

CHEMISTRY

QUESTION SET-5

- Which of the following oxides is amphoteric in character?
a) CaO b) CO₂ c) SiO₂ d) SnO₂
- The oxidation state of Cr in $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]^+$ is
a) +3 b) +2 c) +1 d) 0
- Hydrogen bomb is based on the principle of
a) nuclear fission b) natural radioactivity
c) nuclear fusion d) artificial radioactivity
- An ionic compound has a unit cell consisting of A ions at the corners of a cube and B ions on the centres of the faces of the cube. The empirical formula for this compound would be
a) AB b) AB₃ c) A₂B d) A₃B
- Which of the following is a polyamide?
a) Teflon b) nylon-66 c) terylene d) Bakelite
- Which one of the following types of drugs reduces fever?
a) analgesic b) antipyretics
c) anti biotics d) tranquiliser
- The highest electrical conductivity of the following aqueous solution is of
a) 0.1M acetic acid b) 0.1M chloroacetic acid
c) 0.1M fluoroacetic acid d) 0.1M difluoroacetic acid
- Aluminium oxide may be electrolysed at 1000⁰c to furnish aluminium metal (at.mass =27amu, 1 faraday =96,500coulomb. The cathode reaction is $\text{Al}^{3+} + 3\text{e}^- \rightarrow \text{Al}^0$. To prepare 5.12 kg of aluminium metal by this method would require
a) 5.49×10^7 C of electricity b) 1.83×10^7 C of electricity
c) 5.49×10^4 C of electricity d) 5.59×10^{10} C of electricity

9. Consider the reaction $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$, carried out at constant temperature and pressure. If ΔH and ΔU are the enthalpy and internal energy changes for the reaction, which of the following expression is true?

- a) $\Delta H = 0$
- b) $\Delta H = \Delta U$
- c) ΔH smaller than ΔU
- d) ΔH greater than ΔU

10. Benzene and toluene form nearly ideal solutions. At 20°C , the vapour pressure of benzene is 75 torr and that of toluene is 22 torr. The partial vapour pressure of benzene at 20°C for a solution containing 78g of benzene and 46 g of toluene in torr is

- a) 50
- b) 25
- c) 37.5
- d) 53.5

11. A reaction involving two different reactants can never be

- a) unimolecular reaction
- b) first order reaction
- c) second order reaction
- d) bimolecular reaction

12. Heating mixture of Cu_2O and Cu_2S will give

- a) $\text{Cu} + \text{SO}_2$
- b) $\text{Cu} + \text{SO}_3$
- c) $\text{CuO} + \text{CuS}$
- d) Cu_2SO_3

13. Which of the following compounds shows optical isomerism

- a) $[\text{Cu}(\text{NH}_3)_4]^{2+}$
- b) $[\text{ZnCl}_4]^{2-}$
- c) $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$
- d) $[\text{Co}(\text{CN})_6]^{3-}$

14. 2-Methylbutane on reacting with bromine in the presence of sunlight gives mainly

- a) 1-bromo-2-methylbutane
- b) 2-bromo-2-methylbutane
- c) 2-bromo-3-methylbutane
- d) 1-bromo-3-methylbutane

15. The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is

- a) acid permanganate
- b) acidic dichromate
- c) chromic anhydride in glacial acetic acid
- d) pyridinium chloro chromate

16. Tertiary alkyl halides are practically inert to substitution by $\text{S}_\text{N}2$ mechanism because of

- a) insolubility
- b) instability

c) inductive effect

d)steric hinderance

17. Among the following acid which has the lowest pKa value?

a) CH_3COOH

b) HCOOH

c) $(\text{CH}_3)_2\text{CH}-\text{COOH}$

d) $\text{CH}_3\text{CH}_2\text{COOH}$

18. Elimination of bromine from 2-bromobutane results in the formation of

a)equimolar mixture of 1 and 2-butene

b)predominantly 2- butane

c) predominantly 1- butane

d) predominantly 2- butyne

19. The value of the spin only magnetic moment for one of the following configuration is 2.84BM. The correct one is

a) d^4 (in strong ligand field)

b) d^4 (in weak ligand field)

c) d^3 (in weak as well as in strong field)

d) d^5 (in strong ligand field)

20. Equivalent weight of anhydrous oxalic acid is

a) 45

b)54

c)36

d) 60