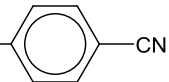
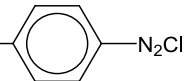
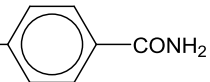
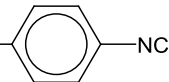
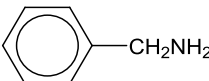
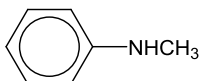
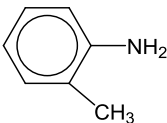
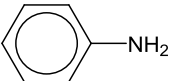
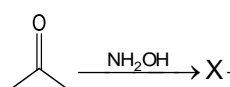


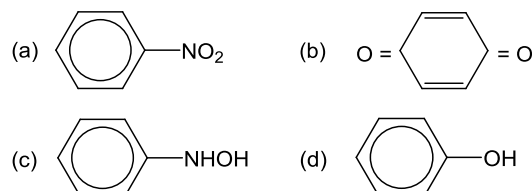
## TOPIC : ORGANIC COMPOUNDS CONTAINING NITROGEN

1. When a primary amine reacts with chloroform in ethanolic KOH, then the product is a/an  
 (a) isocyanide (b) aldehyde  
 (c) cyanide (d) alcohol
2. The reaction of chloroform with alcoholic KOH and p-toluidine forms  
 (a)   
 (b)   
 (c)   
 (d) 
3. Which of the following is a strongest base ?  
 (a)  (b)   
 (c)  (d) 
4. Which of the following an reaction with chloroform produces carbylamine ?  
 (a) p-amine (b) sec-amine  
 (c) tert-amine (d) All of the above
5. Which attacking species is generated from nitrating mixture during the nitration of phenol ?  
 (a)  $\text{NO}_2^-$  (b)  $\text{NO}_2^+$   
 (c)  $\text{NO}_2$  free radical (d)  $\text{N}_2\text{O}_3$
6. During coupling reaction of benzene diazonium chloride and aniline the pH of reaction medium should be approximately  
 (a) 1-2 (2) 9-10  
 (c) 4-5 (d) 7-8
7. Which of the following reagent can distinguish between  $1^\circ$  amine and  $2^\circ$  amine ?  
 (a)  $\text{Br}_2/\text{NaOH}$  (b)  $\text{NaNO}_2/\text{HCl}$   
 (c)  $\text{NH}_3$  (d)  $\text{HClO}_4$
8. Which is least reactive towards nitration ?  
 (a) Benzene (b) Nitrobenzene  
 (c) Chlorobenzene (d) Aniline
9. Which of the following is not a ambident nucleophile?  
 (a)  $\text{NO}_2^+$  (b)  $\text{NO}_2^-$   
 (c)  $\text{CN}^-$  (d)  $\text{SCN}^-$
10. The nitroalkane which cannot exhibit tautomerism is  
 (a)  $\text{CH}_3\text{NO}_2$  (b)  $\text{CH}_3\text{CH}_2\text{NO}_2$   
 (c)  $(\text{CH}_3)_3\text{CHNO}_2$  (d)  $(\text{CH}_3)_3\text{C} - \text{NO}_2$
11. Which of the following reagent reacts only with primary amines ?  
 (a)  $\text{NaNO}_2/\text{HCl}$  (b)  $\text{CH}_3\text{COCl}$   
 (c)  $\text{CH}_3\text{MgI}$  (d)  $\text{CH}_3\text{CHO}$
12. Which of the following exists as Zwitter ion structure ?  
 (a) p-aminobenzene sulphonic acid  
 (b) p-cresol  
 (c) picric acid  
 (d) salicylic acid
13. Hoffmann's Mustard oil reaction involves the use of  
 (a)  $1^\circ$  Amine with  $\text{CS}_2$  in  $\text{HgCl}_2$   
 (b)  $1^\circ$  Amine with  $\text{Br}_2/\text{KOH}$   
 (c)  $1^\circ$  Amine with  $\text{CHCl}_3/\text{KOH}$   
 (d)  $1^\circ$  Amine with  $\text{C}_6\text{H}_5\text{COCl}$
14. Which of the following is metamer of diethylamine ?  
 (a) 2-N-Methylaminopropane  
 (b) 1-N-Methyl propanamine  
 (c) 2-N-Methyl butanamine  
 (d) Both (a) and (b)
15. Dipole moment of cyanide and isocyanides are related as  
 (a)  $\mu_{(\text{RCN})} = \mu_{(\text{RNC})} \neq 0$  (b)  $\mu_{(\text{RCN})} > \mu_{(\text{RNC})}$   
 (c)  $\mu_{(\text{RCN})} = \mu_{(\text{RNC})} = 0$  (d)  $\mu_{(\text{RCN})} < \mu_{(\text{RNC})}$
16. Allyl cyanide contains  $\sigma$  and  $\pi$  bonds, as  
 (a)  $9\sigma$  and  $3\pi$  (b)  $9\sigma$  and  $9\pi$   
 (c)  $3\sigma$  and  $4\pi$  (d)  $5\sigma$  and  $7\pi$

17.  In the above sequence Y is

- (a) tert. amino (b) sec. amine  
(c) pri. amine (d) 2-Nitropropane

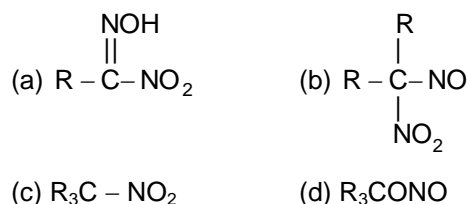
18. Oxidation of aniline with manganese dioxide and sulphuric acid produces



19. Which combination will give methyl isocyanate ?

- (a)  $\text{CH}_3\text{Cl} + (\text{O})$   
(b)  $\text{CH}_3\text{NH}_2 + \text{CH}_2\text{Cl}_2$   
(c)  $\text{CH}_3\text{NH}_2 + \text{COCl}_2$   
(d)  $\text{C}_2\text{H}_5\text{OH} + \text{COCl}$

20. Which of the following will give red colour with NaOH ?



21. Certain primary amino compound on treatment with X gave alkyl chloride,  $\text{N}_2$  and water. X can be

- (a)  $\text{CS}_2$  (b)  $\text{COCl}_2$   
(c)  $\text{NOCl}$  (d)  $\text{HNO}_2$

22. The order of increasing basic strength among m-toluidine (I), p-toluidine (II) and o-toluidene (III) is

- (a)  $\text{III} < \text{II} < \text{I}$   
(b)  $\text{II} < \text{III} < \text{I}$   
(c)  $\text{I} > \text{III} > \text{II}$   
(d)  $\text{III} > \text{II} > \text{I}$

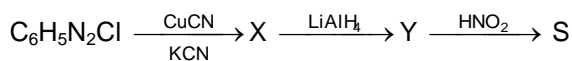
23. An organic compound A contains C, H, N and reacts with dilute HCl to form formic acid as one of the product. The compound A can be

- (a)  $\text{CH}_3\text{NC}$  (b)  $\text{CH}_3\text{CN}$   
(c)  $\text{C}_6\text{H}_5\text{NCO}$  (d)  $\text{C}_2\text{H}_5\text{CN}$

24. Deep blue colour formed by addition of copper (II) sulphate solution to ethyl amine is due to formation of

- (a) free  $\text{Cu}^{2+}$  ions in solution  
(b)  $(\text{NH}_4)_2\text{SO}_4$   
(c)  $[\text{Cu}(\text{C}_2\text{H}_5\text{NH}_2)_4]^{2+}$  ions  
(d)  $\text{Cu}(\text{OH})_9$

25. Identify S in the following sequence of reactions




- (a) Benzoic acid (b) Phenyl acetic acid  
(c) Benzyl alcohol (d) Benzamide

26. The total number of structural isomers of aromatic amines containing carbocyclic rings and having formula  $\text{C}_7\text{H}_9\text{N}$  is

- (a) 2 (b) 3  
(c) 4 (d) 5

27. Which of the following amine shows optical activity?

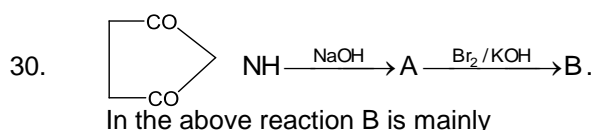
- (a) Isobutylamine (b) 2-Butanamine  
(c)  (d) n-butylamine

28. Aniline +  $\text{COCl}_2 \rightarrow ?$  The product of the reaction are

- (a) Phenyl cyanate (b) Phenyl isocyanate  
(c) Phenyl cyanide (d) Phenyl isocyanide

29. Which of the following product is formed when benzyl amine is oxidized with  $\text{KMnO}_4$ ?

- (a) p-benzoquinone (b) toluene  
(c) phenol (d) benzoic acid

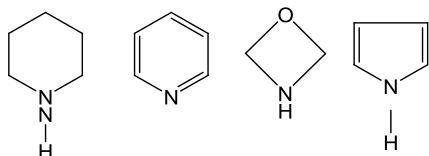


- (a)  $\beta$ -alanine (b)  $\alpha$ -alanine  
(c) Ethylenediamine (d)  $\gamma$ -aminobutyric acid

31. Ammonium salt of benzoic acid is heated strongly with  $\text{P}_2\text{O}_5$  and the product so formed is reduced and then treated with  $\text{NaNO}_2/\text{HCl}$  at low temperature. The total compound is

- (a) Benzene diazonium chloride  
(b) Benzyl alcohol  
(c) Phenol  
(d) Nitrosobenzene

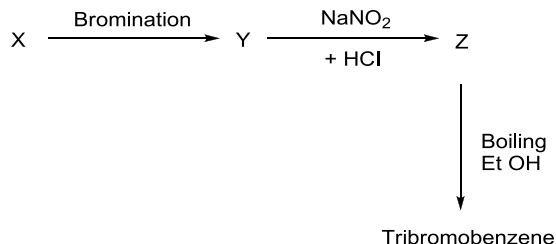
32. In the following compounds,



The order of basicity is :

- (a) IV > I > III > II      (b) III > I > IV > II  
(c) II > I > III > IV      (d) I > III > II > IV

33. In the following reaction X is



- (a) Benzoic acid      (b) Salicylic acid  
(c) Phenol      (d) Aniline

34.  $\text{C}_6\text{H}_5\text{COCl} \xrightarrow{\text{NH}_3} X \xrightarrow[\text{H}_2]{\text{P}_2\text{O}_6} Y \xrightarrow{\text{Ni}} Z$ . The end

product in the above sequence of reaction is

- (a) Benzoic acid      (b) Aniline  
(c) Benzyl amine      (d) Benzonitrile

35. One mole of ethylamine when reacts with nitrous acid will produce dinitrogen gas at  $0^\circ\text{C}$  and 1 atm pressure equal to

- (a) 1 L      (b) 22.4 L  
(c) 11.2 L      (d) 24.8 L

36. Which of the following is intermediate species in Hoffmann's degradation reaction for the preparation of primary amines ?

- (a)  $\text{RCONBr}_2$       (b)  $\text{R}-\text{N}=\text{C}=\text{O}$   
(c)  $\text{R}-\text{CN}$       (d)  $\text{R}-\text{CH}_2\text{NHBr}$

37. Benzene  $\xrightarrow[\text{Mixture}]{\text{Nitrating}}$  X  $\xrightarrow[\text{in strong acid}]{\text{Electrolysis}}$  Y.

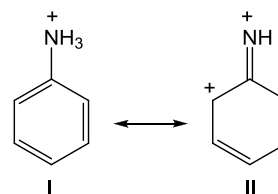
The substance Y, here is

- (a) Aniline      (b) Benzoic acid  
(c) p-aminophenol      (d) Azobenzene

38.  $\text{C}_6\text{H}_5\text{COOH} \xrightarrow[\text{Py}]{\text{SOCl}_2} A \xrightarrow{\text{NH}_3} B \xrightarrow{\text{P}_2\text{O}_5} C \xrightarrow{\text{H}_2/\text{Pd}} D$  In the above sequence D is

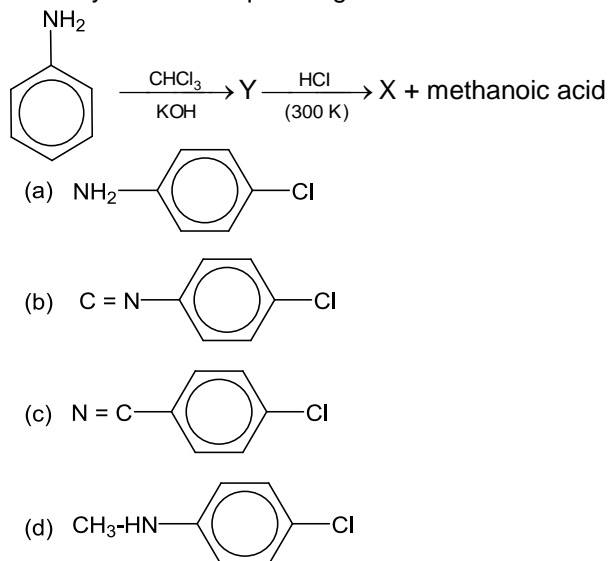
- (a) Aniline      (b) Benzylamine  
(c) Phenol      (d) Cyclohexylamine

39. Pick up the correct statement about the following resonating forms of anilinium ion



- (a) II is not an acceptable canonical structure because carbonium ions are less stable than ammonium ions  
(b) II is not an acceptable canonical structure because it is non-aromatic  
(c) II is not an acceptable canonical structure because the nitrogen has 10 valence electrons  
(d) Both the structure are acceptable canonical forms

40. Identify X in the sequence given below



**ANSWERS KEY**

<b>1</b>	A	<b>11</b>	D	<b>21</b>	C	<b>31</b>	B
<b>2</b>	D	<b>12</b>	A	<b>22</b>	C	<b>32</b>	D
<b>3</b>	A	<b>13</b>	A	<b>23</b>	A	<b>33</b>	D
<b>4</b>	A	<b>14</b>	D	<b>24</b>	C	<b>34</b>	C
<b>5</b>	B	<b>15</b>	B	<b>25</b>	C	<b>35</b>	B
<b>6</b>	C	<b>16</b>	A	<b>26</b>	D	<b>36</b>	B
<b>7</b>	B	<b>17</b>	C	<b>27</b>	B	<b>37</b>	C
<b>8</b>	B	<b>18</b>	B	<b>28</b>	B	<b>38</b>	B
<b>9</b>	A	<b>19</b>	C	<b>29</b>	D	<b>39</b>	C
<b>10</b>	D	<b>20</b>	A	<b>30</b>	A	<b>40</b>	A