

IIT-JEE-Chemistry-Screening-2005

- Which species has the maximum number of lone pair of electrons on the central atom?
(a) $[\text{ClO}_3^-]$
(b) XeF_4
(c) SF_4
(d) $[\text{I}_3^-]$
- Which kinds of isomerism is exhibited by octahedral $\text{Co}(\text{NH}_3)_4\text{Br}_2\text{Cl}$?
(a) Geometrical and ionization
(b) Geometrical and optical
(c) Optical and ionization
(d) Geometrical only
- Which is the most thermodynamically stable allotropic form of phosphorus?
(a) red
(b) white
(c) black
(d) yellow
- Which ore contains both Iron and Copper?
(a) Cuprite
(b) Chalcocite
(c) Chalcopyrite
(d) Malachite
- Which of the following is not oxidised by O_3 ?
(a) KI
(b) FeSO_4
(c) KMnO_4
(d) K_2MnO_4
- Which one of the following statement for order of reaction is not correct?
(a) Order can be determined experimentally
(b) Order of reaction is equal to sum of the power of concentration terms in differential rate law
(c) It is not affected with stoichiometric coefficient of the reactants
(d) Order can not be fractional
- How will you convert butan-2-one to propanoic acid?
(a) Tollen's reagent
(b) Fehling solution
(c) $\text{NaOH}/\text{I}_2/\text{H}^+$
(d) $\text{NaOH}/\text{NaI}/\text{H}^+$
- Which blue-liquid is obtained on reacting equimolar amounts of two gases at -30°C ?
(a) N_2O

- (b) N₂O₃
- (c) N₂O₄
- (d) N₂O₅

9. Which of the following resonating structures of 1-methoxy-1, 3-butadiene is least stable?

- (a) CH₂—CH=CH—CH=O—CH₃
- (b) CH₂=CH₂—CH—CH=O—CH₃
- (c) CH₂—CH—CH=CH—O—CH₃
- (d) CH₂=CH—CH—CH—O—CH₃

10. The ratio of the rate of diffusion of helium and methane under identical condition of pressure and temperature will be:

- (a) 4
- (b) 2
- (c) 1
- (d) 0.5

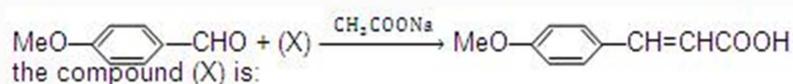
11. When PbO₂ reacts with conc. HNO₃ the gas evolved is:

- (a) NO₂
- (b) O₂
- (c) N₂
- (d) N₂O

12. In which of the following crystals alternate tetrahedral voids are occupied?

- (a) NaCl
- (b) ZnS
- (c) CaF₂
- (d) Na₂O

13.



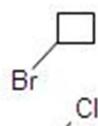
- (a) CH₃—COOH
- (b) BrCH₂—COOH
- (c) (CH₃CO)₂O
- (d) CHO—COOH

14. The elevation in boiling point of a solution of 13.44 g of CuCl₂ in 1 kg of water using the following information will be:

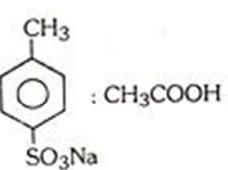
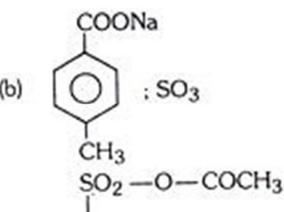
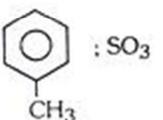
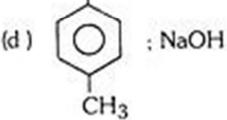
(Molecular weight of CuCl₂ = 134.4 and K_b = 0.52 K molal⁻¹)

- (a) 0.16
- (b) 0.05
- (c) 0.1
- (d) 0.2

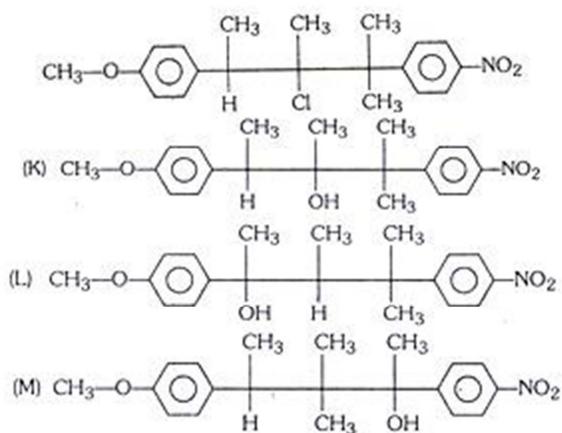
15. What would be the product formed when 1-bromo-3-chloro cyclobutane reacts with two equivalents of metallic sodium in ether?

- (a) 
- (b) 
- (c) 
- (d) 

16. 4-methyl benzene sulphonic acid reacts with sodium acetate to give :

- (a)  : CH_3COOH
- (b)  : SO_3
- (c)  : SO_3
- (d)  : NaOH

17. The following on hydrolysis in aqueous acetone will give :



- (a) Mixture of (K) and (L)
- (b) Mixture of (K) and (M)
- (c) only (M)
- (d) only (K)

18. 0.1 mole of CH_3NH_2 ($K_b = 5 \times 10^{-4}$) is mixed with 0.08 mole of HCl and diluted to one litre. What will be the H^+ concentration in the solution?

- (a) 8×10^{-2} M
- (b) 8×10^{-11} M
- (c) 1.6×10^{-11} M
- (d) 8×10^{-5} M

19. The rusting of iron takes place as follows :



Calculate ΔG_o for the net process

- (a) -322 kJ mol^{-1}
- (b) -161 kJ mol^{-1}
- (c) -152 kJ mol^{-1}
- (d) -76 kJ mol^{-1}

20. Name of the structure of silicates in which three oxygen atoms of $[\text{SiO}_4]^{4-}$ are shared is :

- (a) pyrosilicate
- (b) sheet silicate
- (c) linear chain silicate
- (d) three dimensional silicate

21. Lyophilic sols are :

- (a) irreversible sols
- (b) they are prepared from inorganic compounds
- (c) coagulated by adding electrolytes
- (d) self-stabilizing

22. Which pair of compounds is expected to show similar colour in aqueous medium?

- (a) FeCl_3 and CuCl_2
- (b) VOCl_2 and CuCl_2
- (c) VOCl_2 and FeCl_2
- (d) FeCl_2 and MnCl_2

23. The two forms of D-glucopyranose obtained from the solution of D-glucose are called :

- (a) isomer

- (b) anomer
- (c) epimer
- (d) enantiomer

24. The number of radial nodes of 3s, and 2p orbitals are respectively :

- (a) 2, 0
- (b) 0, 2
- (c) 1, 2
- (d) 2, 1

25. A metal nitrate reacts with KI to give a black precipitate which on addition of excess of KI convert into orange colour solution. The cation of metal nitrate is:

- (a) Hg^{2+}
- (b) Bi^{3+}
- (c) Pb^{2+}
- (d) Cu^{+}

26. When phenyl magnesium bromide reacts with t-butanol, the product would be:

- (a) benzene
- (b) phenol
- (c) t-butyl benzene
- (d) t-butyl phenyl ether

27. The best method to prepare cyclohexene from cyclohexanol is by using :

- (a) conc. HCl + ZnCl_2
- (b) conc. H_3PO_4
- (c) HBr
- (d) conc. HCl

28. When one mole of monoatomic ideal gas at T K undergoes adiabatic change under a constant external pressure of 1 atm changes volume from 1 litre to 2 litre. The final temperature in kelvin would be :

- (a) $T/2^{(2/3)}$
- (b) $T + 2/(3 \times 0.0821)$
- (c) T
- (d) $T - 2/(2 \times 0.0821)$