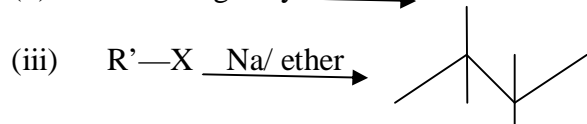
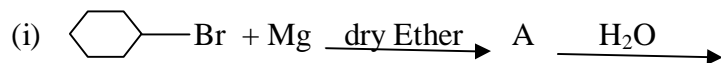
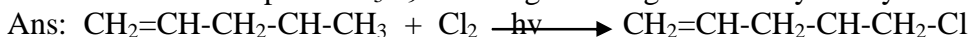


## ORGANIC CONVERSIONS (text book)

1. Identify the A,B,C,D,E,R & R' in the following:

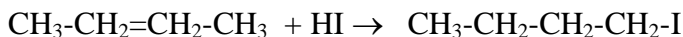


2. A hydrocarbon C<sub>5</sub>H<sub>10</sub> does not react with chlorine in dark but gives a single monochloro compound C<sub>5</sub>H<sub>9</sub>Cl in bright sun light. Identify the hydro carbon.

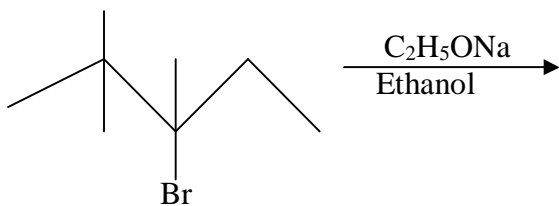
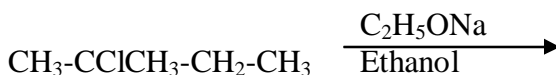
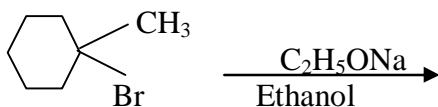


3. Write the equations for the preparation of 1-Iodo butane from :

(i) 1 - butanol    (ii) 1- chloro butane    (iii) But-1-ene



4. Predict the product from the following reactions:



1. How will you bring about 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.

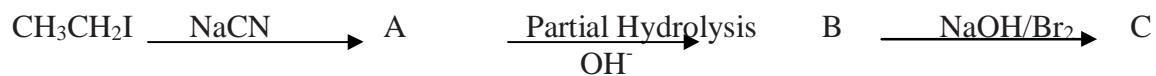
2. Propene to propan-1-ol
3. Ethanol to but-1-yne
4. 1-Bromopropane to 2-bromopropane
5. Toluene to benzyl alcohol
6. Benzene to 4-bromonitrobenzene
7. (vi) Benzyl alcohol to 2-phenylethanoic acid
8. Ethanol to propanenitrile
9. Aniline to chlorobenzene
10. 2-Chlorobutane to 3, 4-dimethylhexane
11. 2-Methyl-1-propene to 2-chloro-2-methylpropane
12. Ethyl chloride to propanoic acid
13. But-1-ene to n-butyliodide
14. 2-Chloropropane to 1-propanol
15. Isopropyl alcohol to iodoform
16. Chlorobenzene to *p*-nitrophenol
17. 2-Bromopropane to 1-bromopropane
18. Chloroethane to butane
19. Benzene to diphenyl
20. *tert*-Butyl bromide to isobutyl bromide
21. Aniline to phenylisocyanide
22. Phenol into *o*-nitro Phenol
23. Phenol into Tri nitro phenol
24. Propene → Propan-2-ol.
25. Benzyl chloride → Benzyl alcohol.
26. Ethyl magnesium chloride → Propan-1-ol.
27. Methyl magnesium bromide → 2-Methylpropan-2-ol.
28. Propanone to Propene
29. Benzoic acid to Benzaldehyde
30. (Ethanol to 3-Hydroxybutanal
31. Benzene to *m*-Nitroacetophenone
32. Benzaldehyde to Benzophenone
33. Bromobenzene to 1-Phenylethanol
34. Benzaldehyde to 3-Phenylpropan-1-ol
35. Benzaldehyde to  $\alpha$ -Hydroxyphenylacetic acid
36. (ix) Benzoic acid to *m*- Nitrobenzyl alcohol
37. Benzene into aniline
38. (ii) Benzene into N, N-dimethylaniline
39. Cl-(CH<sub>2</sub>)<sub>4</sub>-Cl into hexan-1,6-diamine?
40. Ethanoic acid into methanamine
41. Hexanenitrile into 1-aminopentane
42. Methanol to ethanoic acid
43. (iv) Ethanamine into methanamine
44. Ethanoic acid into propanoic acid
45. Methanamine into ethanamine

46. Nitromethane into dimethylamine
47. Propanoic acid into ethanoic acid?
48. Nitrobenzene to benzoic acid
49. Benzene to *m*-bromophenol
50. Benzoic acid to aniline
51. Aniline to 2,4,6-tribromofluorobenzene
52. Benzyl chloride to 2-phenylethanamine
53. Chlorobenzene to *p*-chloroaniline
54. Aniline to *p*-bromoaniline
55. Benzamide to toluene
56. Aniline to benzyl alcohol.

### Some Important Conversions

1. 2- Bromo Propane into 1 – Bromo Propane
2. Propan-2-ol into Propan -1- ol
3. Formaldehyde into Propan -1- ol
4. Acetaldehyde into Propan -2-ol
5. Acetone into t-Butyl alcohol
6. Aniline into Phenol
7. Cumene into Phenol
8. Phenol into salicylic Acid
9. Phenol into 2 – Acetoxy Benzoic Acid ( Aspirine)
10. Propan -1-ol into 2-Bromo Propane
11. Phenol into Benzaldehyde
12. Phenol into Salicylaldehyde
13. Ethano into diethyl ether
14. Ethyl chloride into propanal
15. Benzene into Benzaldehyde
16. Acetic acid to acetaldehyde
17. Acetic acid into acetone
18. Acetonitrile into Benzo phenone
19. Acetaldehyde into lactic acid
20. Acetaldehyde into crotonaldehyde (But-2enal)
21. Acetaldehyde into Butan-1-ol
22. Acetaldehyde into But-2enoic acid
23. Acetaldehyde into Butane-2,4 diol
24. Acetone into 4-methyl pent-3-ene-2-one
25. Benzene into Benzoic acid
26. Benzoic acid into Aniline
27. Chloro Benzene into Benzoic acid
28. Benzyl alcohol into Phenyl ethanoic acid
29. 3-nitro Bromo Benzene into 3-nitro Benzoic acid
30. 4-methyl Acetophenone into terephthalic acid
31. cyclo hexane into adipic acid
32. Phthalic acid into phthalamide
33. Acetic acid into Malonic acid
34. Acetic Acid into Alanine
35. Benzene into methyl Benzoate
36. Benzene into *m*-nitro Benzoic acid

37. Benzene into p-nitro Benzoic acid
38. Benzene into Phynyl Acetic acid
39. Benzene into p-nitro Benzaldehyde
40. Benzene into Aneline
41. Ethyl chloride to propanamine
42. Ethyl amine into Ethyl Carbyl amine
43. Aneline into 4-bromo Aneline
44. Aneline into 4-Nitro Anelien
45. Aneline into Sulphanilic acid
46. Aneline into Acetanilide
47. Phenol into Phenyl Acetate
48. Aneline into Floro Benzene
49. Aneline into Nitro Benzene
50. Aneline into Phenol
51. Aneline into Benzoic Acid
52. Aneline into Benzene
53. 4-Nitro Toluene into 2-Bromo Benzoic Acid
54. 3-methyl Aneline into 3-Nitro Toluene
55. Acetic Acid to Methanol
56. Ethyl Bromide into Propan-1-ol
57. Benzamide into Toluene
58. Aneline into Benzyl alcohol
59. Benzoic Acid into Aneline
60. Benzene into m-bromo phenol
61. Propanoic acid into Ethanoic acid
62. Methanamine into Ethanamine
63. Ethanoic Acid into Propanoic Acid
64. Ethanamine into Methanamine
65. Benzoic Acid into m-nitro Benzyl alcohol
66. Benzaldehyde into alpha hydroxyl phenyl Acetic acid
67. Benzaldehyde into 3-Phenyl Propan-1-ol
68. Benzaldehyde into Benzophenone
69. Benzene into m-nitro Acetophenone
70. Propanone into Propene
71. Ethyl Chloride into Propanoic acid
72. Ethanol into Propanol
73. Ethanol into Propanoic Acid
74. Toluene into Benzyl alcohol
75. Ethanol into But-1-yne
76. Propene into Propyne



Diazonium Chloride into Benzamide  
 Ethyl Bromide into Propan-1-ol  
 Acetic Acid into Methanol

## SOME WORD PROBLEMS

1. Write structural formulae of the organic compounds 'A', 'B', 'C' and 'D' in the following sequence of reactions: 'A' +  $\text{CH}_3\text{MgBr} \xrightarrow{\text{H}_2\text{O}}$   $\text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{CH}_3 \xrightarrow{\text{conc. H}_2\text{SO}_4}$  'B'  $\xrightarrow{\text{Br}_2}$  'C'  $\xrightarrow{\text{alc. KOH}}$  'D'
2. Etherical solution of an organic compound 'A' when heated with magnesium gave 'B'. 'B' on treatment with ethanal followed by acid hydrolysis gave 2-propanol. Identify the compound 'A'. what is 'B' known as?
3. A organic compound 'A' (molecular formula  $\text{C}_3\text{H}_6\text{O}$ ) is resistant to oxidation but forms a compound 'B' ( $\text{C}_3\text{H}_8\text{O}$ ) on reduction. 'B' reacts with HBr to form a bromide 'C' which on treatment with alcoholic KOH forms an alkene 'D' ( $\text{C}_3\text{H}_6$ ). Deduce the structures of A,B,C and D.
4. A compound 'A' which has characteristic odour, on treatment with NaOH forms two compounds 'B' and 'C'. compound 'B' has the molecular formula  $\text{C}_7\text{H}_8\text{O}$  which on oxidation gives back compound 'A'. Compound 'C' is the sodium salt of an acid, 'C' when heated with soda lime yields an aromatic hydrocarbon 'D'. Deduce the structures of A,B,C and D.
5. An organic compound 'A' has the molecular formula  $\text{C}_5\text{H}_{10}\text{O}$ . it does not reduce Fehling solution but forms a bisulphate compound. It also gives positive iodoform test. What are possible structures of 'A'?
6. A compound 'A' with molecular formula  $\text{C}_5\text{H}_{10}\text{O}$  gave a positive 2,4-DNP test but a negative Tollen's test. It was oxidized to carboxylic acid 'B' with molecular formula  $\text{C}_3\text{H}_6\text{O}_2$ . Sodium salt of 'B' gave a hydrocarbon 'C' on Kolbe's electrolytic reduction. Identify A,B and C and write the chemical equations for the reaction.
7. When phenol heated with Zn it forms 'A'. 'A' converts in to 'B' when reacts with conc.  $\text{HNO}_3$  in presence of sulphuric acid. 'B' converts in to 'C' when it reacts with  $\text{Br}_2$ . 'C' converts into 'E' by hydrogenation followed by reaction with nitrous acid/HCl. Finally it converts into 'F' by acidic hydrolysis. Identify A,B,C,D,E and F.
8. An aliphatic compound 'A' with a molecular formula of  $\text{C}_3\text{H}_6\text{O}$  reacts with phenyl hydrazine to give compound 'B'. Reaction of 'A' with  $\text{I}_2$  in alkaline medium on warming, gives a yellow ppt 'C'. Identify compound A,B and C.
9. Two moles of organic compound 'A' on treatment with a strong base gives two compound B and C. Compound 'B' on hydrogenation with Cu gives 'A' while acidification of C yields carboxylic acid 'D', having molecular formula of  $\text{CH}_2\text{O}_2$ . identify the compounds A,B,C and D.
10. An organic compound 'A' having molecular formula  $\text{C}_8\text{H}_{16}\text{O}$  was hydrolysed with dilute sulphuric acid to give a carboxylic acid 'B' and an alcohol 'C'. oxidation of 'C' with chromic acid produces 'B'. Write IUPAC names for possible structures of 'A' and equations for the reactions involved.
11. A compound 'A' of molecular formula  $\text{C}_3\text{H}_7\text{O}_2\text{N}$  on reaction with Fe and conc. HCl gives a compound 'B' of molecular formula  $\text{C}_3\text{H}_9\text{N}$ . compound 'B' on treatment with  $\text{NaNO}_2$  and HCl gives another compound 'C' of molecular formula  $\text{C}_3\text{H}_8\text{O}$ . Compound 'C' gives effervescence with Na. on oxidation with  $\text{CrO}_3$ , the compound 'C' gives a saturated aldehyde containing three carbon atoms. Deduce the structures of A,B and C and write the equations for the reactions involved.

12. A compound 'X' having molecular formula  $C_3H_7NO$ , reacts with  $Br_2$  in presence of NaOH gives compound 'X'. the compound 'X' reacts with  $HNO_2$  to form ethanol and  $N_2$  gas. Identify the compound X and Y and write the reactions involved.
13. An aliphatic compound 'A' with molecular formula  $C_2H_3Cl$  on treatment with AgCN gives two isomeric compounds of unequal amounts with the molecular formula  $C_3H_3N$ . The minor of these two products on complete reduction with  $H_2$  in the presence of Ni gives a compound 'B' with a molecular formula  $C_3H_9N$ . identify the compounds A,B and write the reactions involved.
14. Iodomethane reacts with KCN to form a major product 'A'. Compound 'A' on reduction in presence of  $LiAlH_4$  forms a higher amine 'B'. Compound B on treatment with  $CuCl_2$  forms a blue colour complex 'C'. Identify the compounds A,B and C.
15. An organic compound 'A' having molecular formula  $C_2H_3N$  on reduction gave another compound 'B'. The Compound 'B' on treatment with  $HNO_2$  gave ethyl alcohol. 'B' on warming with  $CHCl_3$  and alcoholic potash gave an offensive smelling substance 'C'. Identify A,B and C.
16. Two isomeric compounds A and B having molecular formula  $C_4H_{11}N$ , both lose  $N_2$  on treatment with  $HNO_2$  and gives compound C and D respectively. C is resistant to oxidation but immediately responds to Lucas reagent, whereas 'D' responds to Lucas reagent after 5 minutes and gives a positive iodoform test. Identify A and B.

Primary alkyl halide  $C_4H_9Br$  (a) reacted with alcoholic KOH to give compound (b). Compound (b) is reacted with HBr to give (c) which is an isomer of (a). When (a) is reacted with sodium metal it gives compound (d),  $C_8H_{18}$  which is different from the compound formed when n-butyl bromide is reacted with sodium. Give the structural formula of (a) and write the equations for all the reactions.

An organic compound with the molecular formula  $C_9H_{10}O$  forms 2,4-DNP derivative, reduces Tollens' reagent and undergoes Cannizzaro reaction. On vigorous oxidation, it gives 1,2-benzenedicarboxylic acid. Identify the compound.

An organic compound (A) (molecular formula  $C_8H_{16}O_2$ ) was hydrolysed with dilute sulphuric acid to give a carboxylic acid (B) and an alcohol (C). Oxidation of (C) with chromic acid produced (B). (C) on dehydration gives but-1-ene. Write equations for the reactions involved.

An organic compound contains 69.77% carbon, 11.63% hydrogen and rest oxygen. The molecular mass of the compound is 86. It does not reduce Tollens' reagent but forms an addition compound with sodium hydrogensulphite and give positive iodoform test. On vigorous oxidation it gives ethanoic and propanoic acid. Write the possible structure of the compound.

An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compound 'B' which on heating with  $Br_2$  and KOH forms a compound 'C' of molecular formula  $C_6H_7N$ . Write the structures and IUPAC names of compounds A, B and C.

\*\*\*\*\*