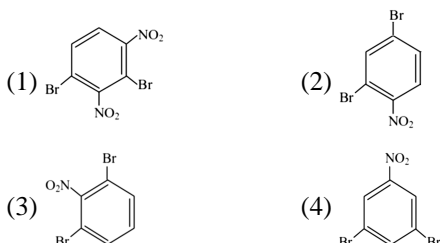
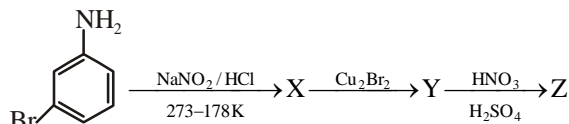


Chemistry NTA Abhyas 31-35

01. Which one of the following is the correct statement? [NTA Abhyas-31-43]
- (1) Boric acid is a protonic acid
 - (2) Both Tl^{3+} and Al^{3+} ions act as oxidizing agent in aqueous solution.
 - (3) Hydrogen bonding in H_3BO_3 gives it a layered structure
 - (4) $B(OEt)_3$ imparts blue colour to the burner flame.

02. The major product Z obtained in the following reaction scheme is [NTA Abhyas-31-45]



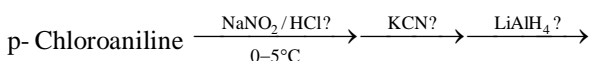
03. A diatomic molecule has a dipole moment of 1.2 D. If its bond length is equal to 10^{-10} m then the fraction of an electronic charge on each atom will be [NTA Abhyas-31-42]

- (1) 45 %
- (2) 55 %
- (3) 75 %
- (4) 25 %

04. Decreasing order of reactivity in Williamson's ether synthesis of the following. [NTA Abhyas-31-37]

- I. Me_3CCH_2Br II. $CH_3CH_2CH_2Br$
 III. $CH_2=CHCH_2Cl$ IV. $CH_3CH_2CH_2CH_2Cl$
- (1) I > II > IV > III
 - (2) III > II > IV > I
 - (3) I > III > II > IV
 - (4) II > III > IV > I

05. The final product in the following reaction sequence is



- [NTA Abhyas-31-35]
- (1) p-chlorophenol
 - (2) p-chlorobenzamide
 - (3) p-chlorobenzylamine
 - (4) p-chlorobenzyl alcohol

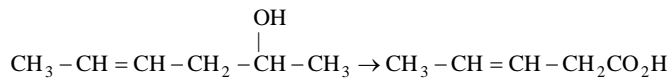
06. The soldiers of Napoleon army while at Alps during freezing winter suffered a serious problem as regards to the tin buttons of their uniforms. White metallic tin buttons got converted to grey powder. This transformation is related to [NTA Abhyas-32-29]

- (1) an interaction with nitrogen of the air at very low temperatures
- (2) a change in the crystalline structure of tin
- (3) an interaction with water vapour contained in the humid air
- (4) a change in the partial pressure of oxygen in the air

07. When one of the following is likely to give a precipitate with $AgNO_3$ solution? [NTA Abhyas-32-32]

- (1) $(CH_3)_3CCl$
- (2) $CHCl_3$
- (3) $CH_2=CH-Cl$
- (4) CCl_4

08. Which is the most suitable reagent for the following transformation? [NTA Abhyas-32-41]



- (1) alkaline $KMnO_4$
- (2) $I_2/NaOH$
- (3) Tollen's reagent
- (4) CrO_3/CS_2

09. Arrange the carbanions

$(CH_3)_3\bar{C}$, $\bar{C}Cl_3$, $(CH_3)_2\bar{C}H$, $C_6H_5\bar{C}H_2$ in order of their decreasing stability: [NTA Abhyas-32-42]

- (1) $(CH_3)_2\bar{C}H > \bar{C}Cl_3 > C_6H_5\bar{C}H_2 > (CH_3)_3\bar{C}$
- (2) $\bar{C}Cl_3 > C_6H_5\bar{C}H_2 > (CH_3)_2\bar{C}H > (CH_3)_3\bar{C}$
- (3) $(CH_3)_3\bar{C} > (CH_3)_2\bar{C}H > C_6H_5\bar{C}H_2 > \bar{C}Cl_3$
- (4) $(CH_3)_3\bar{C} > (CH_3)_2\bar{C}H > \bar{C}H_2 > \bar{C}Cl_3$

10. Total number of geometrical isomers for the complex $[RhCl(CO)(PPh_3)(NH_3)]$ is- [NTA Abhyas-33-09]

- (1) 1
- (2) 2
- (3) 3
- (4) 4

11. Alcohols react with Grignard reagent to form [NTA Abhyas-33-16]

- (1) Alkanes
- (2) Alkenes
- (3) Alkynes
- (4) All of these

12. The aqueous solution of D-glucose contains two forms of D-glucopyranose, which are: [NTA Abhyas-33-17]

- (1) Tautomers
- (2) Anomers
- (3) Epimers
- (4) Enantiomers

13. Electrolytic reduction of nitrobenzene in weakly acidic medium gives [NTA Abhyas-33-24]

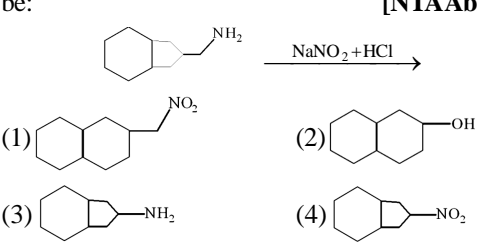
- (1) N-phenylhydroxylamine
- (2) Nitrosobenzene
- (3) Aniline
- (4) p-hydroxyaniline

14. Which of the following species is non-polar? [NTA Abhyas-33-28]

- (1) trans-pent-2-ene
- (2) cis-pent-2-ene
- (3) cis-1-chloropropene
- (4) SF_6

15. The chemical formula of Prussian blue is formed by the reaction of ferric ion and ferrocyanide is [NTA Abhyas-34-11]

- (1) $K_4[Fe(CN)_6]$
- (2) $Na_4[Fe(CN)_6]$
- (3) $Fe_4[Fe(CN)_6]_3$
- (4) None of these

16. Which of the following has the regular tetrahedral structure? [NTA Abhyas-34-24]
 (1) BF_4^- (2) SF_4
 (3) $[\text{Ni}(\text{CN})_4]^{2-}$ (4) XeF_4
17. Which one of the following statements regarding helium is incorrect? [NTA Abhyas-34-27]
 (1) It is used to produce and sustain powerful superconducting magnets
 (2) It is used to fill gas balloons instead of hydrogen because it is lighter and non-inflammable
 (3) It is used as a cryogenic agent for carrying out experiments at low temperatures
 (4) It is used in gas-cooled nuclear reactors
18. One gas bleaches the colour of flowers by reduction while the other by oxidation. [NTA Abhyas-34-33]
 (1) H_2S and Br_2 (2) CO and Cl_2
 (3) NH_2 and SO_3 (4) SO_2 and Cl_2
19. Which of the following organic compounds polymerizes to form the polyester Dacron? [NTA Abhyas-34-37]
 (1) Propylene and para $\text{HO} - (\text{C}_6\text{H}_4) - \text{OH}$
 (2) Benzoic acid and para $\text{HO} - (\text{C}_6\text{H}_4) - \text{OH}$
 (3) Terephthalic acid and ethylene glycol
 (4) Benzoic acid and ethanol
20. The major product formed in the reaction given below will be: [NTA Abhyas-34-40]

21. If to an aqueous solution of mixture of Ba^{++} , Sr^{++} and Ca^{++} , a solution of oxalate is added. Which ion will get precipitated? [NTA Abhyas-35-26]
 (1) Ca^{2+} (2) Ca^{2+} and Sr^{2+}
 (3) Ba^{2+} and Sr^{2+} (4) All the three
22. What product is obtained when chlorine is passed in boiling toluene and product is further hydrolysed. [NTA Abhyas-35-29]
 (1) o-Cresol (2) p-Cresol
 (3) 2, 4-Dihydroxytoluene (4) Benzyl alcohol
23. Starting from propanoic acid, identify the compound Z in the following reactions. [NTA Abhyas-35-32]
 $\text{Propanoic acid} \xrightarrow{\text{SOCl}_2} \text{X} \xrightarrow{\text{NH}_3} \text{Y} \xrightarrow{\text{Br}_2 + \text{KOH}} \text{Z}$
 (1) $\text{CH}_3 - \text{CH}_2 - \text{Br}$ (2) $\text{CH}_3 - \text{CH}_2 - \text{NH}_2$
 (3) $\text{CH}_3 - \text{CH}_2 - \text{COBr}$ (4) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NH}_2$
24. Hydride of nitrogen family have general formula MH_3 . Of the following hydrides which has the lowest boiling point? [NTA Abhyas-35-37]
 (1) NH_3 (2) PH_3
 (3) SbH_3 (4) AsH_3
25. The EAN of Fe in $\text{K}_4[\text{Fe}(\text{CN})_6]$ is [NTA Abhyas-35-42]
 (1) 33 (2) 35
 (3) 36 (4) 26