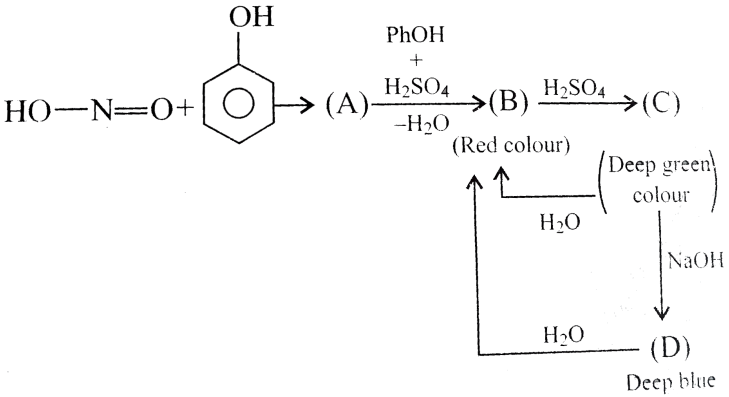
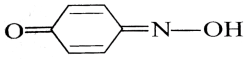


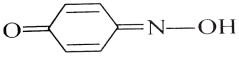
38.

The deep green colour of compound (C) is due to the formation of:

a. 

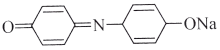
Indophenol

A. a.

a. 

Indophenol

B. b.

c. 

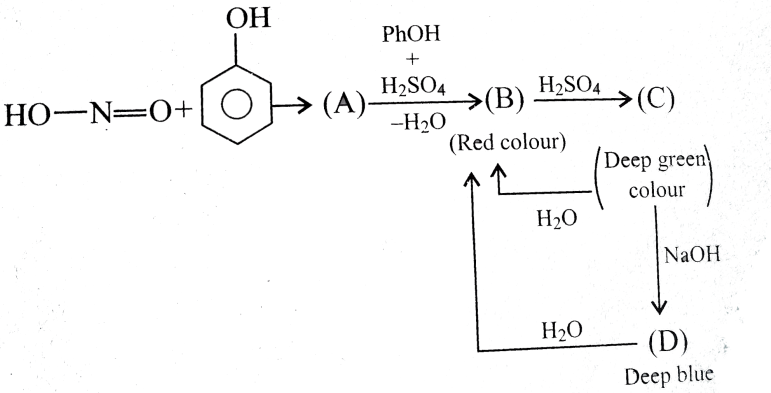
Indophenol sodium salt

C. c.

D. d.Both (a) and (b).

Answer: B

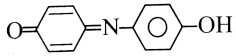
View Text Solution



39.

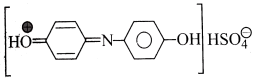
The deep blue colour of compound (D) is due to the formation of:

A. a.



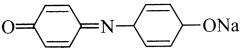
Indophenol

B. b.



Indophenol hydrogen sulphate

C. c.



Indophenol sodium salt

D. d.Both (a) and (b).

Answer: C

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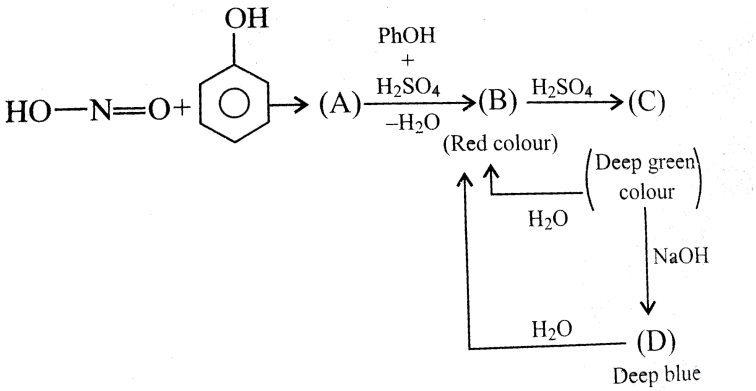

40.

The formation of different-colour compounds (B), (C), and (D) from (A) is called:

A. a.Lemieux reaction

B. b.Liebermann's nitroso reaction

C. c.Oppenaur oxidation

D. d.Brady's reaction

Answer: B

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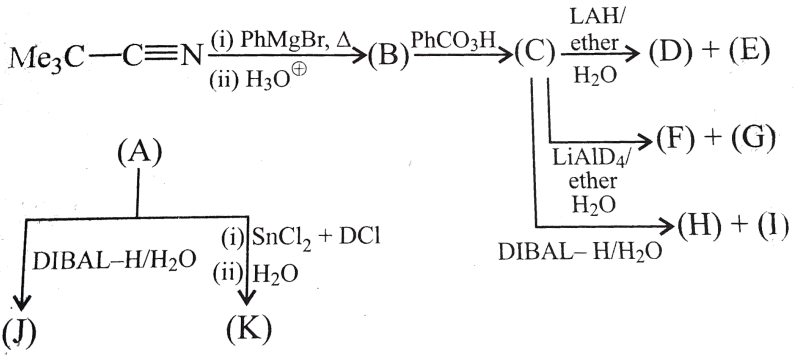
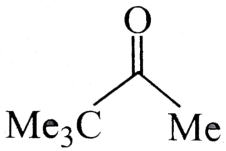
41.



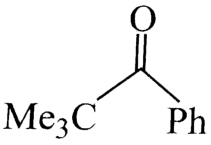
The compound B is:

A. a. $Me_3C - CHO$

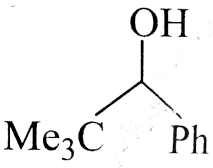
B. b. **b.**



C. c. **c.**



D. d. **d.**



Answer: C

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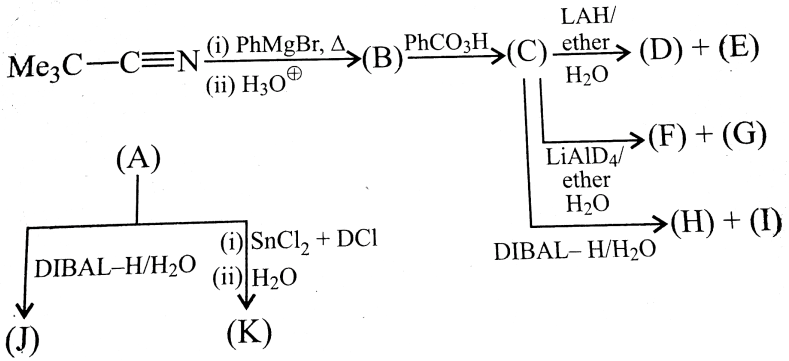
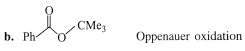


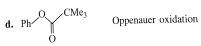
42.

The compound (C) and the reaction involving the conversion of (B) to (C) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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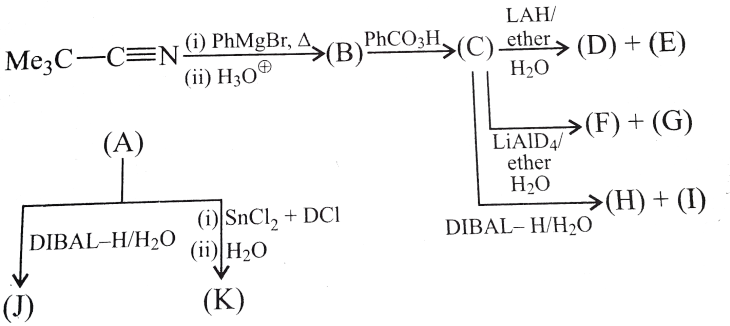
43.



The compounds (D) and (E) respectively are:

A. a. $PhOH + Me_3C - CH_2OH$

B. b. $PhCH_2OH + Me_3C - OH$

C. c. $PhOH + Me_3C - CHO$

D. d. $PhCHO + Me_3C - OH$

Answer: B

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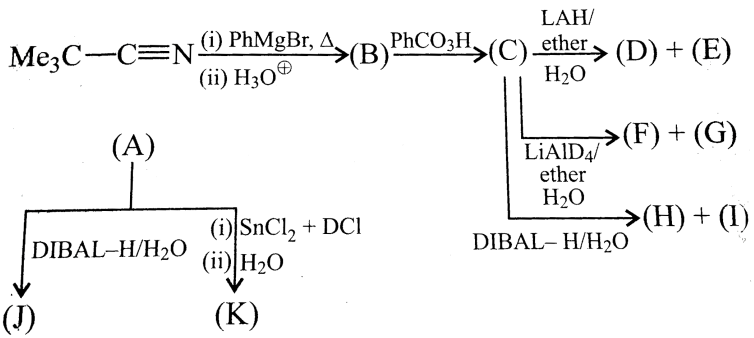
44.



The compounds (F) and (G), repectively, are:

A. a.$PhOH + Me_3C - CHD(OH)$

B. b.$PhOH + Me_3C - CH_2OD$

C. c.$PhCHD(OH) + Me_3C - OH$

D. d.$pHCH_2OD + Me_3C - OH$

Answer: C

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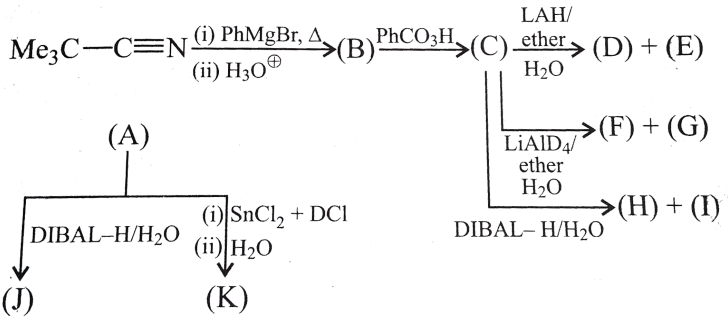

45.

The compounds (H) and (I), repectively, are:

A. a.$PhCOH + Me_3C - OH$

B. b.$PhCH_2OH + Me_3C - OH$

C. c.$PhOH + Me_3C - COH$

D. d.$pHOH + Me_3C - CH_2OH$

Answer: A

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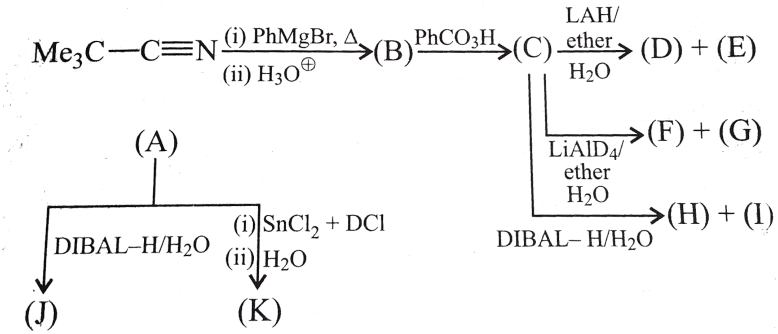
46.



The compounds (J) is:

A. a.$Me_3C - CHO$

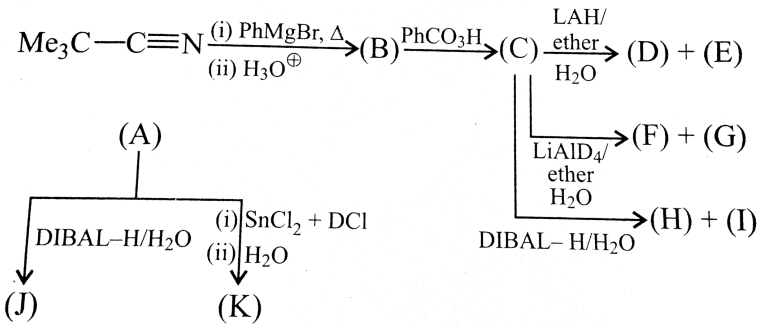
B. b.$Me_3C - CH_2OH$

C. c.Me_3COOH

D. d.$Me_3C - CH_2NH_2$

Answer: A

Watch Video Solution



47.

The compounds (K) is:

A. a.$Me_3C - CD_2 - NH_2$

B. b.$Me_3CD = O$

C. c.$Me_3CH = O$

D. d.$Me_3C - CD_2 - ND_2$

Answer: B

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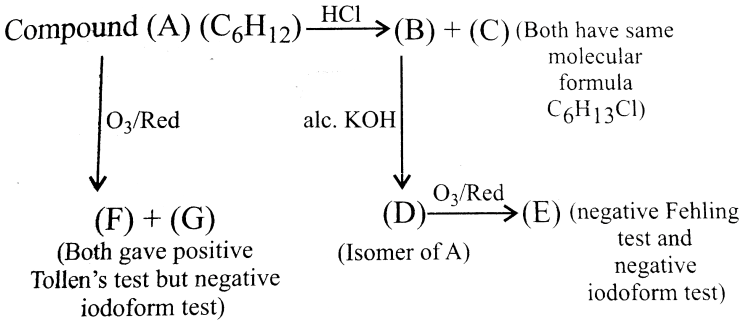
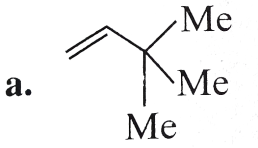


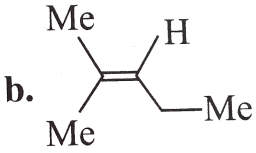
48.

The compounds (A) is:

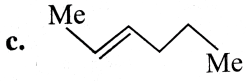
A. a.



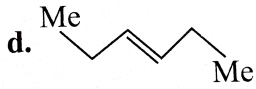
B. b.



C. c.



D. d.



Answer: A

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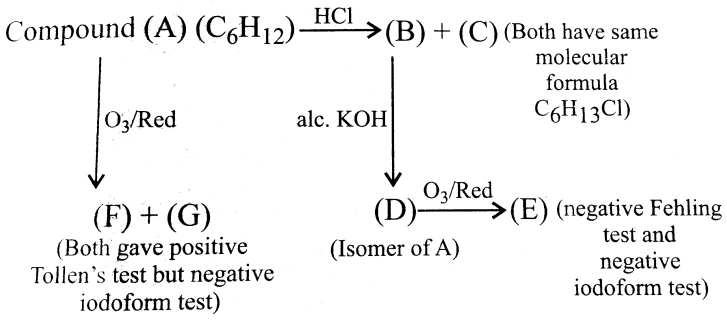
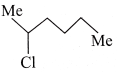
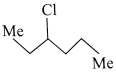


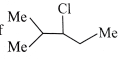
49.

The compounds (B) and (C), respectively, are:

A. a. **a.** (*d*) and (*l*) form of 

B. b. **b.** (*d*) and (*l*) form of 

C. c. **c.** (*d*) and (*l*) form of 

D. d. **d.** (*d*) and (*l*) form of 

Answer: A

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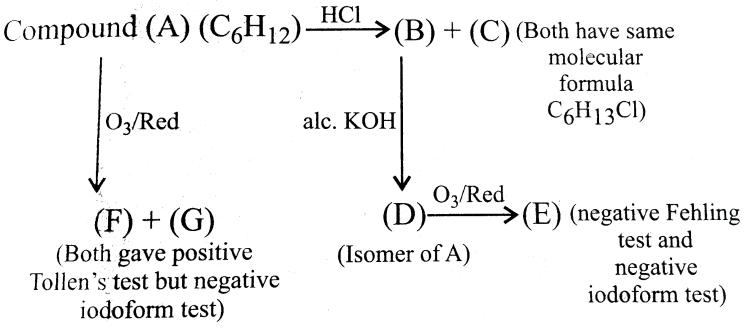
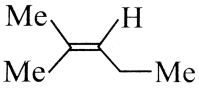
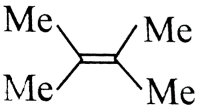
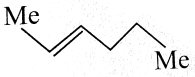


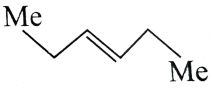
50.

The compounds (D) is:

A. a. **a.** 

B. b. **b.** 

C. c. **c.** 

D. d. **d.** 

Answer: B

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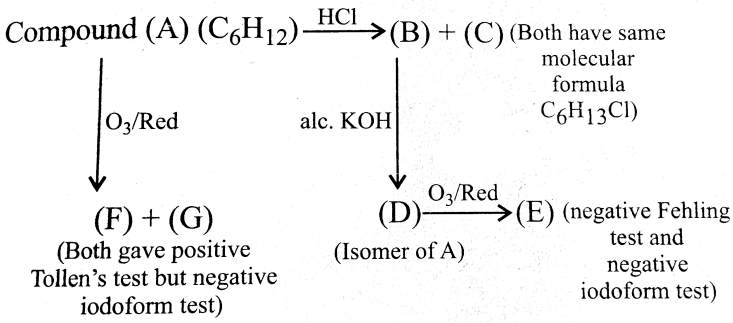
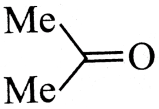
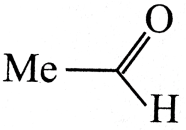


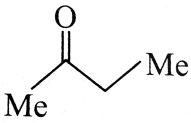
51.

The compounds (E) is:

A. a. **a.** 

B. b. $HCHO + Me_3C - CHO$

C. c. **c.** 

D. d. **d.** 

Answer: A

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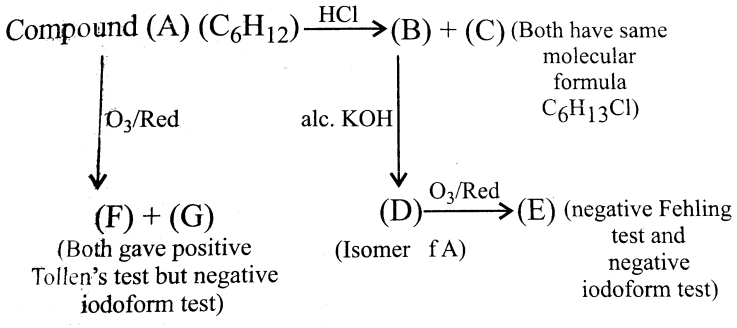

52.

The compounds (F) are (G), resprctively, are:

A. a. a. Me CHO + O Me Me

B. b. $HCHO + Me_3C - CHO$

C. c. c. Me–CHO + CHO Me

D. d. d. Two moles of Me CHO

Answer: B

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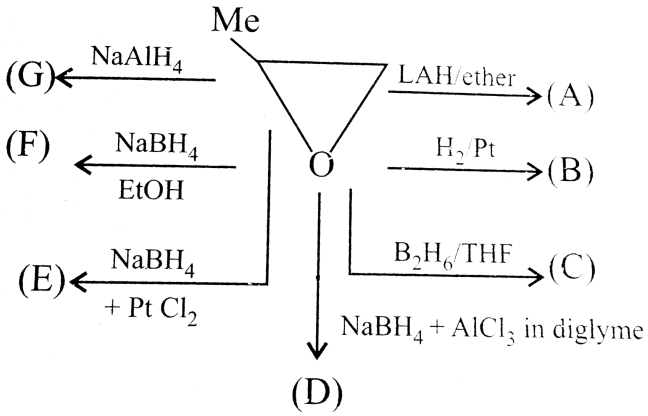
Exercise (Multiple Correct)

1. Which statement(s) is/are correct about the reaction:



A. a. The products in (A), (B), (C), and (D) are  and 

B. b. The products (E), (F), and (G) are  and 

C. c. No reaction takes place in (A), (B), (C), and (D)

D. d. No reaction takes place in (E), (F), and (G).

Answer: A::D

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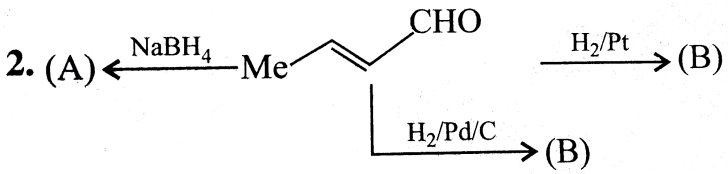
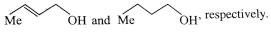
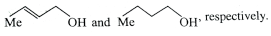
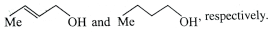
2. 

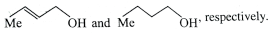
2.

Which statement(s) is/are correct?

A. 

B. 

C. 

D. 

Answer: A::C

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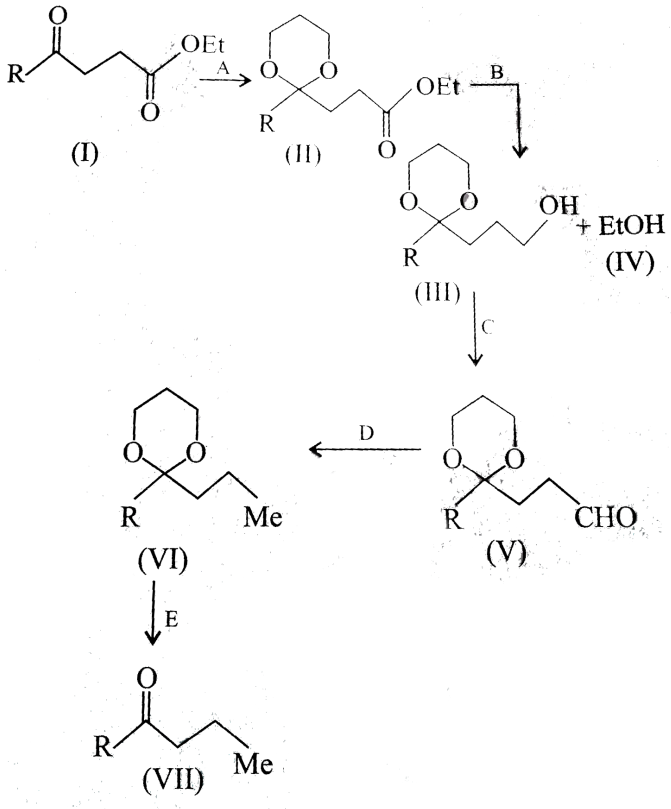
3. Consider the following reactions:



Which of the following reagents is/are used in the above conversion?

A.

a. A ⇒ 

,
B ⇒ LAH/ether, $H_3O^{\oplus}$,
C ⇒ PCC, D ⇒ $NH_2.NH_2/\overset{\ominus}{O}H$,
E ⇒ $H_3O^{\oplus}$

B.

b. A ⇒ 

,
B ⇒ $NaBH_4$/ether, $H_3O^{\oplus}$,
C ⇒ H_2CrO_4/aq. acetone,
D ⇒ Zn–Hg/HCl, E ⇒ $H_3O^{\oplus}$

C. c. A ⇒  ,
B ⇒ LAH/ether, $H_3O^{\oplus}$
C ⇒ PCC, D ⇒ Zn–Hg/HCl, E ⇒ $H_3O^{\oplus}$

D. d. A ⇒  ,
B ⇒ B_2H_6/THF, C ⇒ H_2CrO_4/aq. acetone,
D ⇒ $PhNHNH_2$/glycol + KOH, E ⇒ $H_3O^{\oplus}$

Answer: C::D

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4. In Q. No. 3, direct conversion of II to V can be carried by:

A. a. $NaAlH_4$

B. b. $DlBAL - H$

C. c. $LAH + AlCl_3$

D. d. $NaBH_4 + AlCl_3$ in diglyme

Answer: A::B

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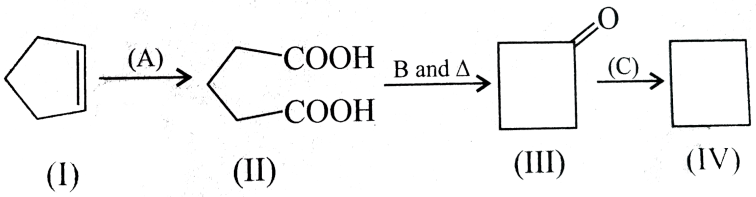
5. Consider the following reactions:



Which of the following group(s) of reagents is/are used in the above conversion?

A. a.$(A) \Rightarrow \text{Acidic} KMnO_4, (B) \Rightarrow Ca(OH)_2,$

$(C) \Rightarrow Zn - Hg / HCl$

B. b.$(A) \Rightarrow O_3 / Ph_3P, (B) \Rightarrow Ba(OH)_2, (C) \Rightarrow LAH / \text{ether}$

C. c.$(A) \Rightarrow O_3 / H_2O, (B) \Rightarrow Sr(OH)_2,$

$(C) \Rightarrow NH_2NH_2 / \overset{\ominus}{O}H$

D. d.$(A) \Rightarrow O_3 / Ag_2O, (B) \Rightarrow Ba(OH)_2, (C) \Rightarrow HI + \text{Red} P$

Answer: A::C::D

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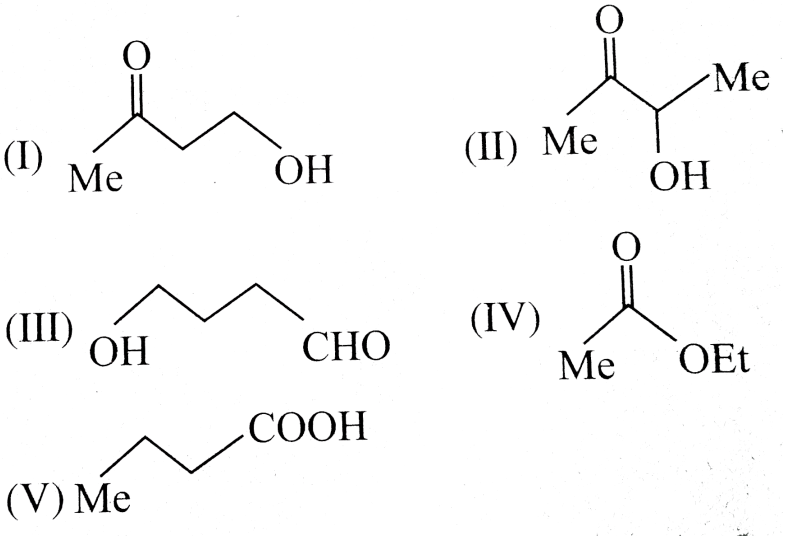
6. Compound $C_4H_8O_2$ exists in various strutures as shown:



Which statement(s) is/are correct?

A. a.Compounds I and II give iodoform test. Compound I gives white turbidity on heating with Lucas reagent, while compound II reduces Tollens reagent.

B. b.Compound III gives silver mirror with $\left[Ag(NH_3)_2\right]^{\oplus}$ and does not react with NaOBr.

C. c.Compound IV on acid hydrolysis gives C_2H_5COOH and $MeOH$

D. d.Compound V on heating is decarboxylated to propane.

Answer: A::B

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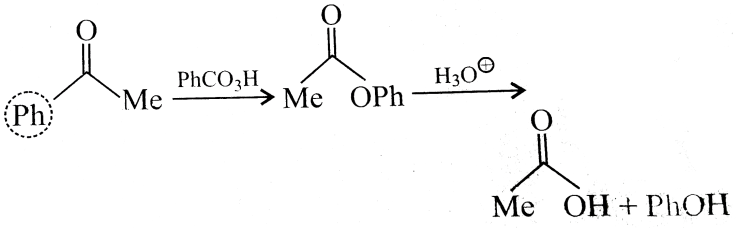
7. Consider the following Baeyer-Villiger oxidation.



A. a.EWG in peracid facilitates the reaction.

B. b.Strong $\bar{e}$-dobating group migrates.

C. c.The migrating group order is

$$3^{\circ}\,\text{alkyl} > \text{Phenyl} > H > 2^{\circ}\,\text{alkyl} > 1^{\circ}\,\text{alkyl} > Me.$$

D. d.The migrating group order of substituted phenyl group is

Answer: A::B::C::D

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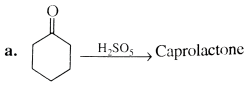
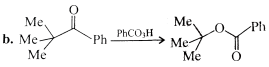
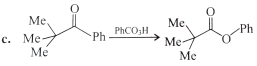
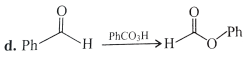
8. Select the correct Baeyer-Villiger oxidation reaction:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A::B::D

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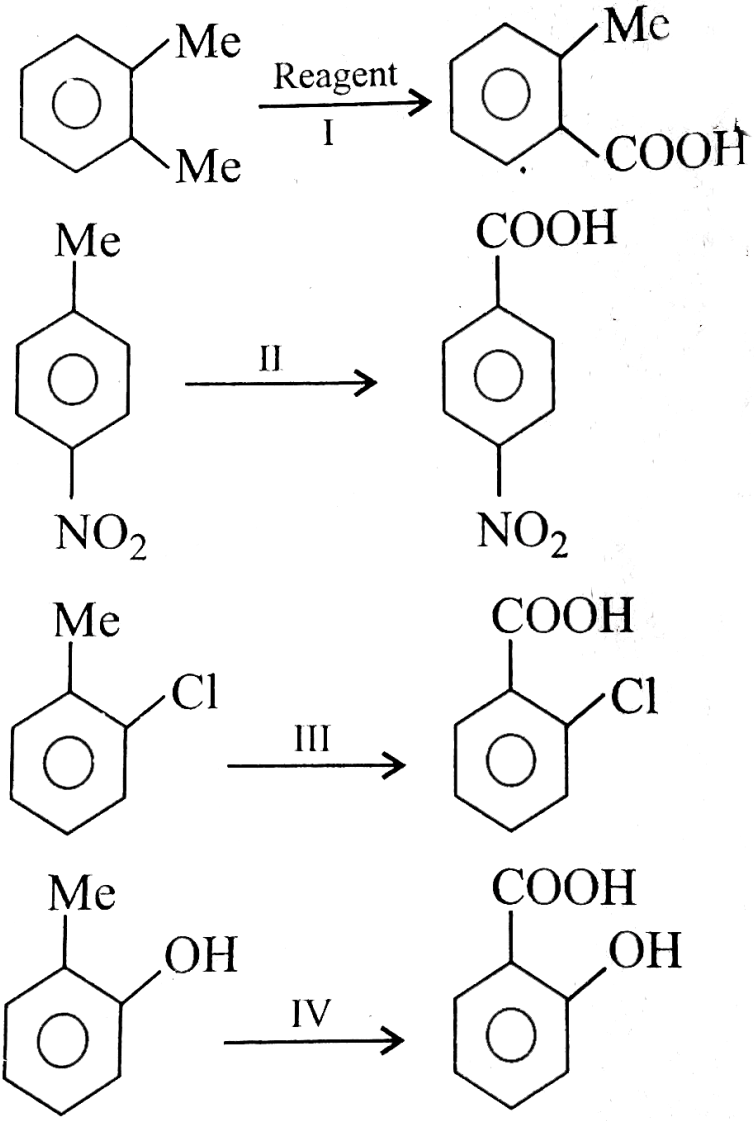
9. Select the correct group(s) of reagent(s) used in the following conversions:



A. a.$I \Rightarrow dil.\ HNO_3, II \Rightarrow Na_2Cr_2O_7 / H_2SO_4$

$III \Rightarrow KMnO_4 / NaOH, IV \Rightarrow PbO_4 / \overset{\ominus}{O}H, H_3O^{\oplus}$

B. b.$I \Rightarrow dil.\ HNO_3, II \Rightarrow KMnO_4 / H^{\oplus}$

$III \Rightarrow KMnO_4 / NaOH,$

$IV \Rightarrow TsCl + acidic KMnO_4 + H_2O$

C. c.$I \Rightarrow KMnO_4 / NaOH, II \Rightarrow Na_2Cr_2O_7 / H^{\oplus},$

$III \Rightarrow KMnO_4 / \overset{\ominus}{O}H, IV \Rightarrow dil.\ HNO_3$

D. d.$I \Rightarrow CrO_3 / MeCOOH, II \Rightarrow KMnO_4 / \overset{\ominus}{O}H,$

$III \Rightarrow KMnO_4 / H^{\oplus}, IV \Rightarrow dil.\ HNO_3$

Answer: A::B

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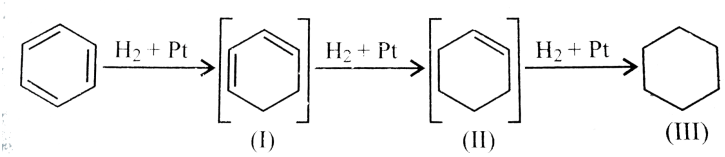
10. Which statements(s) is//are correct:



A. a.The intermediates I and II can be isolated.

B. b.In the intermediates I and II, all the resonance energy has been lost and the activation anergy of this step is much greater than that required for each succeeding step in which the double bond behave like their acylic analogue.

C. c.The conditions required for the formation of I and II are more vigorous than those required for the successive steps.

D. d.Because to this, it is not possible to stop the reaction proceeding to complete the reduction of benzene to II (cyclohexane), and consequently it is not possible ti isolate the intermediates II and III.

Answer: B::C::D

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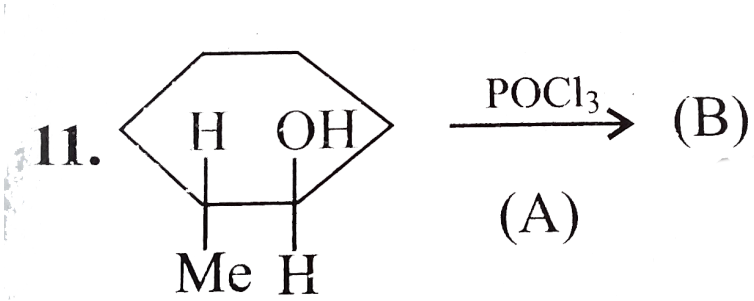
11. 

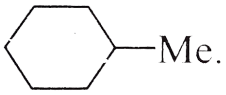
11.

Which of the following statement(s) is/are correct?

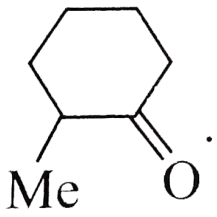
A. a. The compound (B) is 

B. b. The compound (B) is 

C. c.The compound (A) on reaction with $HI + RedP$ gives



D. d.The compound (A) on oxidation with MnO_2 gives



Answer: B::C

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12. In Q.No. 11, which of the following reagents can be used to convert (A) to (B)?

A. a.Conc. H_2SO_4 at $413K(140^\circ C)$

B. b.DCC

C. c.P_2O_5

D. d.Conc. H_2SO_4 at $383K(110^\circ C)$

Answer: B::C

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13. Which of the following will give yellow precipitate with KOI?

A. a.Cyclopentyl methyl carbinol

B. b.α-Phenyl ethanol

C. c.AAE

D. d.$I_3C - CHO$

Answer: A::B::D

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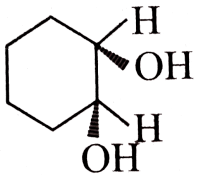
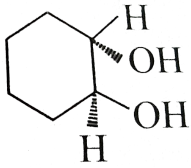
14. Which of the following will undergo periodic oxidation?

a.



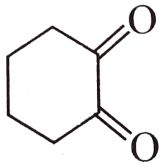
A. a.

b.



B. b.

c.



C. c.

D. d.Glyoxal

Answer: A::C::D

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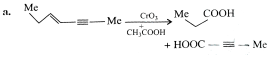
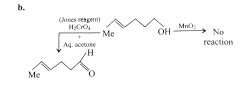
15. Which of the following reactions is//are correct?

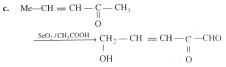
A. a.



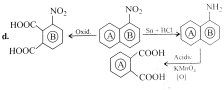
B. b.



C. c.



D. d.



Answer: A::B::C::D

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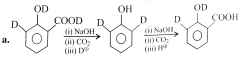
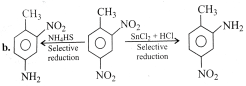
16. Which of the following reactions is//are correct?

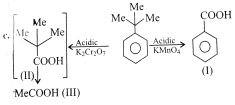
A. a.



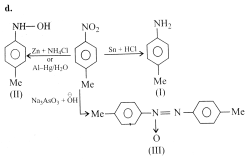
B. b.



C. c.



D. d.



Answer: A::B::D

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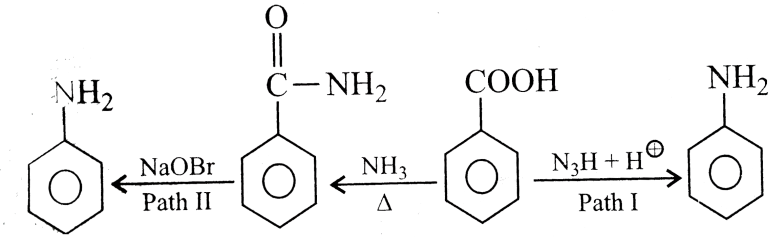
17. Which statement(s) is/are wrong?



A. a.Path I is Claisen-Schmidt rearrangement reaction, whereas Path II is Hofmann bromamide rearrangement reaction.

B. b.Both path proceeds via the formation of acyl nitrene as an intermediate species $\left(R - \overset{O}{\overset{||}{C}} - \ddot{N}: \right)$.

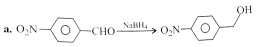
C. c.In path I and Path II, the intermediate compound formed is alkyl isocynaye $(R - N = C = O)$

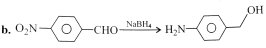
D. d.Both the path proceed via the formation of nitrene $\left(R-\ddot{\dot{N}}:\right)$ as a intermediate species.

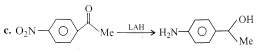
Answer: D

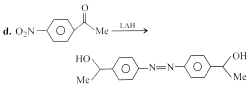
View Text Solution

18. Which of the following reaction(s) is/are correct?

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A::D

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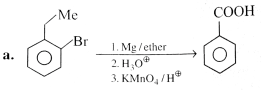
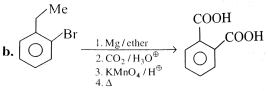
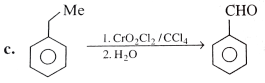
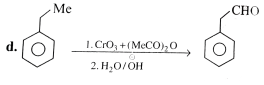
19. Which of the following reaction(s) is/are wrong?

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B::C

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20. Which of the following reactions is/are wrong?

A. a.

$$MeCH_2I \xrightarrow{AgNO_2} MeCH_2NO_2 \xrightarrow{HNO_2} Me - \underset{\underset{N.OH}{||}}{C} - NO_2 \xrightarrow{\overset{\ominus}{OH}}$$

Blue colour

B. b.

$$Me_2CHI \xrightarrow{AgNO_2} Me_2CHNO_2 \xrightarrow{HNO_2} Me_2-\underset{\underset{N=O}{|}}{C}-NO_2 \xrightarrow{\overset{\ominus}{OH}}$$

Blood red colour

C. c.

$$Me_3C-I \xrightarrow{AgNO_2} Me_3C-\overset{\overset{O}{\uparrow}}{N}=O \xrightarrow{HNO_2} Noreaction \xrightarrow{\overset{\ominus}{OH}}$$

Colourless solution

D. d.

$$Me_3C-I \xrightarrow{AgNO_2} Me_3C-O-N=O \xrightarrow{HNO_2} \text{No reaction} \xrightarrow{\overset{\ominus}{OH}}$$

Colourless solution

Answer: A::B::D

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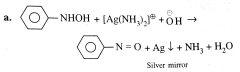
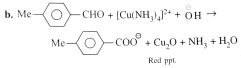
21. Which of the following unbalanced reactions is/are correct?

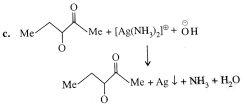
A. a.



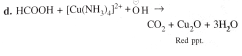
B. b.



C. c.



D.



Answer: A::C::D

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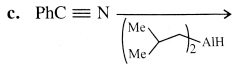
22. Which of the following methods is/are correct for the synthesis of benzaldehyde?

A. a. $PhCOCl \xrightarrow{H_2 + Pd + BaSO_4}$

B. b. $PhCOCl \xrightarrow[LiAlH(OCMe_3)_3]{}$

C. c. 

D. d. $PhCH_2Oh \xrightarrow[\text{Collins reagent}]{}$

Answer: A::B::C::D

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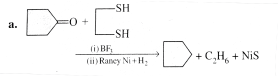
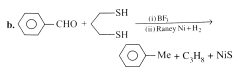
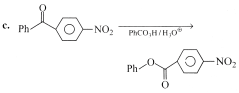
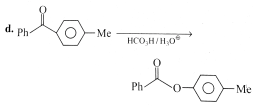
23. Which of the following reaction is/are correct?

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A::B::C::D

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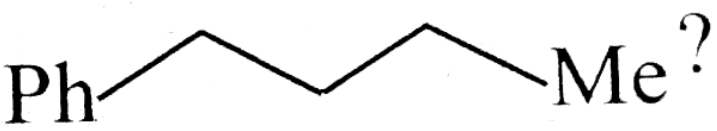
24. Which of the following methods is/are correct for the synthesis of

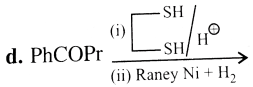


?

A. a. $PhBr \xrightarrow[(1)\,Li\,(2)\,CuI\,(3)\,PrCOCl]{(4)\,Zn-Hg/HCl}$

B. b. $PhCOPr \xrightarrow{Zn-Hg/HCl}$

C. c. $PhCOPr \xrightarrow[\overset{\ominus}{O}H,\,\Delta]{NH_2NH_2}$

D. d. 

Answer: A::B::C::D

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25. Which of the following on oxidation with alkaline $KMnO_4$ follwed by acidification with dil. HCl gives terephthalic acid?

A. a.p-Ethyl toluene

B. b.p-Xylene

C. c.1, 3-Diisopropyl benzene

D. d.m-Xylene

Answer: A::B

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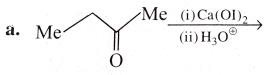
26. Which of the following methods can be used to prepare propanoic acid?

A. a. 

B. b.$CH_2 = CH_2 + CO + \underset{(\text{Steam})}{H_2O} \xrightarrow[\text{High pressure}]{570-670K}$

C. c.Reaction of $EtMgBr$ with dry ice followed by the acidification with dil. HCl.

D. d.Sodium ethoxide is heated with CO under pressure followed by the acidification with dil. HCl.

Answer: A::B::C::D

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27. Which of the following statements is/are correct about formic acid?

A. a.It reduces Tollens reagent.

B. b.It gives CO and H_2O on heating with conc. H_2SO_4.

C. c.It is a stronger acid than benzoic acid

D. d.It forms formyl chloride with PCl_5.

Answer: A::B::C

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28. Which of the following can reduce Benedict's solution?

A. a.Ethanoic acid

B. b.Methanoic acid

C. c.Phenyl methanal

D. d.Methanal

Answer: B::D

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29. Benzoic acid and carbolic acid can be distiguished by:

A. a.Aqueous $NaHCO_3$

B. b.Netural $FeCl_3$

C. c.Aqueous $NaOH$

D. d.Aqueous NH_3

Answer: A::B

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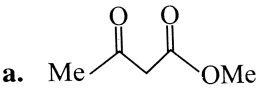
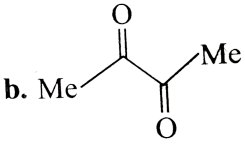
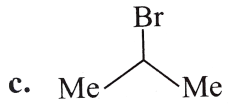
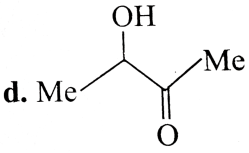
30. Which of the following compounds do(es) not give haloform reaction?

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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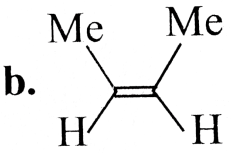
31. Which of the following compounds do(es) not react with $H_2 + Pd + C$?

A. a. $Me - \equiv - Me$

B. b. 

C. c. $MeCOMe$

D. d. $Me - N_3$

Answer: B::C

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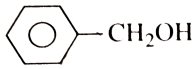
32. Which of the following compounds reacts with $NaCNBH_3$?

A. a. $Me - CH = NH$

B. b. $Me_2C = N - Me$

C. c. c. 

D. d. $PhNO_2$

Answer: A::B

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33. Acetonitrile $\left(\overset{\oplus}{MeN} \equiv \overset{\ominus}{C}\right)$ on reaction with Cl_2 with $DMSO$ gives methyl isocyanate $(MeN = C = O)$. Isocyanides can also be oxidised to alkyl isocyanates with:

A. a.HgO

B. b.Hg_2O

C. c.Ag_2O

D. d.O_3

Answer: A::D

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34. Alkyl isocyanides $\left(\overset{\oplus}{RN} \equiv \overset{\ominus}{C}\right)$ are reduced to 2° amines $(R - NH - CH_3)$ with:

A. a.LAH

B. b.$NaBH_4$

C. c.$HI + P$

D. d.$H_2 + Pt$

Answer: A::C

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35. Methanamide is reduced to methanamine with:

A. a.LAH

B. b.$NaBH_4$

C. c.$H_2 + Ni$

D. d.B_2H_6

Answer: A::C::D

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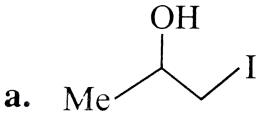
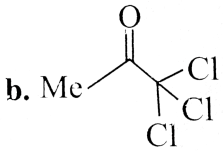
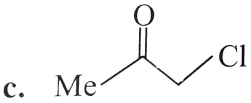
Exercise (Single Correct)

1. Which of the following gives yellow precipitate with $NaOI$?

A. a. 

B. b. 

C. c. 

D. d.All

Answer: D

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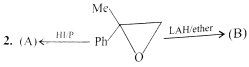
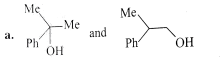
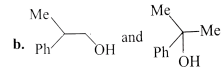
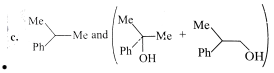
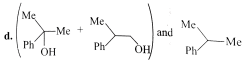
2. 

The products (A) and (B), respectively, are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: C

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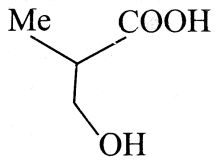
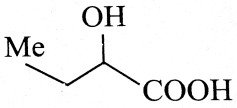
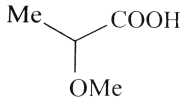
3. Compound $(A)(C_4H_8O_3)$ reacts with $NaHCO_3$ and evolves $CO_2(g)$. (A) reacts with LAH to give a compound (B) which is a chiral. The structure of (A) is:

a. 

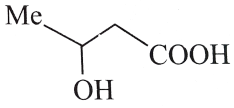
A. a.

b. 

B. b.

c. 

C. c.

d. 

D. d.

Answer: A

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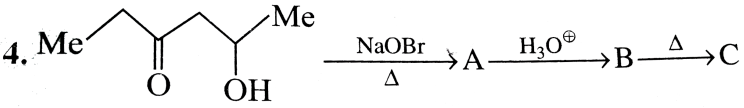
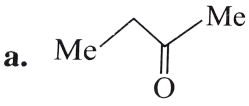
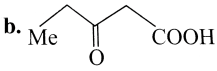
4. 

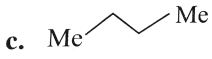
The compound (C) is:

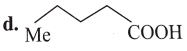
4.

The compound (C) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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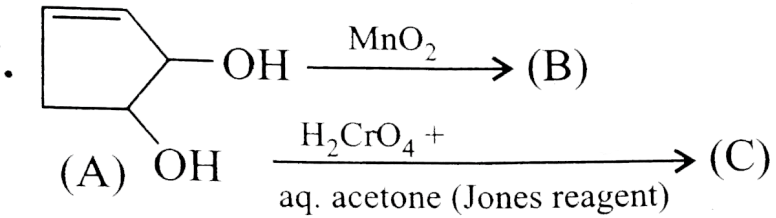
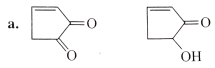
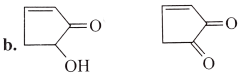
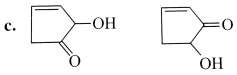
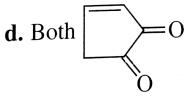
5. 

The compound (B) and (C), respectively, are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B

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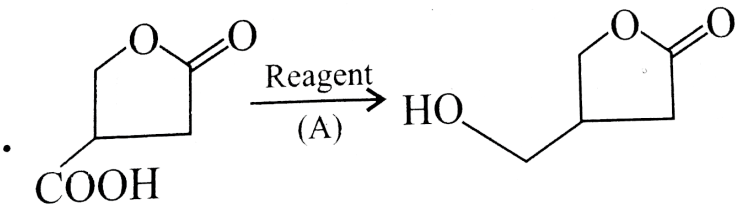
6. 

The compound (A) is:

A. a.LAH

B. b.$HI + P$

C. c.$NaAlH_4$

D. d. B_2H_6 / H_2O

Answer: D

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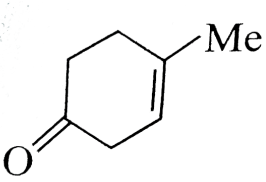
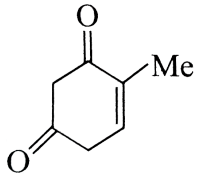
7. 

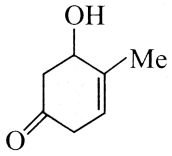
$\xrightarrow[100-140°C]{SeO_2 / MeCOOH}$ (A)

7.

The compound (A) is:

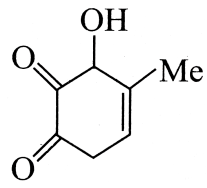
a. 

A. a.

b. 

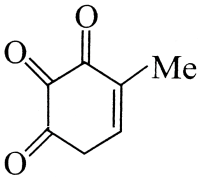
B. b.

c.



C. c.

d.



D. d.

Answer: C

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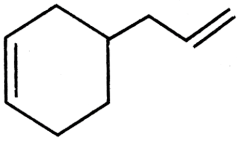
8.

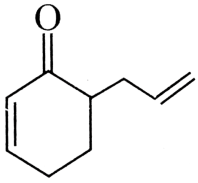


$\xrightarrow{SeO_2 / MeCOOH} (A)$

8.

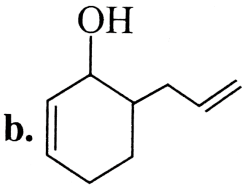
The compound (A) is:

a.

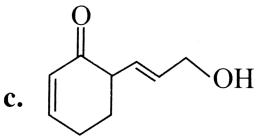


A. a.

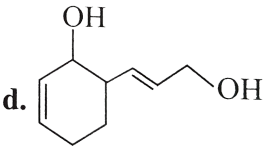
B. b.



C. c.



D. d.



Answer: C

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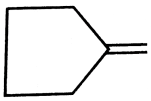
9. Acid-catalysed hydration oxymercuration-demercu-ration, and hydroboration oxidation reaction will give the same product with:

A. a.But-2-ene

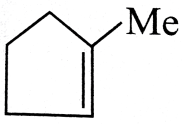
B. b.But-1-ene

c.



C. c.

d.



D. d.

Answer: A

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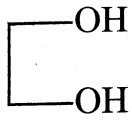
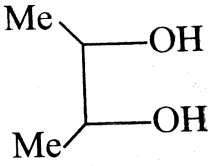
10. The increasing order of the rate of oxidation with HIO_4 oxidation of the following is:

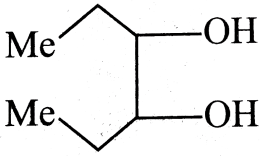
(I)



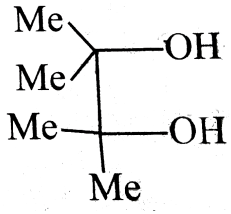
(II)



(III)



(IV)



A. a.IV lt III lt II lt I

B. b.I lt II lt III lt IV

C. c.IV lt III = II lt I

D. d.I lt II = III lt Iv

Answer: A

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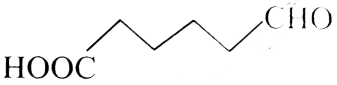
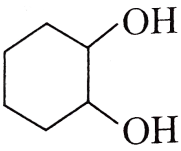
11. Compound $(A) \xrightarrow[HIO_4]{1 mol of}$

11. Compound (A) $\xrightarrow[HIO_4]{1 \text{ mol of}}$ 

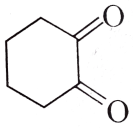
The compound (A) is:

The compound (A) is:

a. 

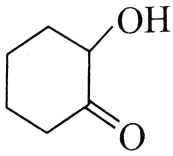
A. a.

b.



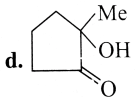
B. b.

c.



C. c.

d.



D. d.

Answer: C

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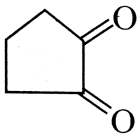
12. Conpound $(A) \xrightarrow[HIO_4]{2mol of}$ 2 mol of glyoxalic acid.

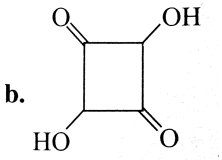
The compound (A) is:

a.

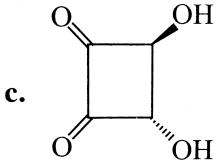


A. a.

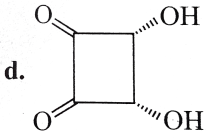
B. b.



C. c.



D. d.



Answer: D

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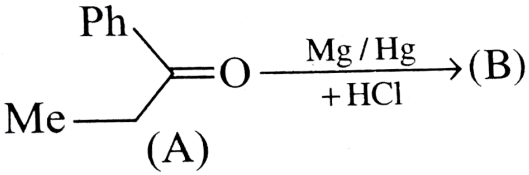
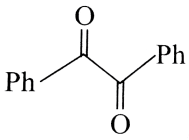
13.

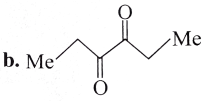


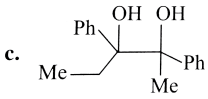
13. The compound (B) is:

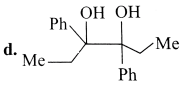
The compound (B) is:

a. 

A. a.

B. b. 

C. c. 

D. d. 

Answer: D

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14. Which type of reaction in the reduction of carbonyl compound with LAH and $NaBH_4$ occurs, and which nucleophile takes part in the reaction?

A. a.Nucleophilic addition and $AlH_4^{\ominus}$ or $BH_4^{\ominus}$

B. b.Nucleophilic addition and $H^{\ominus}$

C. c.Nucleophilic substitution and $AlH_4^{\ominus}$ or $BH_4^{\ominus}$

D. d.Nucleophilic substitution and $H^{\ominus}$

Answer: B

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15. Oxidation of aldehyde and ketone by peroxybenzoic acid to ester is called:

A. a.Elbs oxidation

B. b.Hell-Volhard-Zelinsky oxidation

C. c.Oppenaur oxidation

D. d.Baeyer-Villiger oxidation

Answer: D

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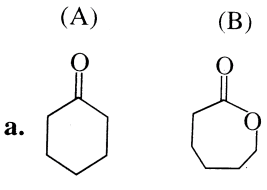
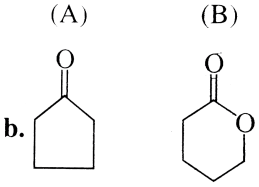
16. $Bariumadipate \xrightarrow{Drydistillation} (A) \xrightarrow{MeCO_3H} (B)$

The compounds (A) and (B), respectively, are:

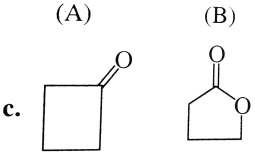
A. a.



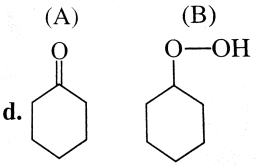
B. b.



C. c.



D. d.



Answer: B

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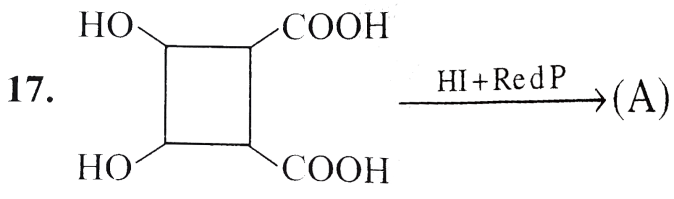
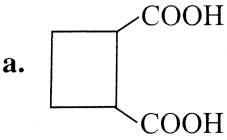
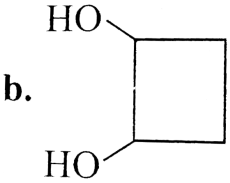
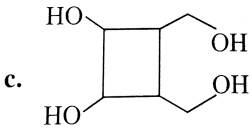
17. 

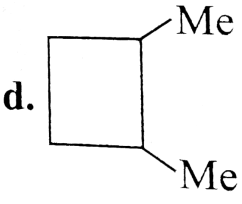
17.

The products (A) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: D

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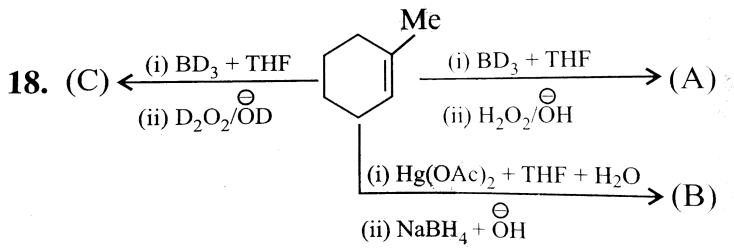
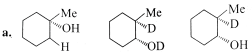
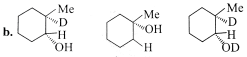
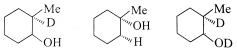
18. 

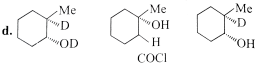
18.

The products (A), (B), and (C) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B

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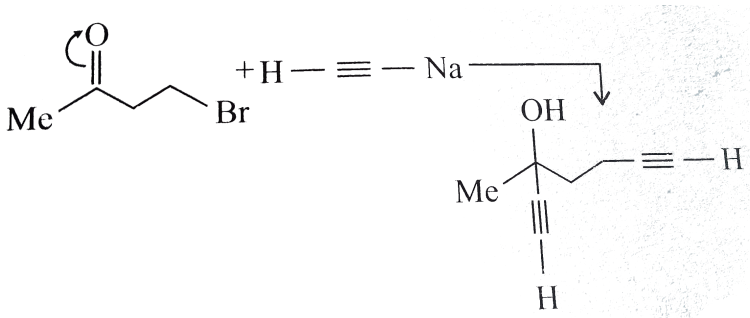
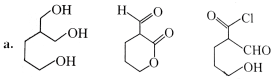
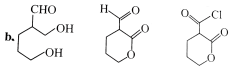
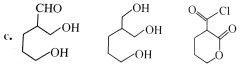


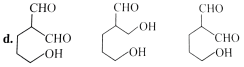
19.

The products (A), (B), and (C) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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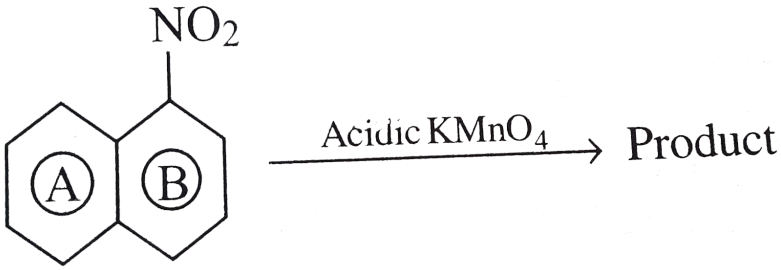
20. For the following reaction, which of the following sttaments is correct?



A. a.Ring (A) is oxidised

B. b.Ring (B) is oxidised

C. c.Both are oxidised

D. d.None is oxidised

Answer: A

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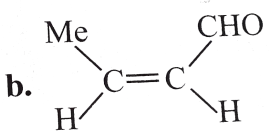
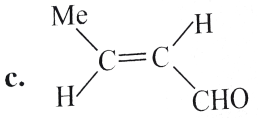
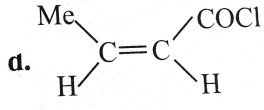
21. $MeC \equiv C - COCl \xrightarrow{H_2 + \text{Lindlar's Catalyst}} (A)$

The Product (A) is:

A. a. $Me - C \equiv C - CHO$

B. b. 

C. c. 

D. d. 

Answer: B

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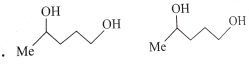
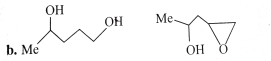
22.

The products (A) and (B), are:

A. a. 

B. b. 

C. c.

D. d. 

Answer: B

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23. $\xleftarrow{H_2+Ni} PhNO_2 \xrightarrow{LAH} (A).$

The products (A) and (B) are:

A. a. $PhNH_2, PhNH_2$

B. b. $Ph - N = N - Ph, Ph - N = N - Ph$

C. c. $Ph - N = N - Ph, PhNH_2$

D. d. $Ph - NH - NH - Ph, PhNH_2$

Answer: C

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24. $\xleftarrow{NaBH_4} PhCH = CH - CHO \xrightarrow[2.H_3O^+]{1.LAH, ether} (A)$

The products (A) and (B) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: D

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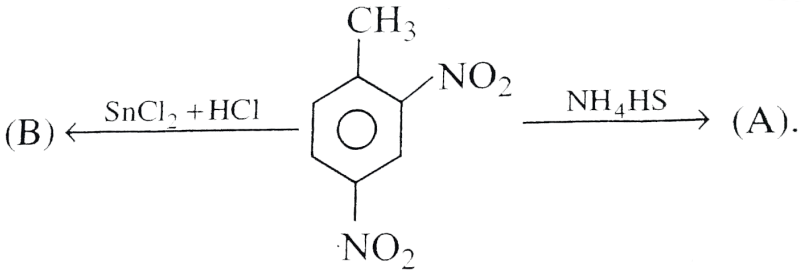
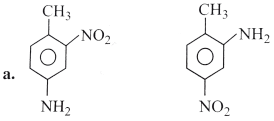
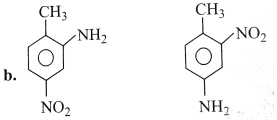
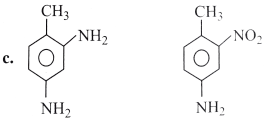


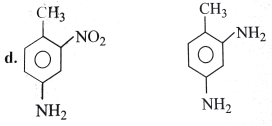
25.

The product (A) and (B) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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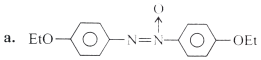
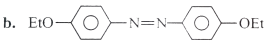
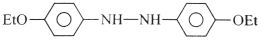
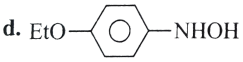
26.

The product (A) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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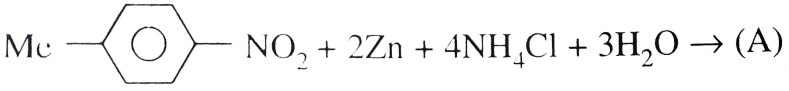
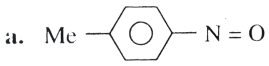
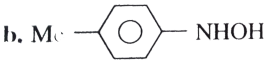
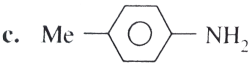
27.

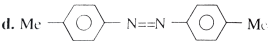


The product (A) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B

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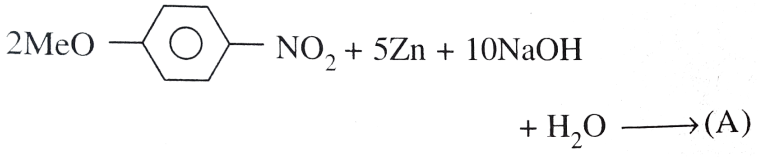
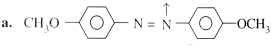
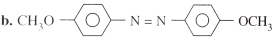
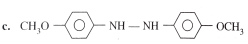
28.

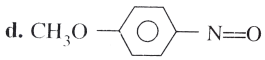


The product (A) is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: C

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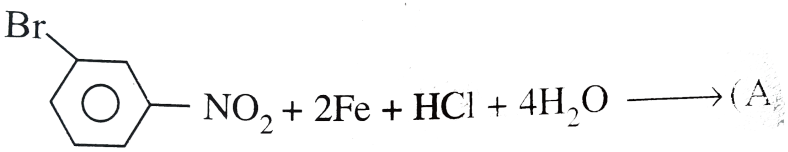
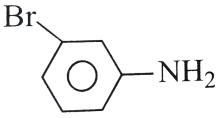
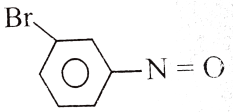
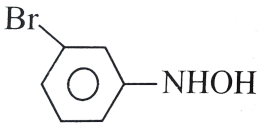
29. 

The product (A) is:

A. a. 

B. b. 

C. c. 

D. d. None

Answer: A

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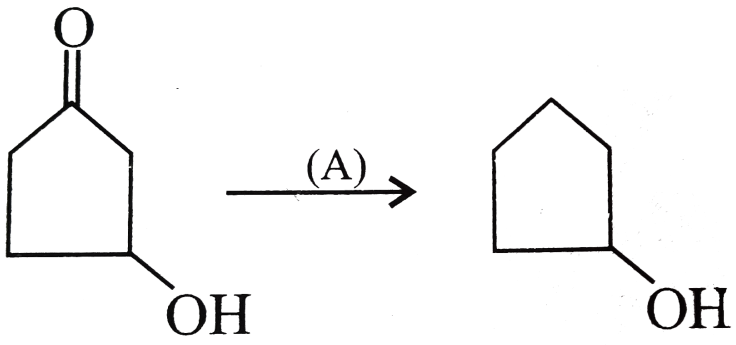
30.



The reagent (A) is:

A. a.Wolff-Kishner reduction

B. b.Clemmensen reduction

C. c.LAH

D. d.$NaBH_4$

Answer: A

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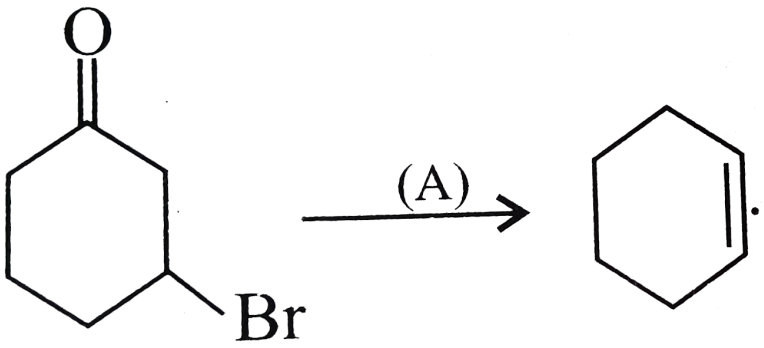
31.



The reagent (A) is:

A. a.$LAH + AlCl_3$

B. b.$NaBH_4 + PtCl_2$

C. c.Wolff-Kishner reduction

D. d.Clemmensen reduction

Answer: C

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32. In Rosenmund reduction, which of the following does not poison the catalyst Pd?

A. a.$BaSO_4$

B. b.S

C. c.Quinoline

D. d.Xylene

Answer: D

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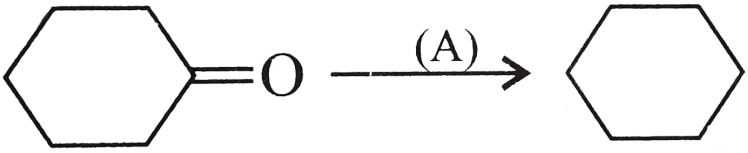

33.

The reagent (A) is:

A. a.Wolff-Kishner reduction

B. b.Clemmensen reduction

C. c.HI+P

D. d.All

Answer: D

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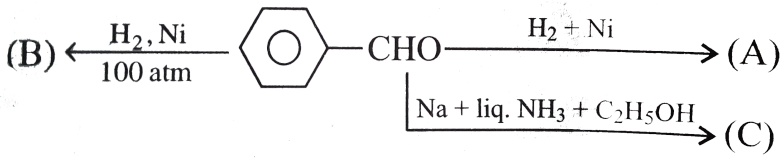
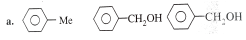
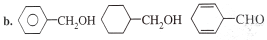
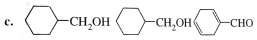


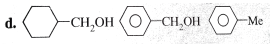
34.

The products (A), (B), and (c) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B

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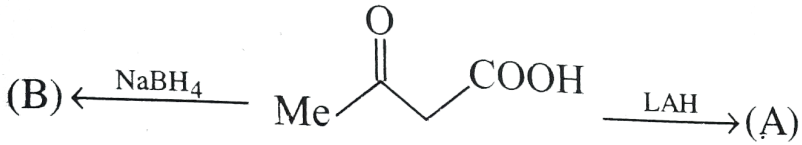
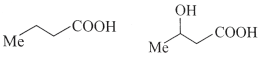
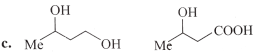


35.

The products (A), and (B) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: C

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36. $\xleftarrow{NaBH_4} CH_3N_3 \xrightarrow{LAH} (A)$

the products (A) and (B) are:

A. a.CH_3NH_2, CH_3NH_2

B. b.CH_3NH_2, No reaction

C. c.No reaction, CH_3NH_2

D. d.No reaction, No reaction

Answer: A

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37. $\xleftarrow{NaBH_4}$ Ethanoic anhydride $\xrightarrow{LAH} (A)$

$\downarrow H_2/Pt$

(C)

The products (A), (B), and (c) are:

A. a.$2CH_3CH_2OH, 2CH_3CH_2OH, 2CH_3CH_2OH$

B. b.$2CH_3CH_2OH$, No reaction, $2CH_3CH_2OH$,

C. c.$2CH_3CH_2OH$, No reaction, No reaction

D. d.No reaction, No reaction, $2CH_3CH_2H$,

Answer: B

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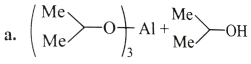
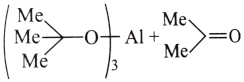
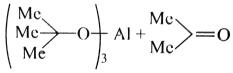
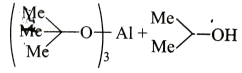
38. The catalyst and solvent used in MPV (Meerwein- Ponndorf-Verley) reaction are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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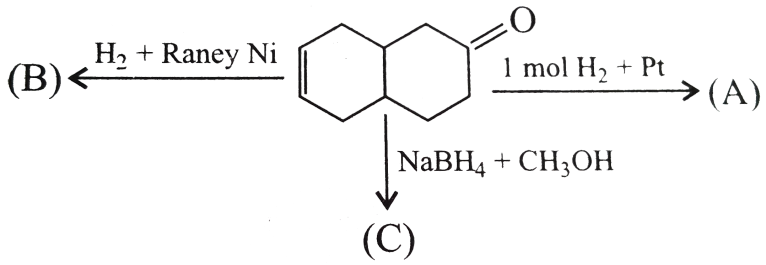
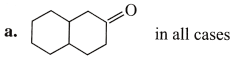
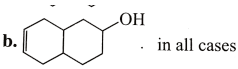
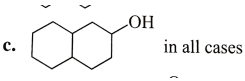


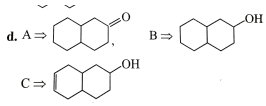
39.

The reagents (A), (B), and (C) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: D

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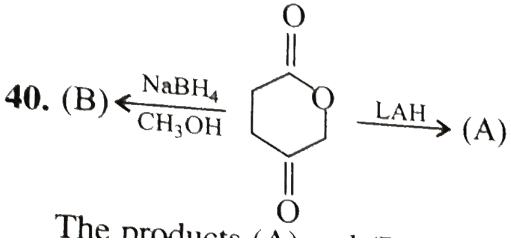
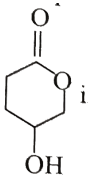
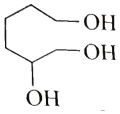


40. The products

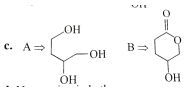
The products (A), and (B) are:

a.  in both cases

A. a.

b.  in both cases

B. b.

c. 

C. c.

D. No reaction in both cases

Answer: C

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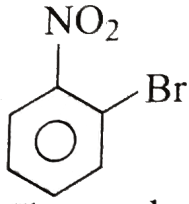
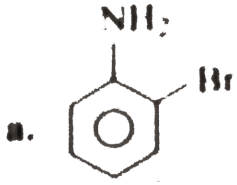
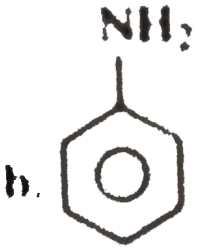
41.  

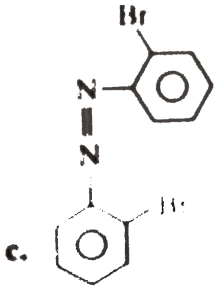
The product (A) is:

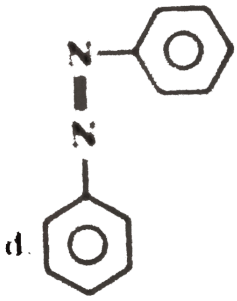
41.

The product `(A), is:

A. a. 

B. b. 

C. c. 



D. d.

Answer: C

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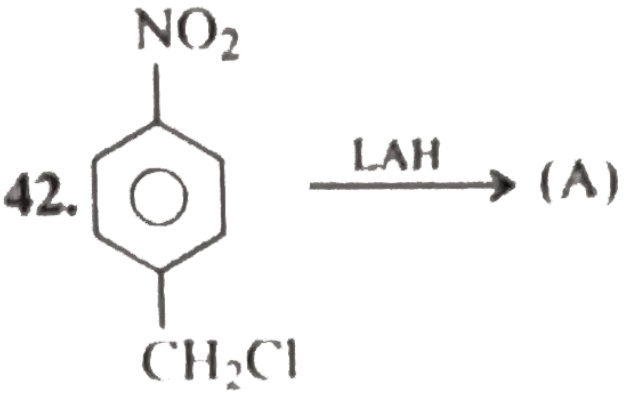
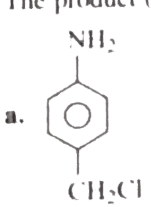
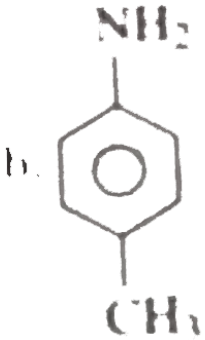
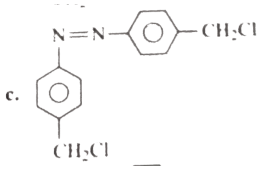


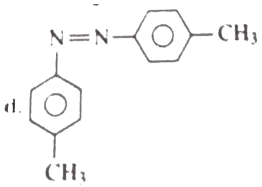
42.

The product `(A), is:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: D

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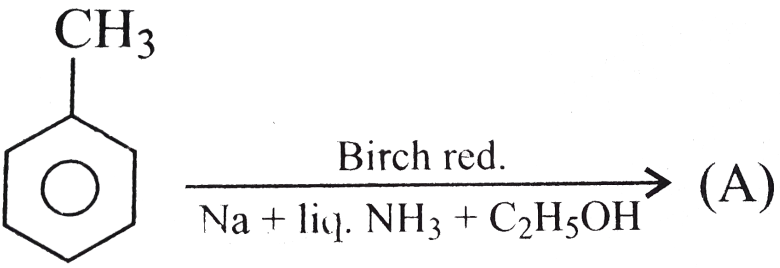
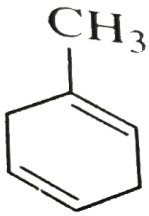


43.

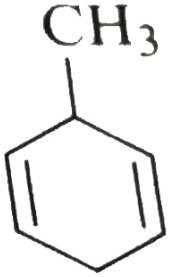
The product `(A), is:

a.



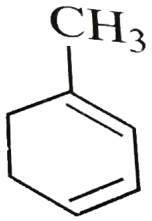
A. a.

b.

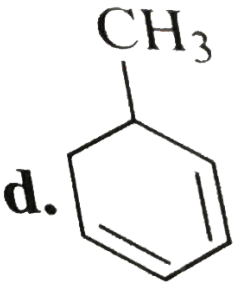


B. b.

c.



C. c.



D. d.

Answer: A

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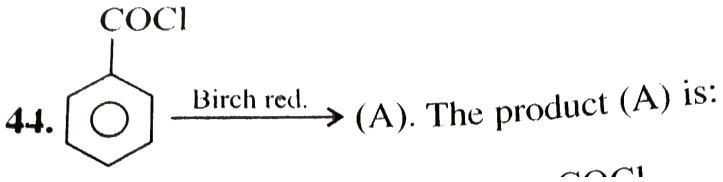
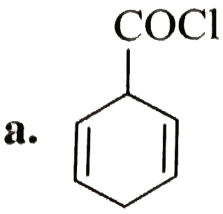
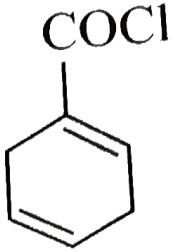


44.

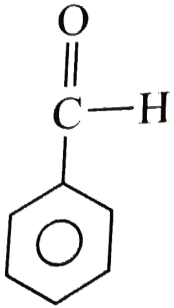
The product `(A), is:



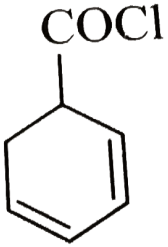
A. a.

b. 

B. b.

c. 

C. c.

d. 

D. d.

Answer: A

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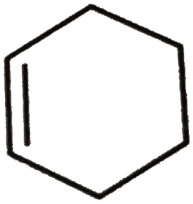
45.  Birch red. → A. The product (A) is:

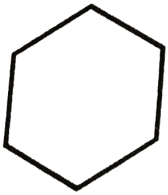
45.

The product `(A), is:

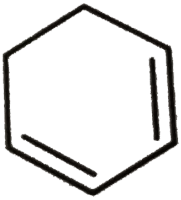
A. No reaction

b. 

B. b.

c. 

C. c.

d. 

D. d.

Answer: A

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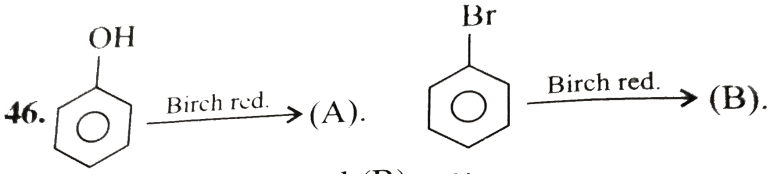
46. 

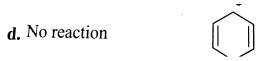
46.

The product (A), and (B) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: D

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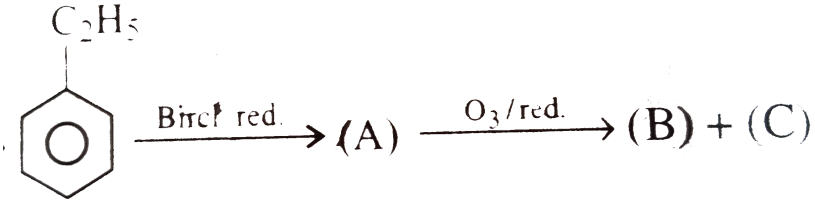
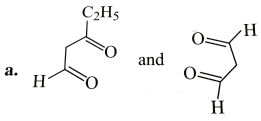
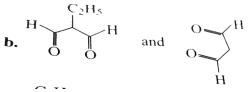
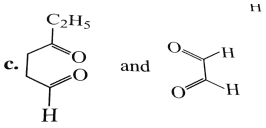


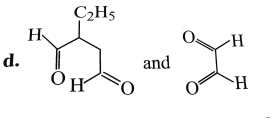
47.

The product (B), and (C) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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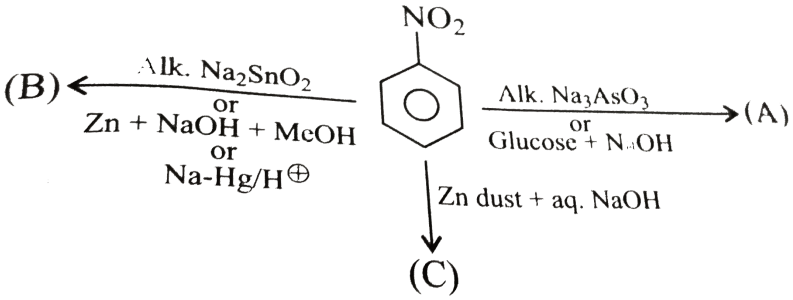

48.

The product (A), (B), and (C) are:

A. a.$(A) \Rightarrow$ Azobenzene, $(B) \Rightarrow$ Hydrazobenzene, $(C) \Rightarrow$ Azoxybenzene

B. b.$(A) \Rightarrow$ Azobenzene, $(B) \Rightarrow$ Azoxybenzene, $(C) \Rightarrow$ Hydrazobenzene

C. c.$(A) \Rightarrow$ Azoxybenzene, $(B) \Rightarrow$ Azobenzene, $(C) \Rightarrow$ Hydrazobezene

D. d.(A) $\Rightarrow$ Azoxybenzene, (B) $\Rightarrow$ Hydrazobenzene, (C) $\Rightarrow$ Azobenzene

Answer: C

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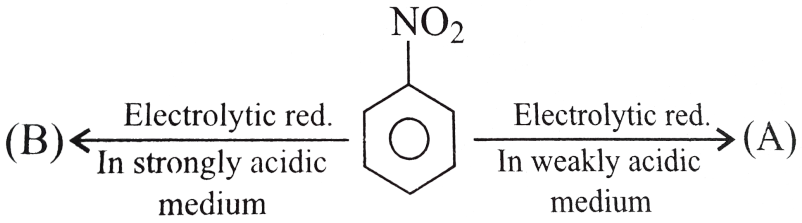

49.

The product (A) and $(B)$are:

A. a.$(A) \Rightarrow$ Aniline $(B) \Rightarrow$ Aniline

B. b.(A) $\Rightarrow$ Aniline (B) $\Rightarrow$ Phenylhydroxylamine

C. c.(A) $\Rightarrow$ p-Aminophenol (B) $\Rightarrow$ Phenylhydroxylamine

D. d.(A) $\Rightarrow$ Aniline (B) $\Rightarrow$ p-Aminophenol

Answer: D

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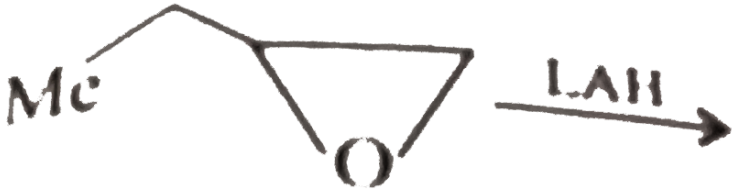
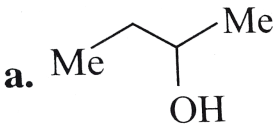
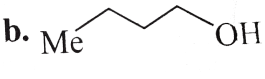


50.

The product are:



A. a.



B. b.

C. c.Both (a) and (b)

D. d.None

Answer: C

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51. Toluene on reaction with CrO_3 and Ac_2O gives benzaldehyde as the main product. The intermediate compound formed in the

reaction is:

A. a.$PhCH_2OH$

B. b.$PhCH(Oac)_2$

C. c.$PhCH_2Oac$

D. d.$PhCH(OH)_2$

Answer: B

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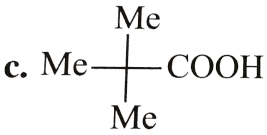
52. The final product obtained in the oxidation of t-butyl benzene with $Na_2Cr_2O_7 + H_2SO_4$ is:

A. a.Benzene acid

B. b.$PhCH_2COOH$



C. c.

D. d.CH_3COOH

Answer: D

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53. An aromatic compound $(A), C_8H_{10}$, on oxidation with acidic $KMnO_4$ gives dibasic acid. The compound (A) on nitration gives three isomeric nitro derivatives. The compound (A) is:

A. a.o-Xylene

B. b.m-Xylene

C. c.p-Xylene

D. d.Ethyl benzene

Answer: B

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54. $PhCH_2CH_2CH_3 \xrightarrow[(ii)\, h_2O]{(i)\, CrO_2Cl_2 / CCl_4} (A)$

The product (A) is:

A. a.$PhCHO$

B. b.$PhCH_2CHO$

C. c.$PhCH_2CH_2CHO$

D. d.$PhPhCH(CH_3) - CHO$

Answer: C

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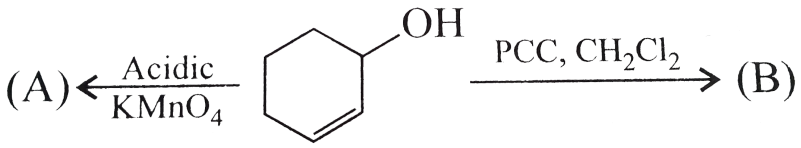
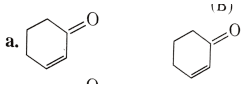
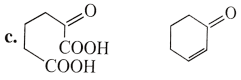
55. Identify (A) and $\cdot(B)$ in the reaction



A. a. 

B. b. 

C. c. 

D. d. 

Answer: C

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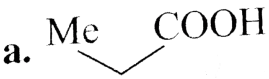
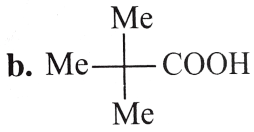
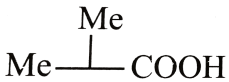
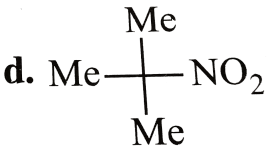
56. The compound $Me_3C - NH_2$ on oxidation with acidic $KMnO_4$ gives:

A. a. **a.** 

B. b. **b.** 

C. c. **c.** 

D. d. **d.** 

Answer: D

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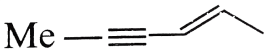
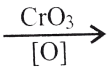
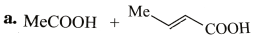
57.   (A). The product (A) is:

The product (A) is:

A. a. **a.** 

B. b. 

C. c.$Me - \equiv - COOH + MeCOOH$

D. d.None

Answer: C

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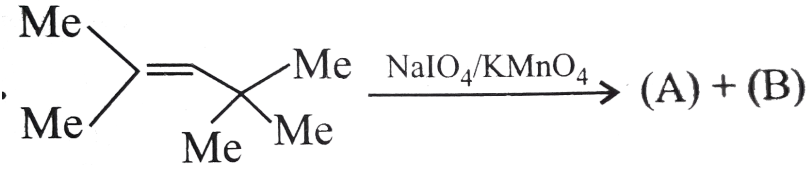
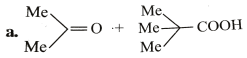
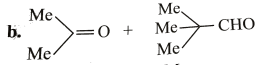
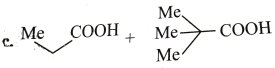
58. 

The product (A) and (B) are:

A. a. 

B. b. 

C. c. 

D. None

Answer: A

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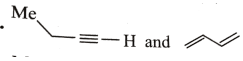
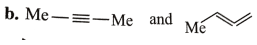
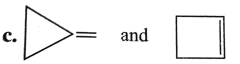
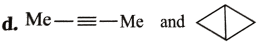
59. an Organic compound $(A)(C_4H_6)$ forms a precipitate with Tollens and Fehling's reagents. (A) has an isomer (B). (B) reacts with $1mol$ of Br_2 to form 1, 4-dibromo-2-butene. (A) and (B) are:

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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60. An alkene on ozonolysis yields only ethanal. There is an isomer of the alkene which on ozonolysis yields:

A. a.Propanone and methanal

B. b.Propanone and ethanal

C. c.Ethanal and nethanal

D. d.Only propanone

Answer: A

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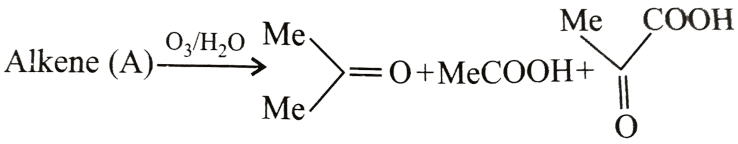
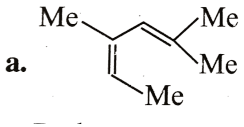
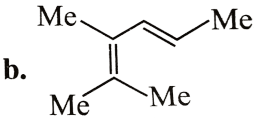


61.

(A) can be:

A. a. 

B. b. 

C. c.Both correct

D. d.None is correct

Answer: C

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62. Which of the following is an incorrect statement:

A. a.The oxidation of $1,2$-ethanediol with HIO_4 gives formaldehyde.

B. b.1° Alcohol turns $K_2Cr_2O_7/H^\oplus$ solution green

C. c.t-Butyl alochol is converted to isobutene on heating with Cu.

D. d.CH_3OH is also called denatured spirit.

Answer: D

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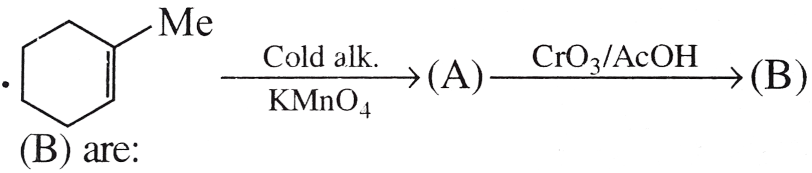
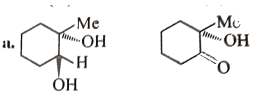
63.



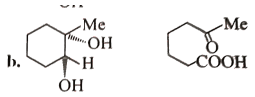
(B) are:

(A) and (B) are:

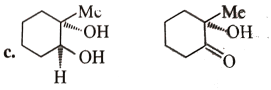
A. a.



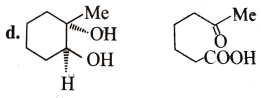
B. b.



C. c.



D. d.



Answer: A

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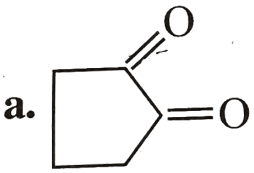
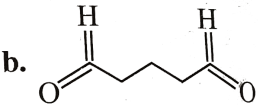
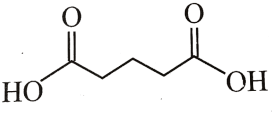
64. The oxidation product of $1,2$-cyclopentane diol with HIO_4 or $(CH_3COO)_4Pb$ is:

A. a. 

B. b. 

C. c. 

D. d. None

Answer: A

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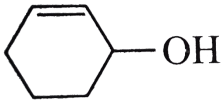
65. Chromic anhydride in H_2SO_4 is not blue by:

A. a.1° alcohol

B. b.2° alcohol

C. c.3° alcohol

D. d. **d.** 

Answer: C

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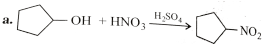
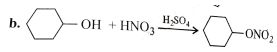
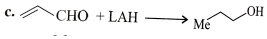
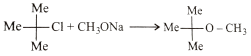
66. Which of the following reactions is correct?

A. a. 

B. b. 

C. c. 

D. d. 

Answer: B

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67. Fehling's solution can make distinction between:

A. $MeCHO$ and $PhCHO$

B. $MeCHO$ and $CH_3 - \underset{\underset{O}{||}}{C} - CH_2OH$

C. $H_3C - \underset{\underset{OH}{|}}{C}H - \underset{\underset{O}{||}}{C} - CH_3$ and $HCHO$

D. $MeCHO$ and $HCHO$

Answer: A

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68. $C_6H_{10}O_3(Ke \to ester)(A) \xrightarrow[\Delta]{NaOH+I_2} Yellowppt.$

$+(B) \xrightarrow{H^{\oplus}} (C) \xrightarrow[-CO_2]{\Delta} CH_3COOH.$ (A) and (B) are:

A. a.

B. b.

C. c.

D. d.

Answer: B

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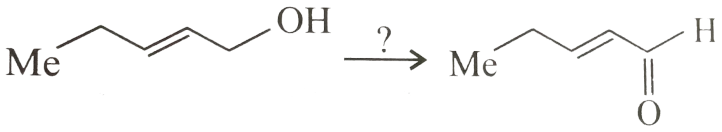
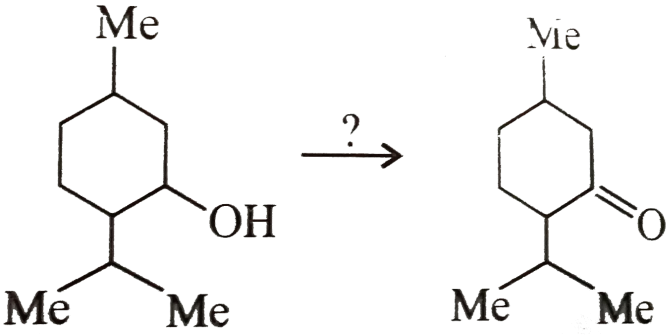
69. Suggest a suitable oxidising reagent for the following conversions:

(A) 

(B) 

A. a.MnO_2 in (A) and CrO_3 (in glacial acetic acid) in (B).

B. b.CrO_3 in (A) and MnO_2 in (B).

C. c.Both are correct

D. d.Both are incorrect

Answer: A

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70. $C_2H_5O-\overset{\overset{O}{||}}{C}-OC_2H_5 \xrightarrow{2MeMgBr} (A)$. The product (A) formed can:

A. a.give iodoform test.

B. b.further react with $MeMgBr/H_3O^{\oplus}$ to give t-butyl alcohol.

C. c.be obtained by the ozonolysis of 2, 3-dimethyl 1-2-butene.

D. d.all correct

Answer: D

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71. Which of the following compounds will not give haloform reaction?

A. a.alpha-Phenyl ethanol

B. b.Acetophenone

C. c.Ethyl bromide

D. d.$(MeCO)_2O$

Answer: D

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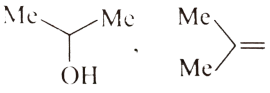
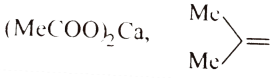
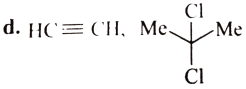
72. Identify the set from the following which connot form acetone in a single-step reaction.

A. a. 

B. b. 

C. c.$(MeCOO)_2Ca, Me- \equiv -H$

D. d. 

Answer: D

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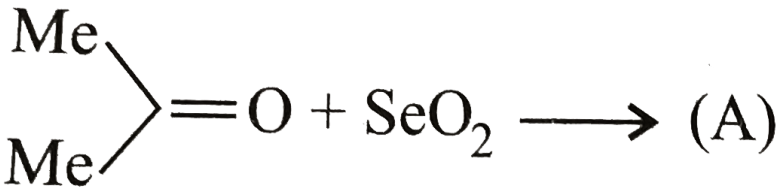

73.

(A) will not

A. a.reduce Tollens reagent.

B. b.give Iodoform test

C. c.form dioxime

D. d.give ceric ammonium nitrate test.

Answer: D

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74. $CH_3CH_2NO_2 \xrightarrow[at0^\circ C]{NaNO_2+HBr} (A).\ (A)$ is

A. a.CH_3CH_2OH

B. b.CH_3CH_2OH

C. c.$CH_3\underset{\underset{NO_2}{|}}{C} = N.OH$

D. d.$Noreaction$

Answer: C

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75. Which of the following does not give Liebermann's nitroso reaction?

A. a.$PhOH$

B. b.$PhNHCH_3$

C. c.$PhN(CH_3)_2$

D. d.$Ph - \overset{CH_3}{\underset{|}{N}} - NO$

Answer: C

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76. Of the following compounds, whose ozonolysis proves the Kekule structure of benzene?

A. a.Benzene

B. b.Toluene

C. c.o-Xylene

D. d.p-Xylene

Answer: C

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77. $CH_3 - \overset{CH_3}{\underset{|}{C}}H - NO_2 \xrightarrow[at0^\circ C]{NaNO_2 + H_2SO_4} (A)$. (A) is:

A. a.$(CH_3)_2 - CH - OH$

B. b.$(CH_3)_2CH - N = N - Br$

C. c.$(CH_3)_2 \underset{|}{\overset{}{C}}_{NO_2} - N = O$

D. d.$(CH_3)_2 \underset{|}{\overset{}{C}}_{NO_2} - NHOH$

Answer: C

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78.

Which of the following compounds are (A), (B), (C), and (D)?

$Ph - \overset{CH_3}{\underset{|}{C}} = O, \underset{(II)}{CH_3CH = O}$

$$\underset{(III)}{CH_3 - COOH}, Ph - \underset{(IV)}{\overset{CH_3}{\overset{|}{C}}H} - OH$$

$$\underset{(V)}{CH_3CH_2OH}, \underset{(VI)}{PhCOOH}$$

A. a.I, II, I, II

B. b.I, III, I, II

C. c.IV, V, I, III

D. d.VI, III, I, III

Answer: B

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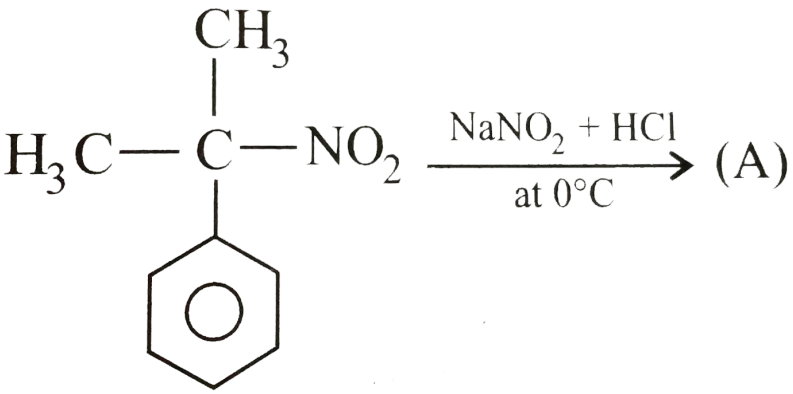
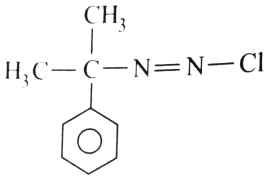
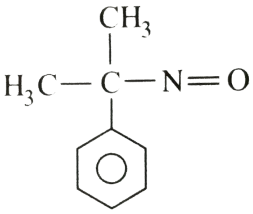


79.

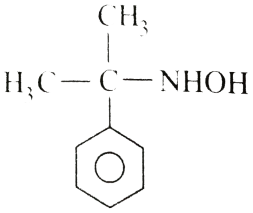
The compound (A)



A. a.



B. b.



C. c.

D. d.*Noreaction*

Answer: D

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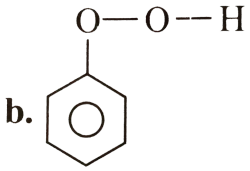
80. Fenton's regent $\left(Fe^{2+} + H_2O_2\right)$ with benzene gives:

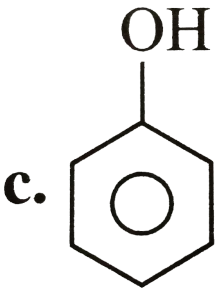
A. a.$Noreaction$

b.



B. b.

c.



C. c.

D. d.$3(HOOC - COOH)$

Answer: C

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81. Lactic acid on oxidation with Fenton's reagent gives:

A. a.$CH_3COCOOH(Pyruvicacid)$

B. b.CH_3COOH

C. c.$HOOC - \underset{\underset{O}{||}}{C} - COOH$

D. d.$HOOC - COOH$

Answer: A

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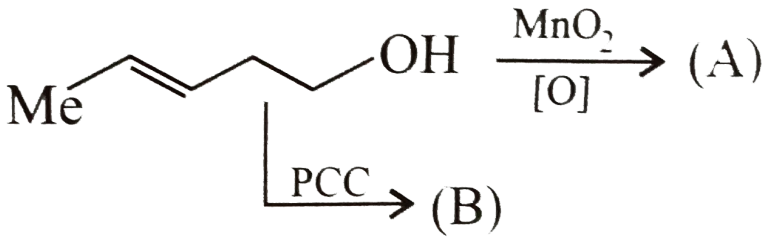
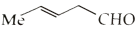


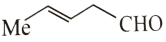
82.

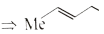
The compounds (A) and (B) are:

A. a. $No reaction$

B. b. (A) and (B) are $\Rightarrow$ 

c. (A) $\Rightarrow$ 

C. c. (B) $\Rightarrow$ 

D. d. (A) $\Rightarrow$ No reaction (B) $\Rightarrow$ 

Answer: D

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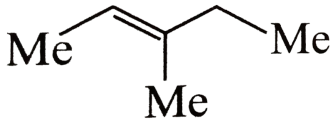
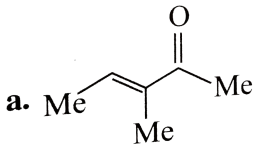
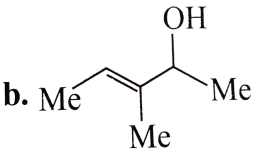
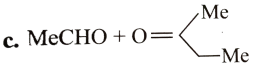
83.  $\xrightarrow{SeO_2/AcOH}$ (A). (A) is:

(A) is:

A. a. 

B. b. 

C. c. 

D. d. $No reaction$

Answer: B

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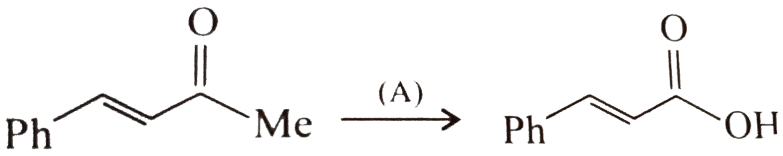

84. The compound (A) is:

The compound (A) is:

A. a.Acidic $KMnO_4$

B. b.$KOBr / H_3O^{\oplus}$

C. c.$SeO_2 / MeCOOH$

D. d.Jones reagent

Answer: B

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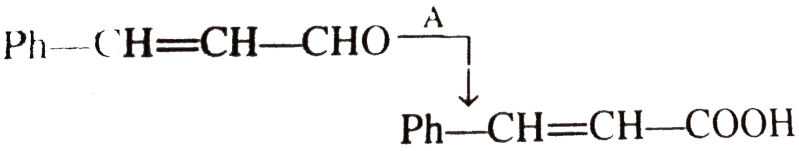

85.

The compound (A) is:

A. a.$Aq.\ KMnO_4$

B. b.$NaOI$

C. c.$\left[Ag(NH_3)_2\right]^{\oplus}/H_3O^{\oplus}$

D. d.MnO_2

Answer: C

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86. Which single reagent can be used in the following conversions?

A. a.H_2 + Poisoned Pd

B. b.H_2 + Raney Ni

C. c.$H_2 + Pd + C$

D. d.$H_2 + Ni + B$

Answer: C

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87. $Et - N^{\oplus} \equiv C^{\ominus} \xrightarrow[\text{or } HgO \text{ or } O_3]{Cl_2 + DMSO}$. The compound (A) is:

A. a.Ethyl methyl amine

B. b.$Ethylnitri \leq$

C. c.Ethyl isocyanate

D. d.Ethyl cyanate

Answer: C

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88. Imines or enamines are selectively reduced to 1° or 2° amines with:

A. a.$NaBH_4$

B. b.LAH

C. c.$NaCNBH_3$

D. d.$NaAiH_4$

Answer: C

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89. Caprolactone on reduction with LAH or $H_2 + Pt$ or Pd gives:

A. a.Butane-1,4-diol`

B. b.Pentane-1,5-diol

C. c.Heexane-1,6-diol

D. d.Heptane-1,7-diol

Answer: B

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90. Caprolactam on reduction with LAH or $H_2 + Pt$ or Pd gives:

A. a.4-Amino butan-1 $-$ ol

B. b.5-Aminopentam-1 $-$ ol

C. c.6-Aminohexan-1 $-$ ol

D. d.7-Aminoheptan-1 $-$ ol

Answer: B

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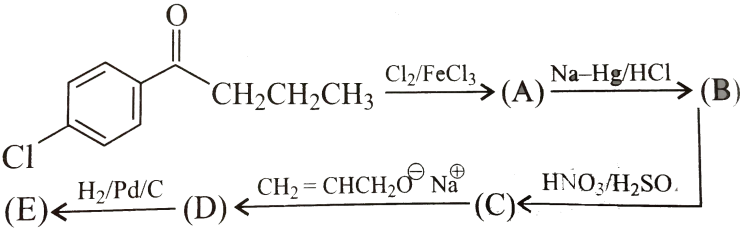
Exercise (Assertion And Reasoning)

1. 

Statement 1: The product (B) formed will be a racemic mixture.

Statement 2: The above reaction is oxymercuration and demercuration, and it proceeds via the addition of D_2O, according to Markovnikov's rule, and with antiregiospecificity.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: A

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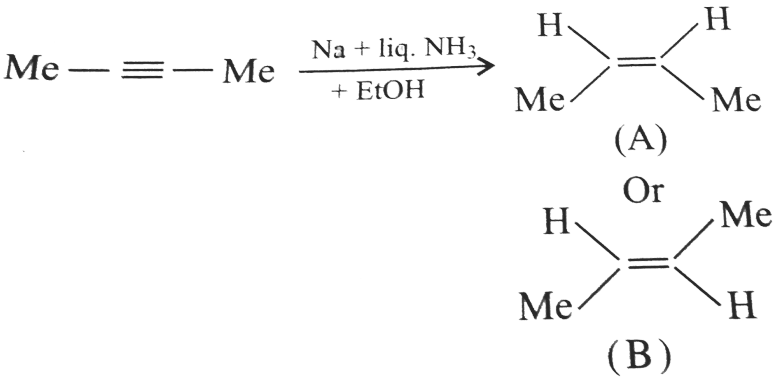
2.



Statement 1: The product formed is (B).

Statement 2: The reaction proceeds via the formation of the following species in the order: Radical anion $\rightarrow$ Vinylic anion $\rightarrow$ Vinylic redical $\rightarrow$ Product

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: C

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3. The reaction of $\left(R' - \underset{\underset{O}{||}}{C} - Cl \right)$ with (R_2Cd) or with (R_2CuLi) gives a ketone but with $(RMgX)$ gives a 3° alcohol $(R_2R'COH)$.

Statement 2: $(C - Mg)$ bond has more ionic character than $(C - Cu)$ or $(C - Cd)$ bond abd (R) group in Grignard reagent is more like $R^{\ddot{\ominus}}$ and is much more reactive for nuleophilic addition reaction.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: A

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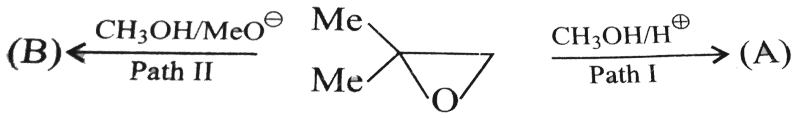
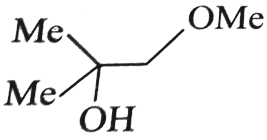
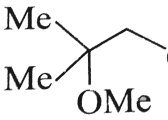
4.



Statement 1: The products (A) and (B) are



and



, respectively.

Statement 2: Path I takes place by SN^2 mechanism and Path II take place by SN^1 mechanism.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: D

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5. Statement 1: Reduction of 3-phenyl prop-2-en-1-al with LAH gives 3-phenyl propan-1-ol.

Statement 2: Both the double bond and the aldehyde group of α, β-unsaturated aldehydes are reduced by LAH.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: A

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6. Statement 1: Formic acid reduces 'Tollens reagent'.

Statement 2: Compounds containing $(-CHO)$ group reduce 'Tollens reagent'.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: B

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7. Statement 1: tert-Butybenzene on oxidation does not give benzoic acid on oxidation with acidic $KMnO_4$.

Statement 2: Due to the absence of benzylic hydrogen.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: A

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8. Statement 1: Diisopropyl ketone on reaction with isopropyl magnesium bromide followed by hydrolysis gives 2° alcohol.

Statement 2: Grignard reagent acts as a reducing agent.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: A

View Text Solution

9. Statement 1: Schiff's regent is a dilute solution of rosaniline hydrochloride in water whoce magneta colour is discharged with aqueous SO_2 or H_2SO_3.

Statement 2: Schiff's reagent oxidies benzaldehyde to benzoic acid.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: C

View Text Solution

10. Statement 1: Acryaldehyde $(CH_2 = CH - CHO)$ is oxidised to acrylic acid

$(CH_2 = \ = CH - COOH)$ by Benedict's solution.

Statement 2: Benedict's solution is ammoniacal $CuSO_4$ solution containing sodium potassium tartarate.

A. a.Statement 1 and Statement 2 are true and Statement 2 is the correct explanation of Statement 1.

B. b.Statement 1 and Statement 2 are true and Statement 2 is not the correct explanation of Statement 1.

C. c.Statement 1 is true and statement 2 is false.

D. d.Statement 1 is false and statement 2 is false

Answer: C

View Text Solution

Exercise Archives (Subjective)

1. The reagent with which both acetadehyde and acetone react easily is:

A. a.Tollens regent

B. b.Schiffs reagent

C. c.Grignard reagent

D. d.Fehling's solution

Answer: C

View Text Solution

2. A compound that gives a positive iodoform test is:

A. a.1- Pentanol

B. b.3-Pentanone

C. c.2- Pentanal

D. d.

Answer: C

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3. When acetaldehyde is heated with Fehling's solution it gives a precipitate of

A. a.Cu

B. b.CuO

C. c.Cu_2O

D. d.$Cu + Cu_2O + CuO$

Answer: C

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4. The compound that will not give iodoform on treatment with alkali and iodine is :

A. a.Acetone

B. b.Ethanol

C. c.Diethyl ketone

D. d.Isopropyl alcohol

Answer: C

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5. Which of the following compounds is oxidised to prepare methyl ethyl ketone?

A. a.2-Propanol

B. b.1-Butanol

C. c.2-Butanol

D. d.t-Butyl alcohol

Answer: C

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6. Hydrogenation of benzoyl chloride in the presence of Pd on $BaSO_4$ gives

A. a.Benzyl alcohol

B. b.Benzaldehyde

C. c.Benzoic zcid

D. d.Phenol

Answer: B

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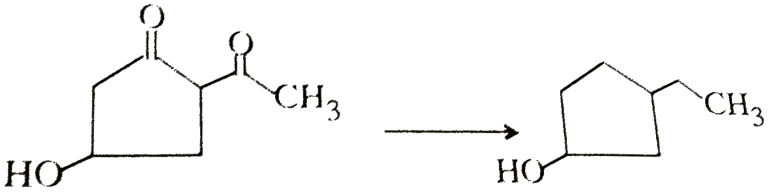
7. The appropriate reagent for the following transformation is



A. a.$Zn(Hg), HCl$

B. b.$NH_2NH_2, \overset{\ominus}{O}H$

C. c.H_2 / Ni

D. d. $NaBH_4$

Answer: B

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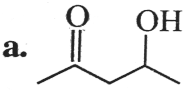
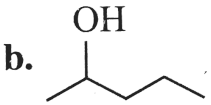
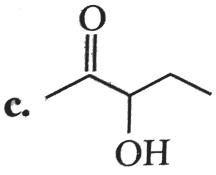
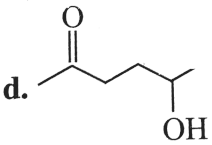
8. Which one of the following will most readily be dehydrated in acidic condition?

A. a. 

B. b. 

C. c. 

D. d. 

Answer: A

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9. 1-Propanol and 2- propanol can be distinguished by:

A. a.Oxidation with alkaline $KMnO_4$ followed by reaction with Fehiling's solution.

B. b.Oxidation with acidic dichromate followed by reaction with Fehling's solution

C. c.Oxidation by heating with copper followed by reaction with Fehling's solution.

D. d.Oxidation with concentrated H_2SO_4 follwed by reaction with Fehling's solution.

Answer: C

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10. Compound (A) [molecular formula (C_3H_8O)] is treated with acidified potassium dichromate to form a product (B) [molecular formula (C_3H_6O)]. (B) forms a shining silver mirror on warming with ammoniacal silver nitrate. (B) when treated with an aqueous solution of $H_2NCONHNH_2$ and sodium acetate gives a product (C). Identify the structure of (C).

A. a.$CH_3CH_2CH = N.NHCONH_2$

B. b.$CH_3 - \underset{\underset{CH_3}{|}}{CH_3} = N.NHCONH_2$

C. c.$CH_3 - \underset{\underset{CH_3}{|}}{CH_3} = N.CONHNH_2$

D. d.$CH_2CH_2CH = N.CONHNH_2$

Answer: A

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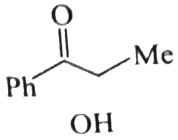
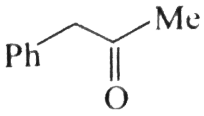
11.

$$PhC \equiv CPh \xrightarrow{Hg^{2+} + H^{\oplus}} (A). The compound (A) is The compound$$

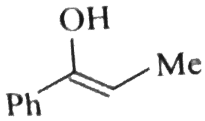
(A)` is:

a. 

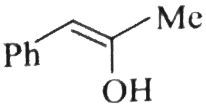
A. a.

b. 

B. b.

c. 

C. c.

d. 

D. d.

Answer: A

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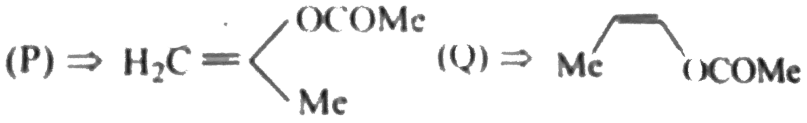
12. The products of acid hydrolysis of P and Q can be distinguished by



A. a. Lucas reagent

B. b. $2, 4 - DNP$

C. c.Fehling's solution

D. d.$NaHSO_3$

Answer: C

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13. How will you convert butan-2-one to propanoic acid?

A. a.Tollens reagent

B. b.Fehling's solution

C. c.$NaOH / I_2 / H^{\oplus}$

D. d.$NaOH / NaI / H^{\oplus}$

Answer: C

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14. Which of the following compound will give a yellow precipitate with iodine and alkali?

A. a.2-Hydroxy

B. b.Acetophenone

C. c.Methyl acetone

D. d.Acetone

Answer: A::B

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15. Under Wolff-Kishner reduction conditions, the conversion which may be brought about is:

A. a.Benzophenone to diphenyl methane

B. b.Benzaldehyde to benzyl alcohol

C. c.Cyclohexanone to cyclohexane

D. d.Cyclohexanone to cyclohexanol

Answer: A::C

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16. Fehling's solution 'A' consists of an aqueous solution of copper sulphate, while Fehling's solution 'B' consists of an akaline solution of .....

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17. The yield of ketone when a secondary alcohol is oxidised is more than the yield of aldehyde when a primary alcohol is oxidised.

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18. Statement I: Acetic acid does not undergo haloform reaction.

Statement II: Acetic acid has no alpha hydrogen.

A. a.Statement I and Statement II are true and Statement II is the correct explanation of Statement I.

B. b.Statement I and Statement II are true and Statement II is not the correct explanation of Statement I.

C. c.Statement I is true and statement II is false.

D. d.Statement I is false and statement II is false

Answer: C

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19. Give a chemical test to distinguish between methanol and ethanol.

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20. Suggest a suitable reagent to distinguish acetaldehyde from acetone.

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21. Ketone (A), which indergoes halform reaction, give compound (B) on reduction. (B) on heating with H_2SO_4 gives compound (C), which forms mono-ozonide (D). (D) on hydrolysis in the presence

of Zn dust gives only acetaldehyde. Identify $(A).(B)$, and (C). Write down the reactions involved.

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22. Give reason on one or two sentances for the following: Iodoform is obtained by the reaction of acetone with hypoiodote but not with iodode

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23. When t-butanol and n-butanol are separately treated with a few drops of dilute $KMnO_4$ in one case only, the purple colour disappears and brown precipitate is formed. Which of the two alcohols gives the above reaction and which is the brown precipitate?

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24. A compound $(D)(C_8H_{10}O)$ upon treatement with alkaline solution of iodine gives a yellow precipitate. The filterate on acidification gives a white solid $(E)(C_7H_6O_2)$. Write the structures of (D) and (E), and explain the formation of (E).

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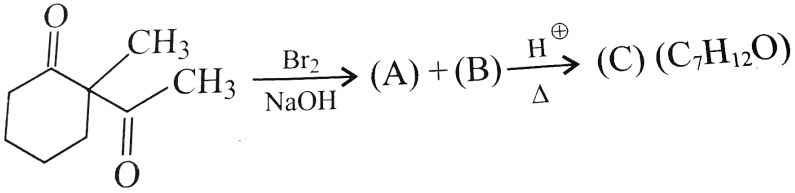
25. Identify (A), (B), and (C) and give their strucyures.



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26. An alkene $(A)C_{16}H_{16}$ on ozonolysis gives only one product $(B)(C_8H_8O)$. Compound (B) on reaction with $NaOH/I_2$ yields

sodium benzoate. Compound (B) reacts with KOH/NH_2 yielding a hydrocarbon (C_8H_{10}). Write the structures of compounds (B) and (C). Based on this information, two isomeric structures can be proposed for alkene (A). write thair structures and identify the isomer which on catalytic hydrogenation $(H_2 + Pd + C)$ gives a recemic mixture.

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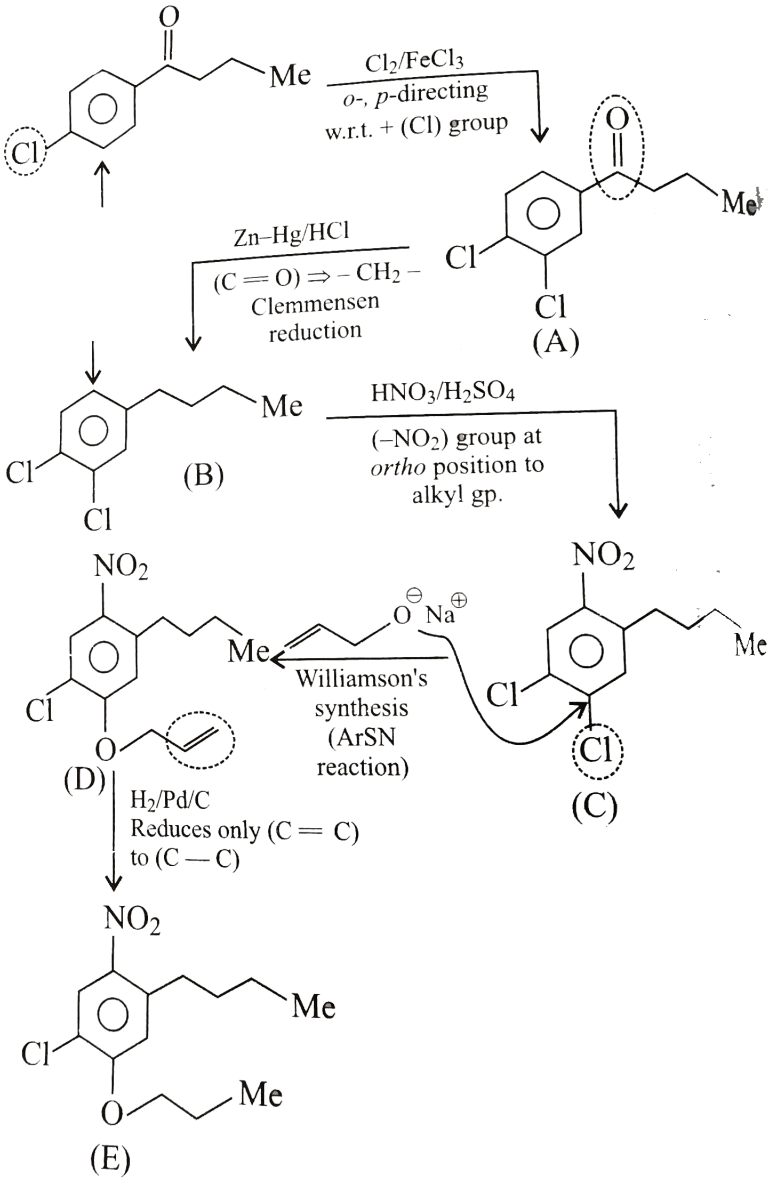
SUBJECTIVE TYPE

1. Write the statements of the products (A), (B), (C), (D), and (E) in the following scheme.



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2. Identify (X), (Y), and (Z) in the following synthetic scheme and write their structures.

Is the compound (Z) optically active? Justify your answer.

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3. Compound (A) of molecular formula $C_9H_7O_2Cl$ exists in ketoform and predominantly in enolic form (B). On oxidation with $KMnO_4$, (A) gives m-chlorobenzoic acid. Identify (A) and (B).

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