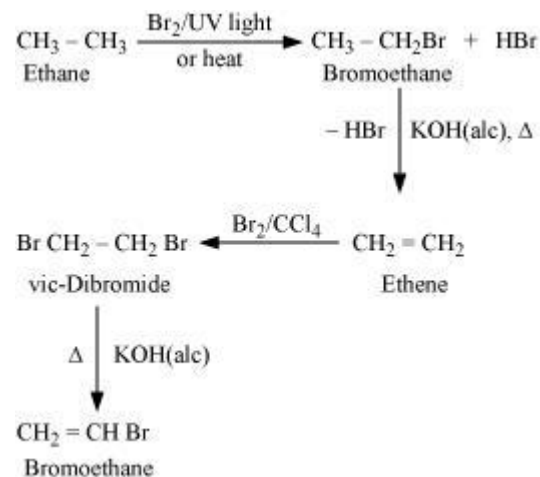
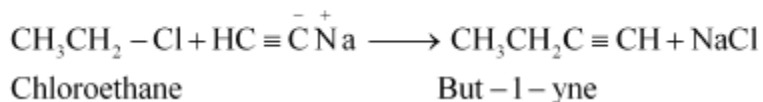
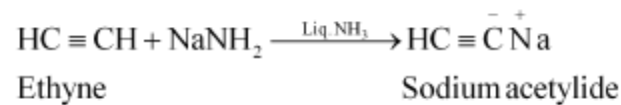
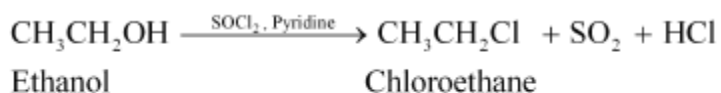


INTERCONVERSIONS

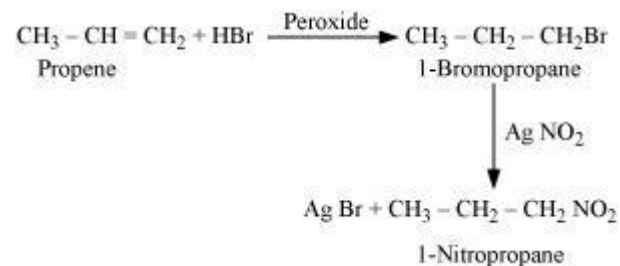
1 How will you bring about the following conversions?

- (i) Ethanol to but-1-yne
- (ii) Ethane to bromoethene
- (iii) Propene to 1-nitropropane
- (iv) Toluene to benzyl alcohol
- (v) Propene to propyne
- (vi) Ethanol to ethyl fluoride
- (vii) Bromomethane to propanone
- (viii) But-1-ene to but-2-ene
- (ix) 1-Chlorobutane to n-octane
- (x) Benzene to biphenyl.

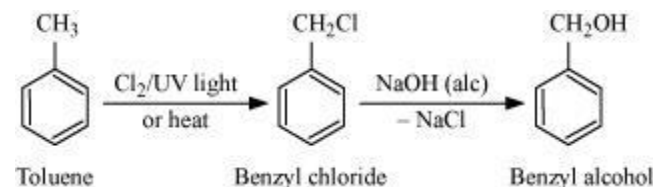
(i)



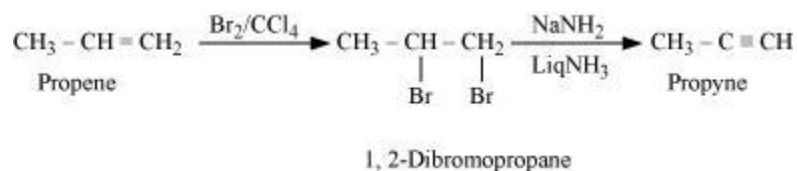
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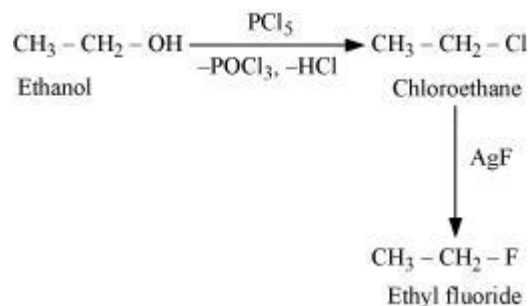
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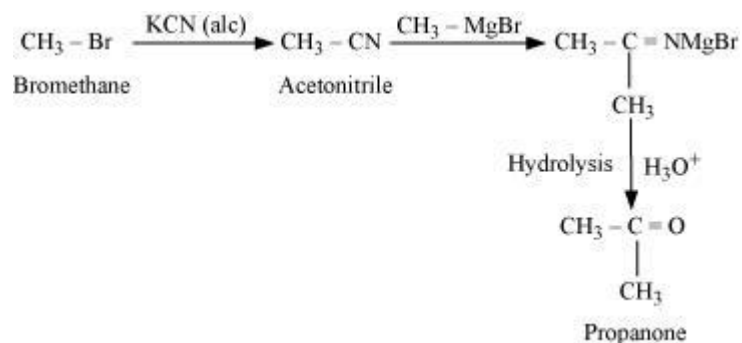
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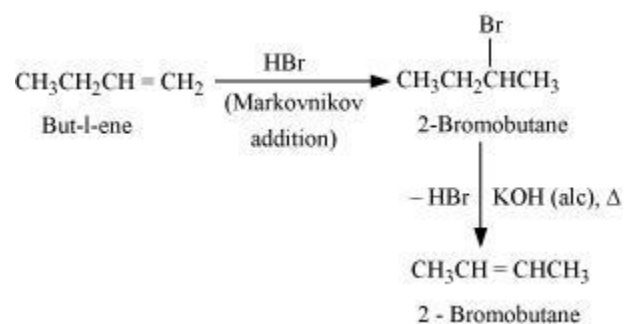
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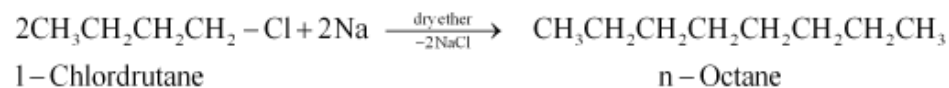
(vii)



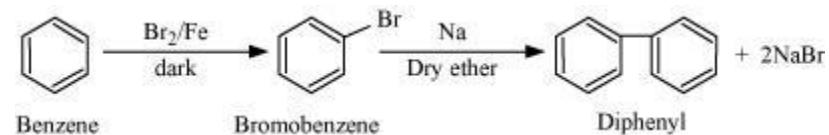
(viii)



(ix)



(x)



2How the following conversions can be carried out?

(i) Propene to propan-1-ol

(ii) Ethanol to but-1-yne

(iii) 1-Bromopropane to 2-bromopropane

(iv) Toluene to benzyl alcohol

(v) Benzene to 4-bromonitrobenzene

(vi) Benzyl alcohol to 2-phenylethanoic acid

(vii) Ethanol to propanenitrile

(viii) Aniline to chlorobenzene

(ix) 2-Chlorobutane to 3, 4-dimethylhexane

(x) 2-Methyl-1-propene to 2-chloro-2-methylpropane

(xi) Ethyl chloride to propanoic acid

(xii) But-1-ene to n-butyliodide

(xiii) 2-Chloropropane to 1-propanol

(xiv) Isopropyl alcohol to iodoform

(xv) Chlorobenzene to *p*-nitrophenol

(xvi) 2-Bromopropane to 1-bromopropane

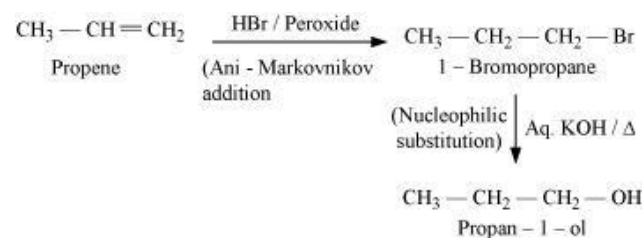
(xvii) Chloroethane to butane

(xviii) Benzene to diphenyl

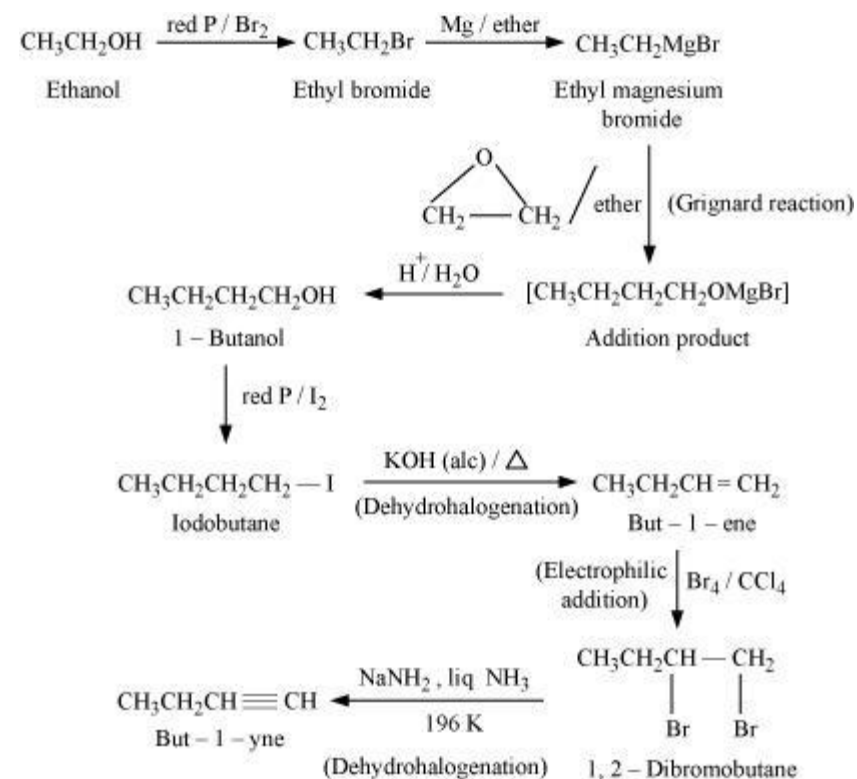
(xix) *tert*-Butyl bromide to isobutyl bromide

(xx) Aniline to phenylisocyanide

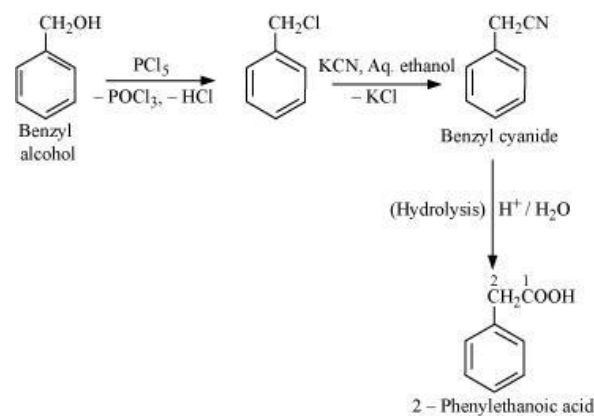
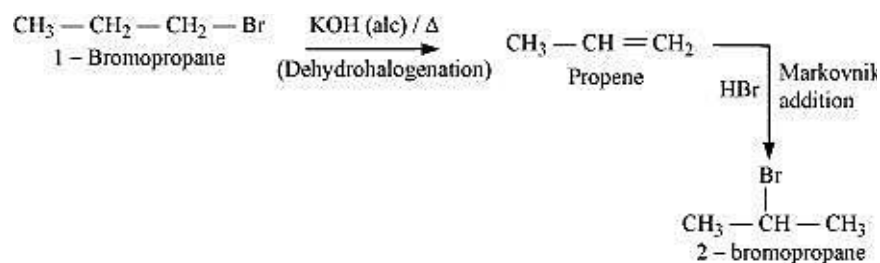
Answer (i)



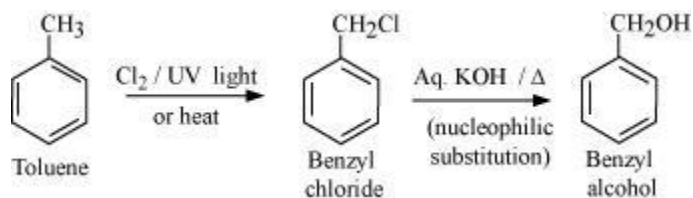
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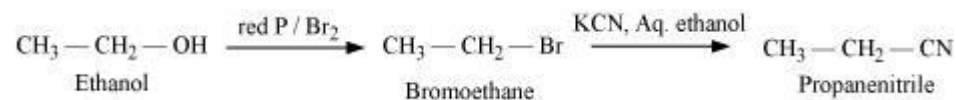
(iii)



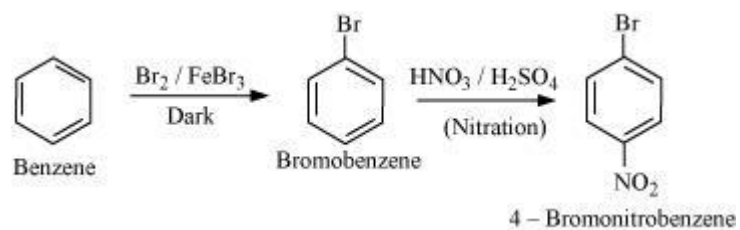
(iv)



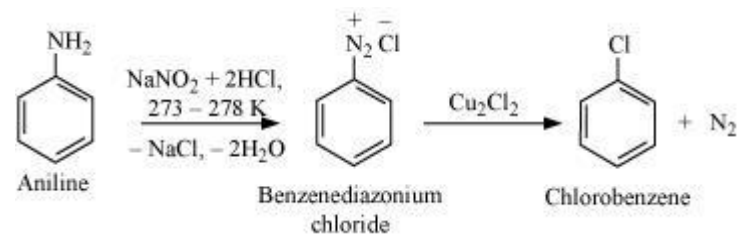
(vii)



(v)

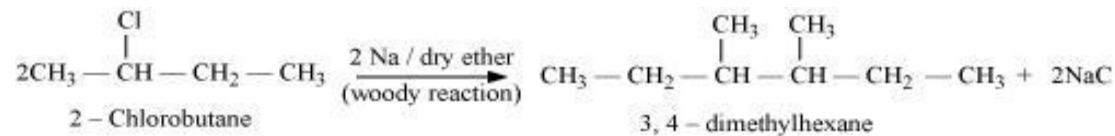


(viii)



(vi)

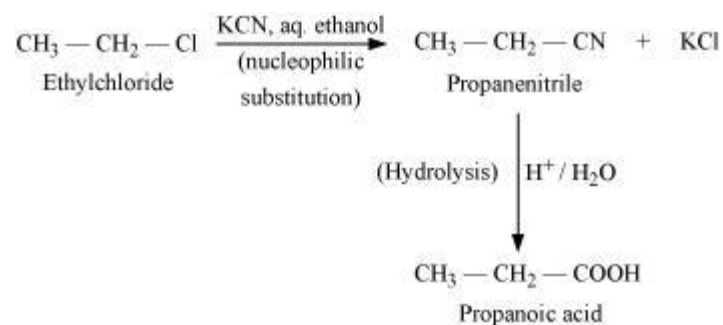
(ix)



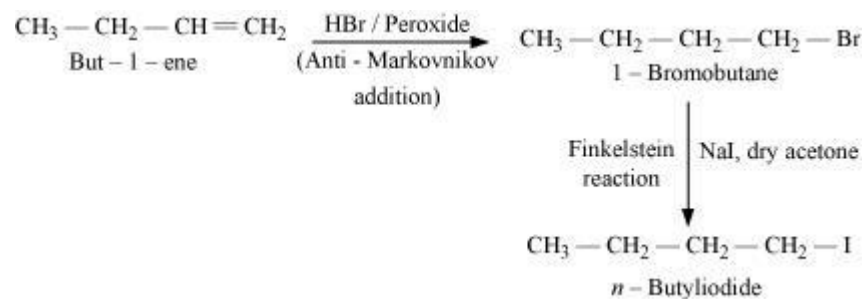
(x)



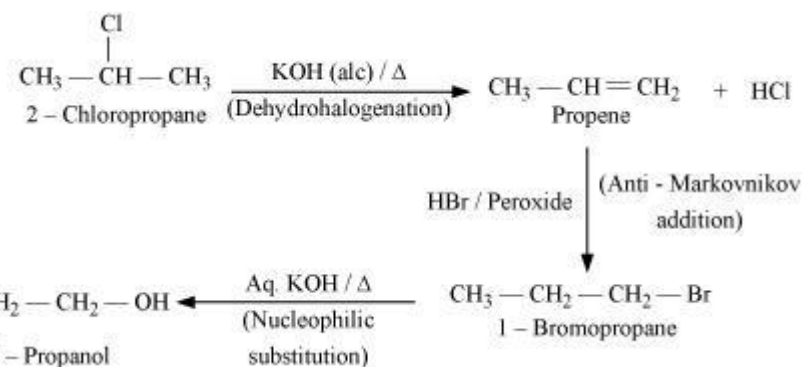
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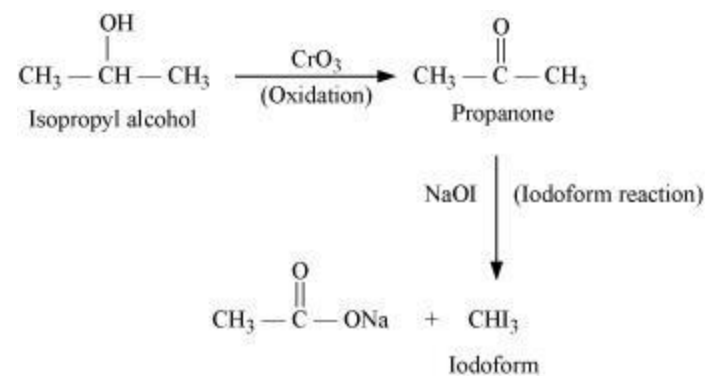
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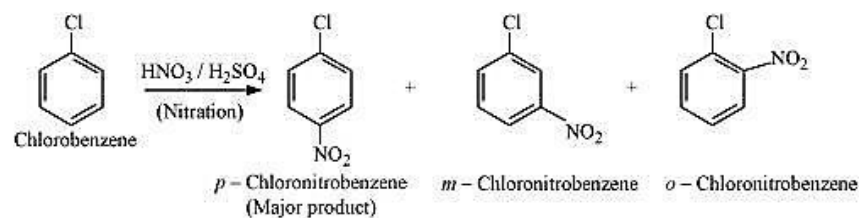
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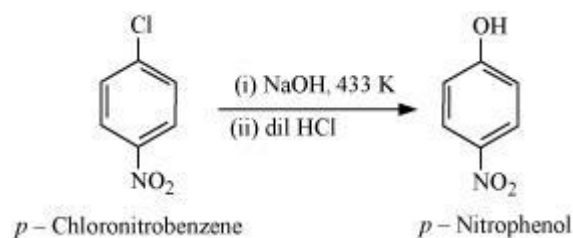


(xiv)

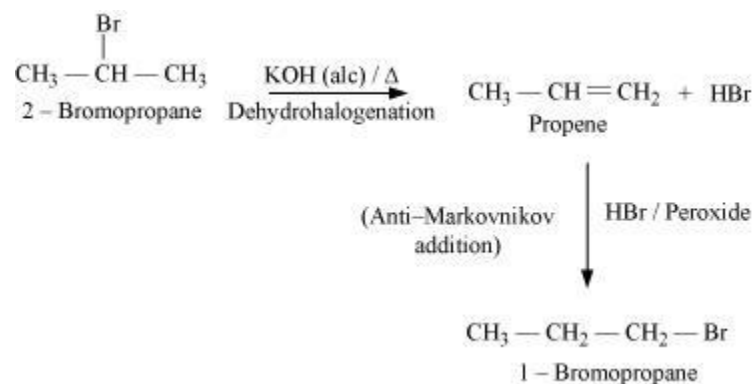


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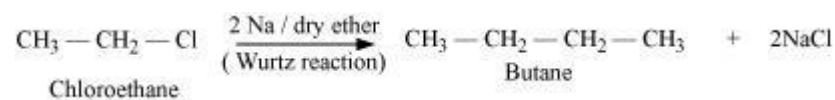




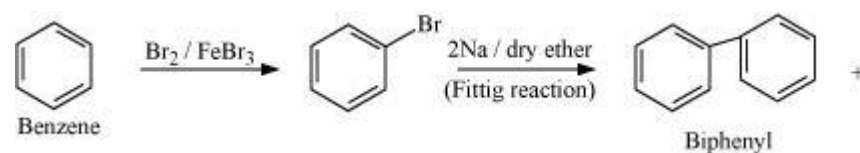
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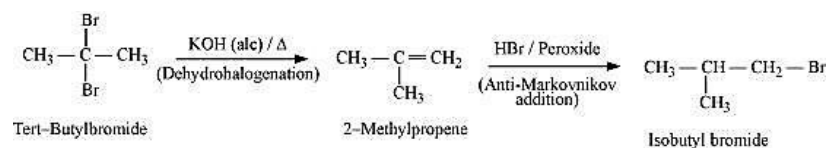
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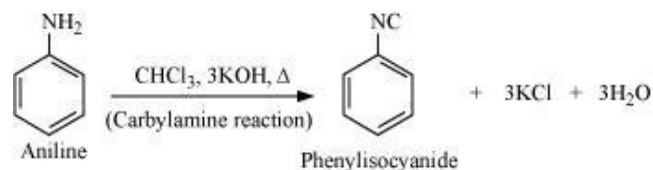
(xviii)



(xix)



(xx)



Q3 How are the following conversions carried out?

(i) Propene \rightarrow Propan-2-ol

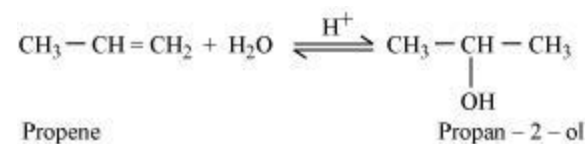
(ii) Benzyl chloride \rightarrow Benzyl alcohol

(iii) Ethyl magnesium chloride \rightarrow Propan-1-ol.

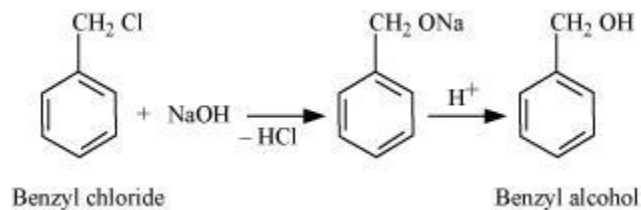
(iv) Methyl magnesium bromide \rightarrow 2-Methylpropan-2-ol.

Answer

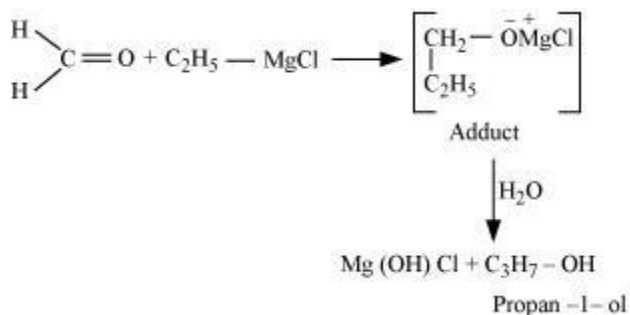
(i) If propene is allowed to react with water in the presence of an acid as a catalyst, then propan-2-ol is obtained.



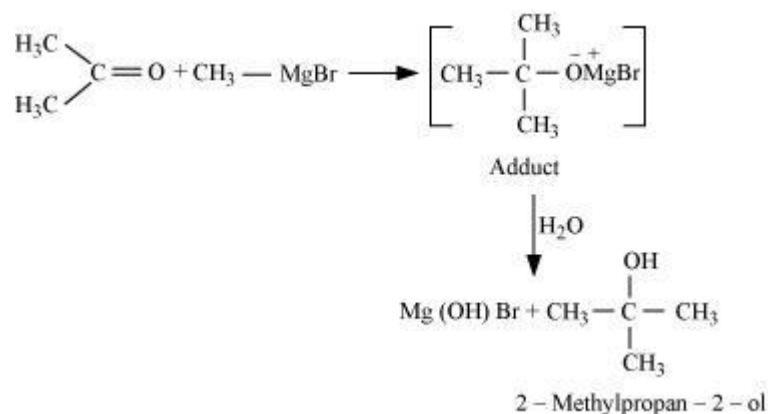
(ii) If benzyl chloride is treated with NaOH (followed by acidification) then benzyl alcohol is produced.



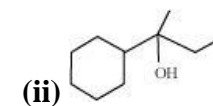
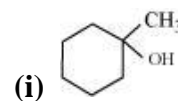
(iii) When ethyl magnesium chloride is treated with methanal, an adduct is the produced which gives propan-1-ol on hydrolysis.



(iv) When methyl magnesium bromide is treated with propanone, an adduct is the product which gives 2-methylpropan-2-ol on hydrolysis.

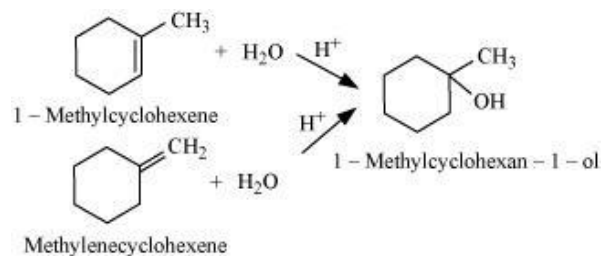


Q4 Show how would you synthesise the following alcohols from appropriate alkenes?

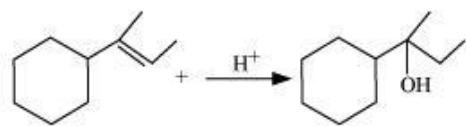


The given alcohols can be synthesized by applying Markovnikov's rule of acid-catalyzed hydration of appropriate alkenes.

(i)



(ii)



2 - Cyclohexylbut - 2 - ene 2 - Cyclohexylbutan - 2 - ol

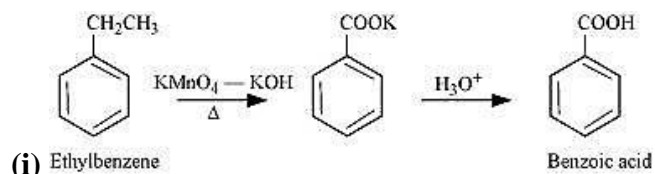
Q5 Give names of the reagents to bring about the following transformations:

- (i) Hexan-1-ol to hexanal (ii) Cyclohexanol to cyclohexanone
 (iii) p-Fluorotoluene to p-fluorobenzaldehyde
 (iv) Ethanenitrile to ethanol (v) Allyl alcohol to propenal
 (vi) But-2-ene to ethanol

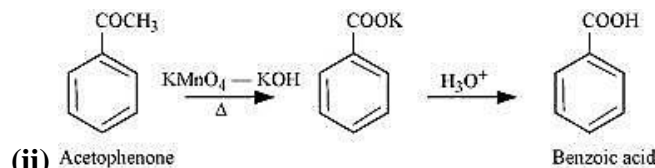
A

- (i) $C_5H_5NH^+CrO_3Cl$ (PCC) (ii) $K_2Cr_2O_7$ in acidic medium
 (iii) CrO_3 in the presence of acetic anhydride/
 1. CrO_2Cl_2 2. HOH (iv) (Diisobutyl)aluminium hydride (DIBAL-H)
 (v) PCC (vi) O_3/H_2O-Zn dust

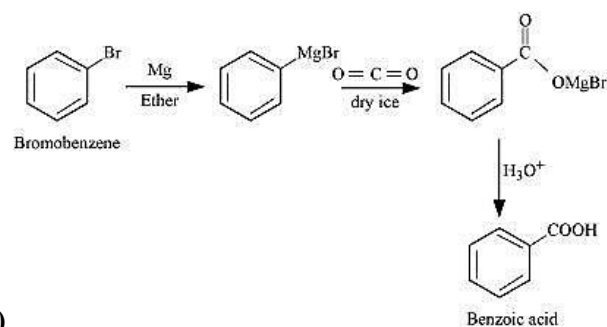
Q6 Show how each of the following compound can be converted into Ethylbenzene (ii) Acetophenone (iii) Bromobenzene (iv) Phenylethene (Styrene)



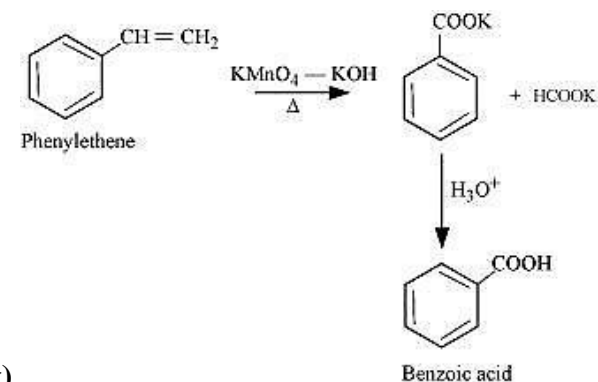
(i) Ethylbenzene



(ii) Acetophenone



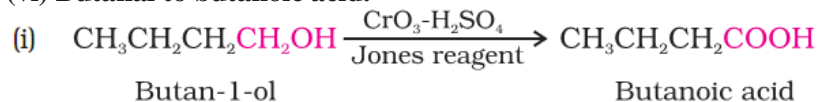
(iii)

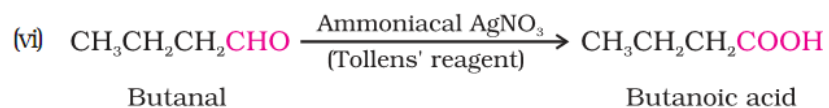
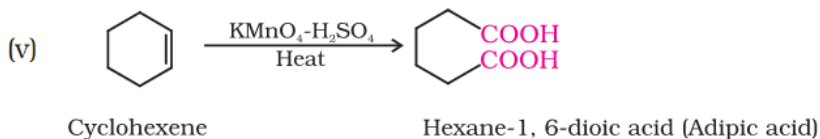
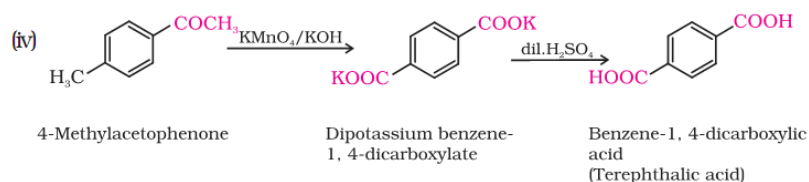
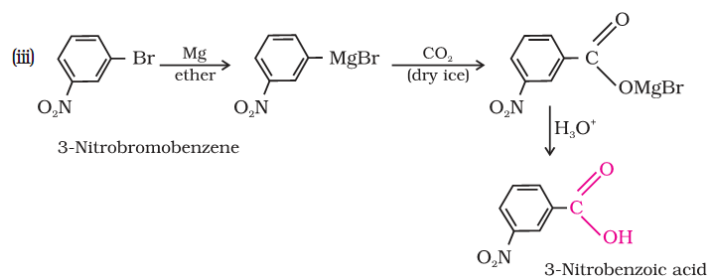
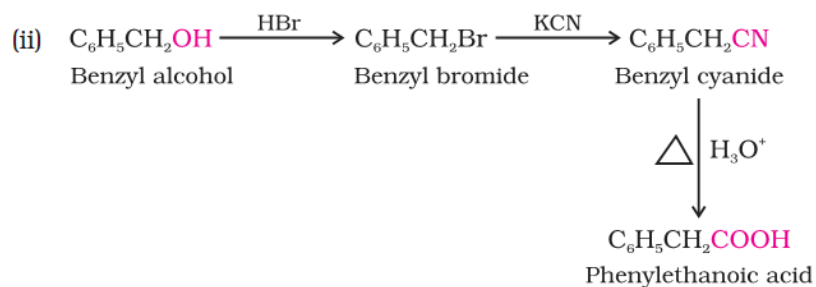


(iv)

Q7 Write chemical reactions to affect the following transformations:

- (i) Butan-1-ol to butanoic acid
 (ii) Benzyl alcohol to phenylethanoic acid
 (iii) 3-Nitrobromobenzene to 3-nitrobenzoic acid
 (iv) 4-Methylacetophenone to benzene-1,4-dicarboxylic acid
 (v) Cyclohexene to hexane-1,6-dioic acid
 (vi) Butanal to butanoic acid.

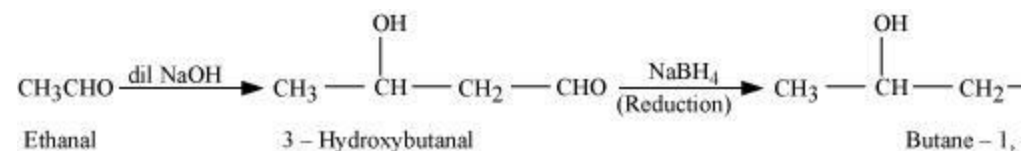




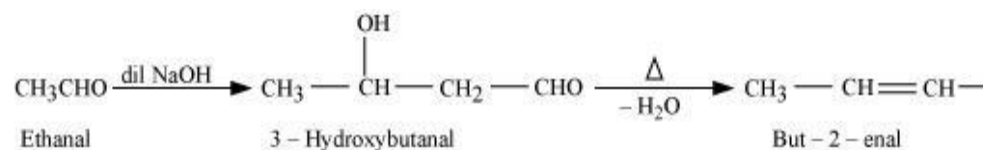
Q8 How will you convert ethanal into the following compounds?

(i) Butane-1, 3-diol (ii) But-2-enal (iii) But-2-enoic acid

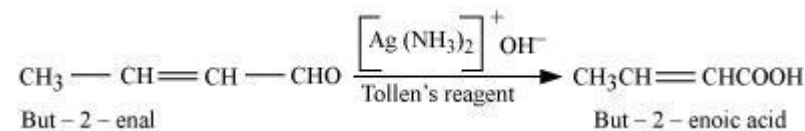
A (i) On treatment with dilute alkali, ethanal produces 3-hydroxybutanal which gives butane-1, 3-diol on reduction.



(ii) On treatment with dilute alkali, ethanal gives 3-hydroxybutanal which on heating produces but-2-enal.



(iii) When treated with Tollen's reagent, But-2-enal produced in the above reaction produces but-2-enoic acid.



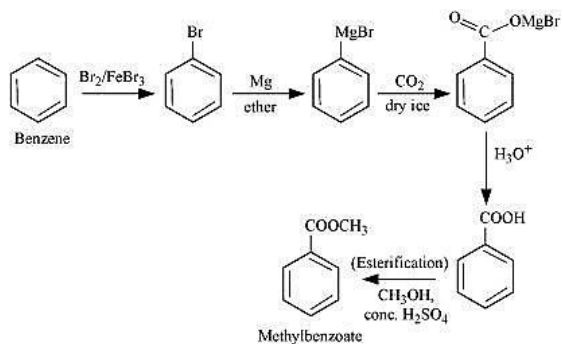
Q9 How will you prepare the following compounds from benzene? You may use any inorganic reagent and any organic reagent having not more than one carbon atom

(i) Methyl benzoate (ii) *m*-Nitrobenzoic acid

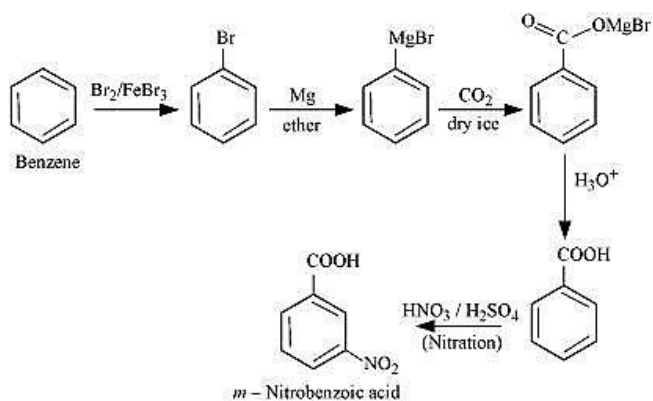
(iii) *p*-Nitrobenzoic acid (iv) Phenylacetic acid

(v) *p*-Nitrobenzaldehyde.

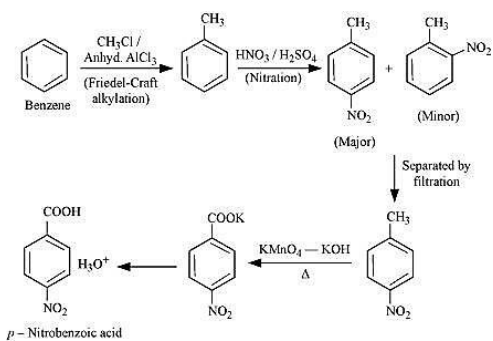
(i)



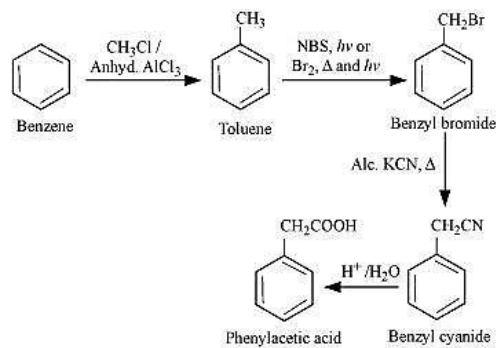
(ii)



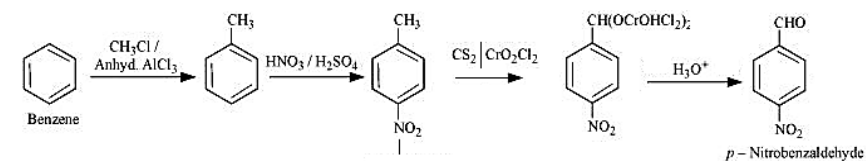
(iii)



(iv)



(v)



Q10 How will you bring about the following conversions in not more than two steps?

(i) Propanone to Propene

(ii) Benzoic acid to Benzaldehyde

(iii) Ethanol to 3-Hydroxybutanal

(iv) Benzene to *m*-Nitroacetophenone

(v) Benzaldehyde to Benzophenone

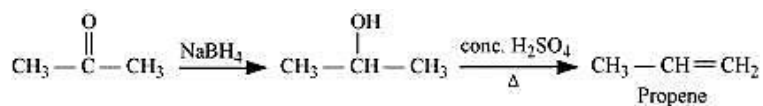
(vi) Bromobenzene to 1-Phenylethanol

(vii) Benzaldehyde to 3-Phenylpropan-1-ol

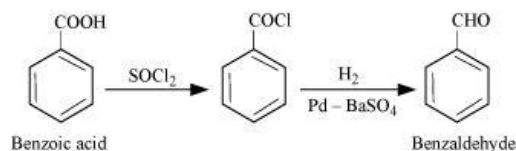
(viii) Benzaldehyde to α -Hydroxyphenylacetic acid

(ix) Benzoic acid to *m*- Nitrobenzyl alcohol

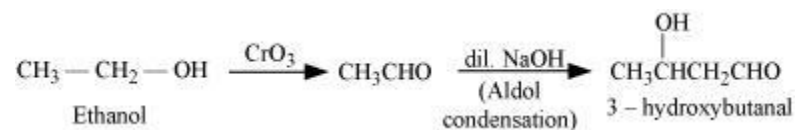
(i)



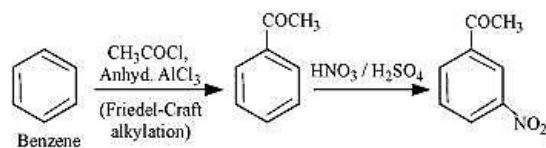
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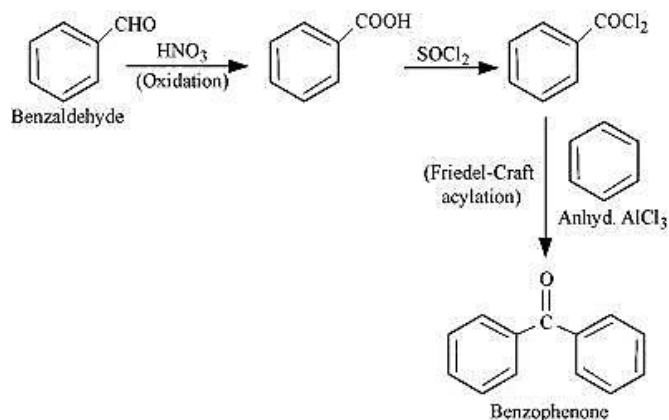
(iii)



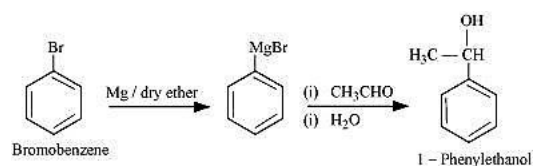
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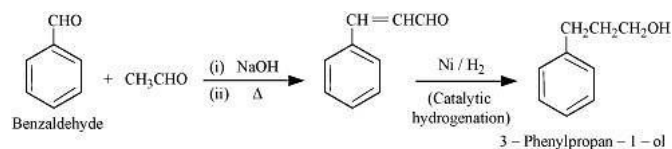
(v)



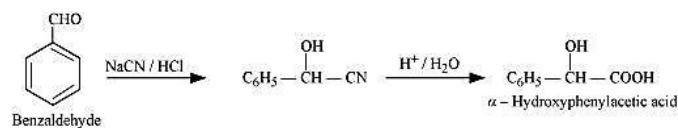
(vi)



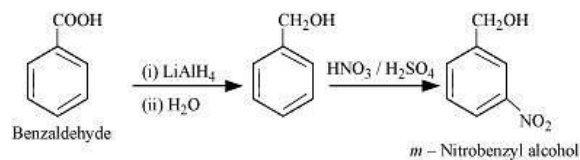
(vii)



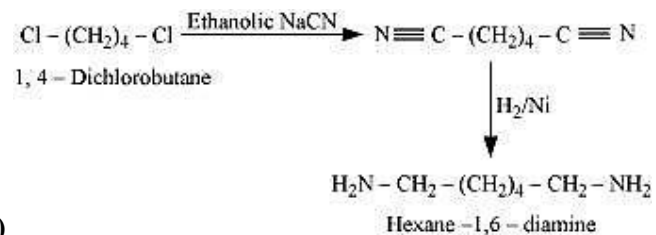
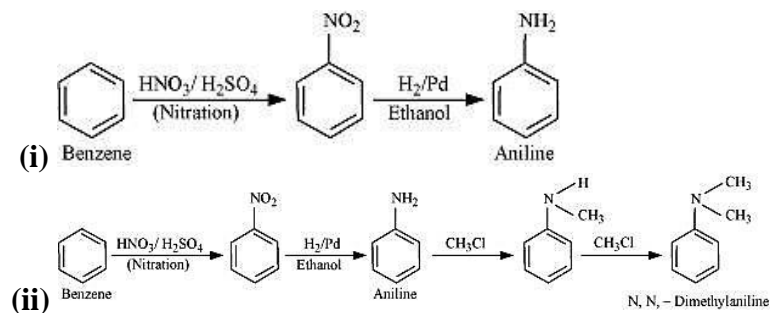
(viii)



(ix)



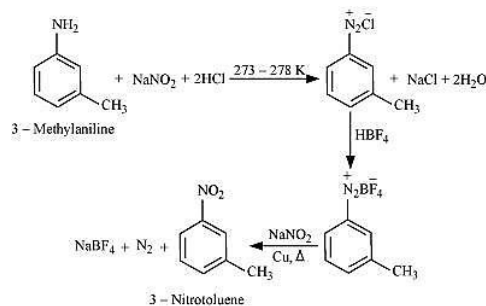
Q11 How will you convert? (i) Benzene into aniline (ii) Benzene into N, N-dimethylaniline (iii) Cl-(CH₂)₄-Cl into hexan-1, 6-diamine? [Answer](#)



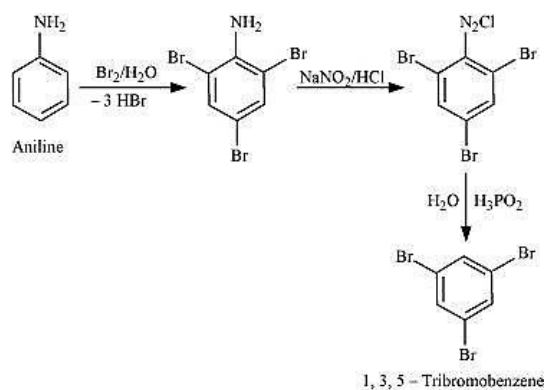
(iii)

Q12 Convert (i) 3-Methylaniline into 3-nitrotoluene. (ii) Aniline into 1,3,5 tribromobenzene.

[Answer](#) (i)



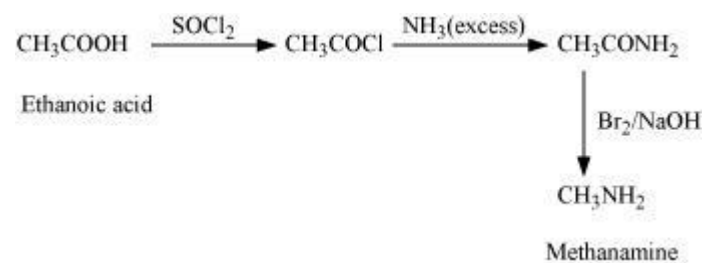
(ii)



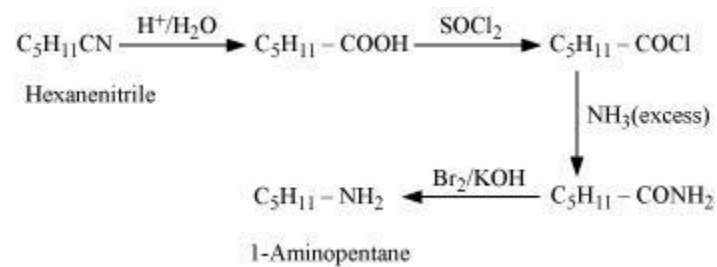
Q13 How will you convert:

- (i) Ethanoic acid into methanamine
- (ii) Hexanenitrile into 1-aminopentane
- (iii) Methanol to ethanoic acid
- (iv) Ethanamine into methanamine
- (v) Ethanoic acid into propanoic acid
- (vi) Methanamine into ethanamine
- (vii) Nitromethane into dimethylamine
- (viii) Propanoic acid into ethanoic acid

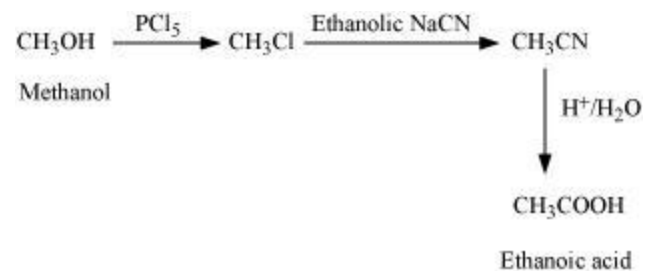
A (i)



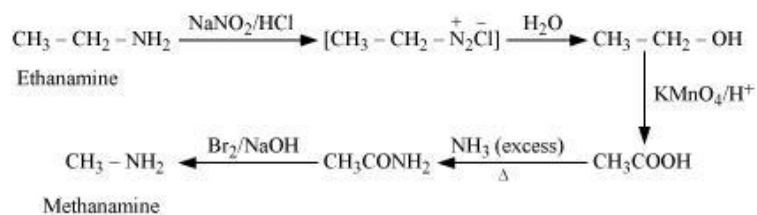
(ii)



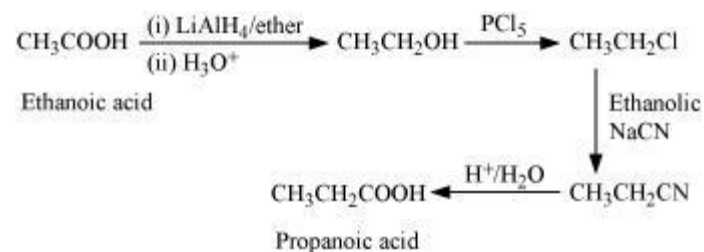
(iii)



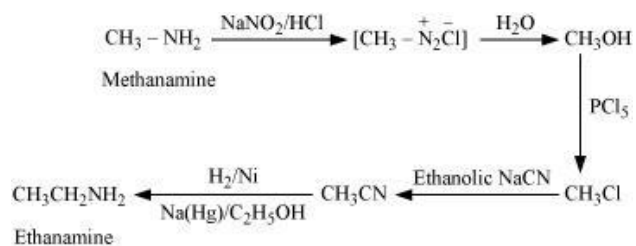
(iv)



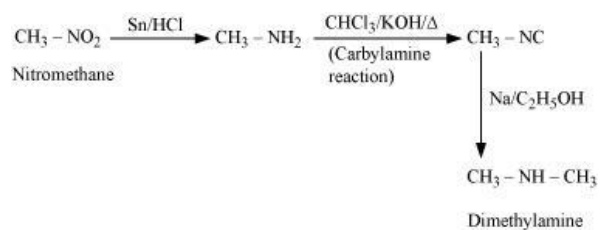
(v)



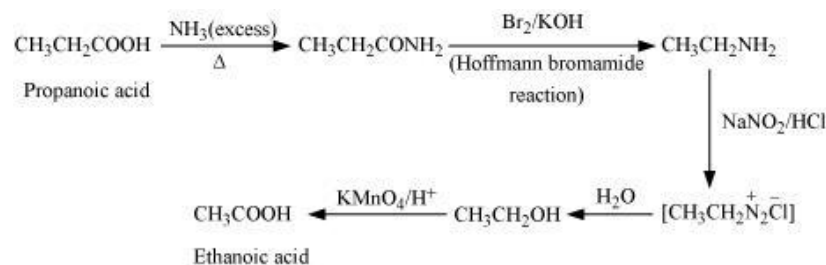
(vi)



(vii)



(viii)

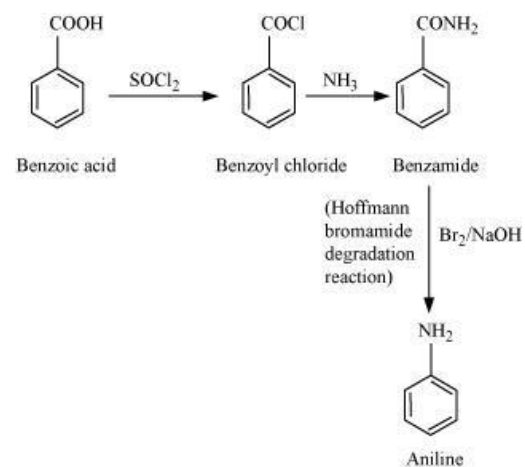
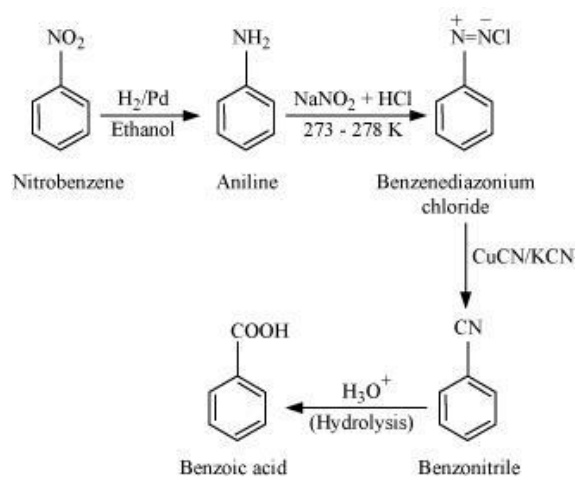


Q14 Accomplish the following conversions:

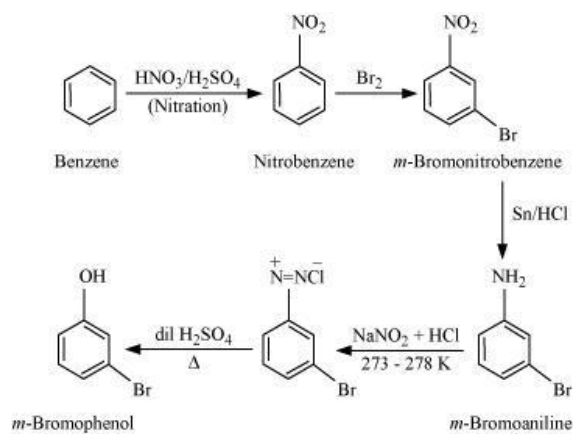
- (i) Nitrobenzene to benzoic acid
- (ii) Benzene to *m*-bromophenol
- (iii) Benzoic acid to aniline
- (iv) Aniline to 2,4,6-tribromofluorobenzene
- (v) Benzyl chloride to 2-phenylethanamine
- (vi) Chlorobenzene to *p*-chloroaniline
- (vii) Aniline to *p*-bromoaniline
- (viii) Benzamide to toluene
- (ix) Aniline to benzyl alcohol.

• [Answer](#)

(i)

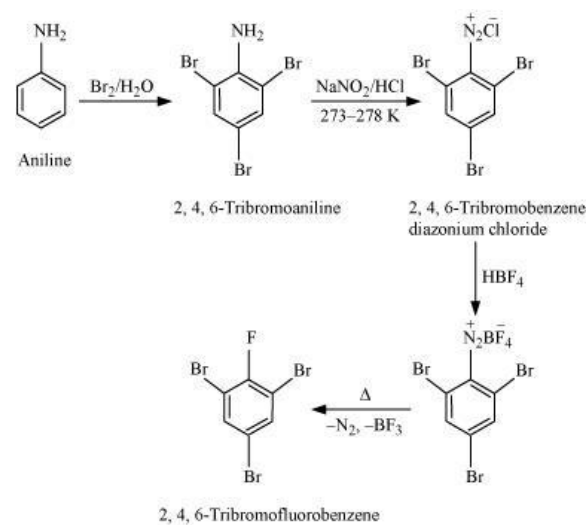


(ii)

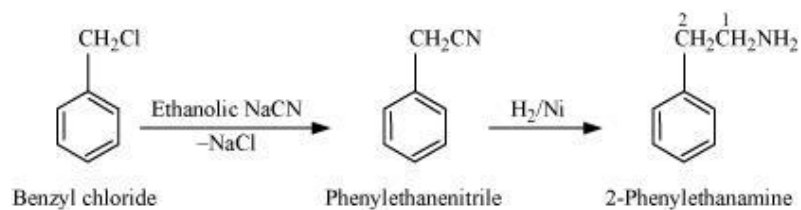


(iii)

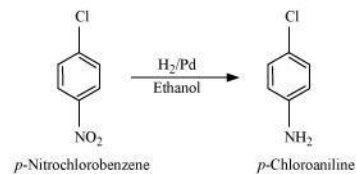
(iv)



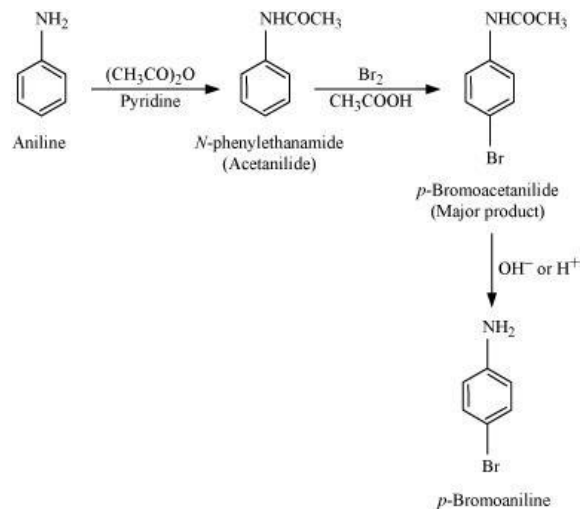
(v)



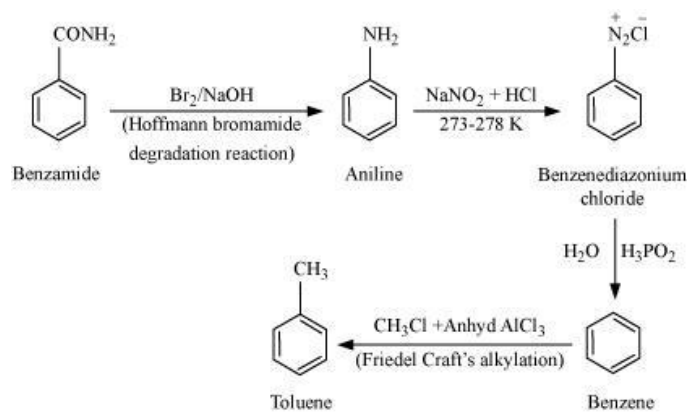
(vi)



(vii)



(viii)



(ix)

