

## 15.1 ALIPHATIC NITRO COMPOUNDS

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### Introduction

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What happens when a Haloalkane (alkyl halide) is treated separately with silver nitrite and potassium nitrite?

1. Why is the nitro group called an ambident group? 2

### Classification

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#### Nomenclature (Upto Nitrobutanes)

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#### Isomerism

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2. Why nitro group is called an ambident group? 1
1. The number of possible isomeric nitro compounds with molecular formula  $C_4H_9O_2N$  is
- a. 2      b. 3      c. 4      d. 5

#### General methods of preparation

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3. Give a reaction to prepare Nitroalkane from haloalkane. 1

#### Physical properties

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#### Chemical properties

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##### 1. Reduction:

4. How does Nitroalkane react with  $Sn/HCl$ ? 1
5. How does Nitroalkane react with  $Zn/NH_4Cl$ ? 1
6. How is following conversion carried out: Nitroethane to N-ethyl hydroxyl amine? 1
1.  $-NO_2$  group is an example of
- a. Ambident group      d. Amphoteric group
- b. Reducing group      c. Auxochrome
2. Nitroethane and ethyl nitrite are
- a. Tautomers      c. Metamers
- b. Optical isomers      d. Functional isomers
3. Ethyl bromide reacts with alcoholic silver nitrite give
- a. Nitrolic acid      c. Pseudonitrol
- b. Ethylnitrite      d. Nitroethane
4. Primary nitroalkanes react with nitrous acid to form nitrolic acids which dissolve in aqueous NaOH giving
- a. Yellow colour      c. Intense green colour

- b. Blue colour                      d. Blood red colour

5. You are provided with two organic compounds X and Y with molecular formula  $C_3H_7NO_2$ . The compounds X and Y probably are;
- Aminoethane and ethylnitrite
  - Nitroethane ethylnitrate
  - Nitroethane and ethylnitrolate
  - Nitroethane and ethylnitrite
6. You are provided with an organic compound X with molecular formula  $C_2H_5Cl$ . The compound X reacts further with alc.  $AgNO_2$  to produce a compound Y. The compounds X and Y probably are;
- Chloroethane and nitroethane
  - Chloroethane and nitromethane
  - Chloromethane and nitroethane
  - Chloroethane and ethylnitrite
7. A 2 – carbon alkene is treated with HBr to produce P. The compound P further reacts with alc.  $NaNO_2$  to produce a compound Q. Compounds P and Q probably are;
- Bromoethane and nitroethane
  - Bromoethane and aminoethane
  - Bromoethane and ethylnitrite
  - Chloroethane and ethylnitrite
8. Ethanol is treated with  $SOCl_2$  to obtain an organic compound A. The compound A reaction with alc.  $AgNO_2$  gives B. Further, compound B yields compound C on heating with  $Sn/HCl$ . The compounds A, B and C respectively are;
- Chloroethane, nitroethane and ethanenitrile
  - Chloroethane, aminoethane and nitroethane
  - Chloroethane, nitroethane and ethanamide
  - Chloroethane, nitroethane and aminoethane
9. Propene reacts with HBr in presence of peroxides to produce X. The compound X is treated with alc.  $AgNO_2$  to give Y. The compound Y on heating with  $Zn/H_2O$  yields Z. The compounds X, Y and Z probably are;
- 1-bromopropane, 1-nitropropane and propylhydroxylamine
  - 1-bromopropane, 1-nitropropane and 1-aminopropane
  - 2-bromopropane, 2-nitropropane and 2-aminopropane
  - 2-bromopropane, 2-nitropropane and propylhydroxylamine
10. Nitroethane undergoes reduction to produce ethylhydroxylamine. The reagents with which this reduction can be achieved is/are;
- Both  $Zn/H_2O$  and Ni or Pt
  - $Zn/H_2O$
  - $Sn/HCl$
  - Both  $Sn/HCl$  and Ni or Pt

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