

## NITROGEN COMPOUNDS

Std. XII  
CHEMISTRY

Time: 1½ Hrs  
Max.Marks: 75

## PART - I

Choose and write the correct answer:

(15 × 1 = 15)

- Bromo ethane reacts with silver nitrite to give
  - $C_2H_5NO_2$
  - $C_2H_5-O-NO$
  - $C_2H_5Ag + NaBr$
  - $C_2H_5NC$
- The isomerism exhibited by  $CH_3CH_2-N$  and  $CH_3CH_2-O-N=O$  is
  - tautomerism
  - metamerism
  - functional
  - position
- The compound that is most reactive towards electrophilic nitration is
  - benzene
  - benzoic acid
  - toluene
  - nitro benzene
- Which of the following compounds has the smell of bitter almonds?
  - nitrobenzene
  - aniline
  - nitromethane
  - benzaldehyde
- Which of the following does not undergo diazotisation?
  - benzyl amine
  - m-toluidine
  - p-amino phenol
  - aniline
- Nitromethane reacts with alkali due to
  - its neutral nature
  - its acidic nature
  - its high molar mass
  - its electronegativity
- The basic nature of amines in the aqueous solution form is in the order
  - $3^\circ > 1^\circ > 2^\circ > NH_3$
  - $3^\circ > 2^\circ > 1^\circ > NH_3$
  - $NH_3 > 3^\circ > 1^\circ > 2^\circ$
  - $2^\circ > 1^\circ > 3^\circ > NH_3$
- Aniline on oxidation gives
  - a cyclic unsaturated diketone
  - anilic acid
  - anilinium hydroxide
  - does not undergo oxidation
- The aniline that cannot undergo coupling reaction is
  - O - amino toluene
  - aniline
  - p-hydroxy aniline
  - phenyl amino methane
- Tertiary amine is less basic than secondary amine because of
  - inductive effect
  - steric effect
  - peroxide effect
  - resonance effect
- Gomberg reaction is used to prepare
  - biphenyl
  - nitrobenzene
  - chloro benzene
  - benzonitrile
- Phenyl acetate can be prepared from diazonium chloride using
  - $CH_3OH$
  - $CH_3COOH$
  - $CH_3COOCH_3$
  - $CH_3OCH_3$

13. The test for aniline is  
 a Fehling's test  
 c Bromination test  
 b Ferric Chloride test  
 d Riemer - Tiemann test
14. Stephan's reaction involves the use of  
 a  $\text{RCN} + \text{SnCl}_2 + \text{HCl}$   
 c  $\text{RNH}_2 + \text{COCl}_2$   
 b  $\text{RCN} + \text{HCl} + \text{H}_2\text{O}$   
 d  $\text{RNH}_2 + \text{CS}_2$
15. Amines have  
 a sweet smell  
 c rotten egg smell  
 b fishy odour  
 d garlic odour

### PART - II

Answer all the questions:

(10 × 3 = 30)

16. Explain tautomerism with an example.
17. How is chloropicrin prepared?
18. Write a note on diazotisation reaction.
19. How is mixture of amines prepared by using ethyl alcohol?
20. Write a test for primary amine.
21. Write the name and structure of four isomeric amines having the molecular formula  $\text{C}_3\text{H}_9\text{N}$ .
22. Write a note on the basicity of amines.
23. What happens when aniline is treated with bromine?
24. Write the nitration of aniline.
25. Mention the uses of nitromethane.

### PART - III

Answer all the questions:

(4 × 5 = 20)

26. Distinguish primary, secondary and tertiary amines
27. Explain the mechanism of nitration of benzene
28. Write the following naming reactions.  
 (a) Mustard oil reaction  
 (b) Schotten - Baumann reaction  
 (c) Schiff's base
29. Differentiate the properties of ethylamine with aniline

### PART - IV

(1 × 10 = 10)

Answer the following:

30. (a) An Organic compound (A) with molecular formula  $\text{C}_6\text{H}_7\text{N}$  gives (B) with  $\text{HNO}_2/\text{HCl}$  at 273K. The aqueous solution of (B) on heating gives compound (C) which gives violet colour with neutral  $\text{FeCl}_3$ . Identify the compounds A, B and C and write the equations.
- (b) Write the following naming reactions  
 (i) Hoffmann Bromamide reaction  
 (ii) Gabriel phthalimide reaction.