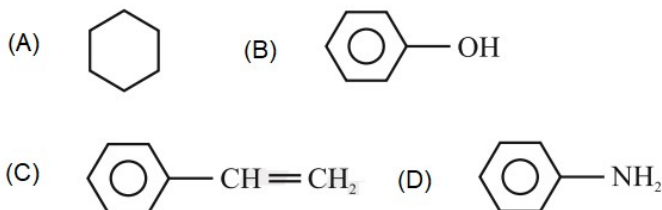


SAMPLE QUESTIONS FOR APTITUDE TEST IN CHEMISTRY

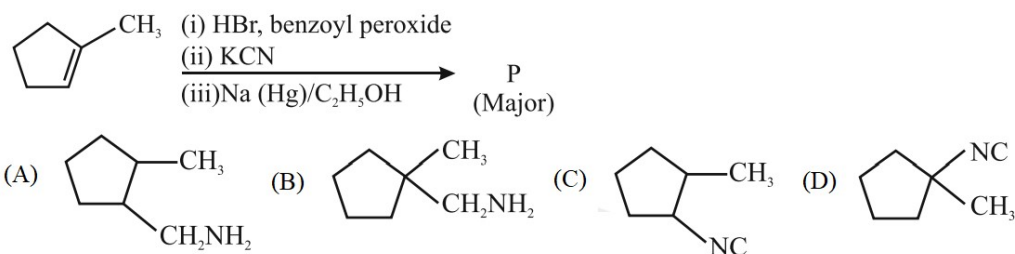
1. If the azimuthal quantum number $l = 0$, the shape of the orbital is
(A) unsymmetrical (B) dumb-bell
(C) spherically symmetrical (D) sausage shaped
2. The material used in solar cells contains
(A) Cu (B) Sn (C) Si (D) Ti
3. The half-life of ^{60}Co is about 5.2 years. After 21 years, the radioactivity remaining will be reduced to
(A) $\frac{1}{2}$ (B) $\frac{1}{4}$ (C) $\frac{1}{8}$ (D) $\frac{1}{16}$
4. The solubility product of a salt having general formula MX_2 in water is: 4×10^{-12} . The concentration of M^{2+} ions in the aqueous solution of the salt is:
(A) $2.0 \times 10^{-6} \text{ M}$ (B) $1.0 \times 10^{-4} \text{ M}$ (C) $1.6 \times 10^{-4} \text{ M}$ (D) $4.0 \times 10^{-10} \text{ M}$
5. Of the following sets, one which does NOT contain isoelectronic species is:
(A) PO_4^{3-} , SiO_4^{4-} , SO_4^{2-} (B) CN^- , N_2 , C_2^{2-} (C) SO_3^{2-} , CO_3^{2-} , NO_3^- (D) BO_3^{3-} , CO_3^{2-} , NO_3^-
6. $2\text{N}_2\text{O}_5 \rightarrow 4\text{NO}_2 + \text{O}_2$
$$\text{If, } \frac{d[\text{N}_2\text{O}_5]}{dt} = \kappa_1 [\text{N}_2\text{O}_5], \quad \frac{d[\text{NO}_2]}{dt} = \kappa_2 [\text{N}_2\text{O}_5], \quad \frac{d[\text{O}_2]}{dt} = \kappa_3 [\text{N}_2\text{O}_5]$$

The relation between κ_1 , κ_2 , κ_3 will then be:
(A) $\kappa_1 = \kappa_2 = \kappa_3$ (B) $2\kappa_1 = \kappa_2 = 4\kappa_3$ (C) $2\kappa_1 = 4\kappa_2 = \kappa_3$ (D) none of these
7. Of the following ions, one which is ESR active, is:
(A) Cu^{2+} (B) Zn^{2+} (C) Ca^{2+} (D) O^{2-}
8. Of the following, the correct sequence of the noble gases in their group in the periodic table is:
(A) Ar, He, Kr, Ne, Rn, Xe (B) He, Ar, Ne, Kr, Xe, Rn
(C) He, Ne, Ar, Kr, Xe, Rn (D) He, Ne, Kr, Ar, Xe, Rn
9. X-rays are often used in crystal structure analysis due to
(A) their high penetrating power (B) high wavelength
(C) their wavelength being of the order of interplanar spacing
(D) their capacity to cause ionization
10. NaBH_4 is used for
(A) reduction of $\text{C}=\text{C}$ bonds to $\text{C}-\text{C}$ (B) reduction of $\text{C}=\text{O}$ bonds to $-\text{CH}_2$
(C) reduction of $\text{C}=\text{O}$ bonds to $\text{CH}(\text{OH})$ (D) reduction of NHOH group to NH_2OH
11. If the solution of an electrolyte is diluted, its equivalent conductance
(A) remains constant (B) decreases
(C) increases (D) varies in an unpredictable manner
12. Chlorobenzene on reaction with sodamide in liquid ammonia mainly gives
(A) o-chloroaniline (B) p-chloroaniline
(C) a mixture of o- and p-chloroaniline (D) aniline
13. It is impossible to specify the momentum and position of a particle exactly. This is because of
(A) Rutherford principle (B) Heisenberg uncertainty principle
(C) Pauli's exclusion principle (D) Einstein's relativity theorem
14. The emf for the half reaction are $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$ $E^0 = 0.34 \text{ V}$
 $\text{Zn}^{2+} + 2\text{e}^- \rightarrow \text{Zn}$ $E^0 = -0.76 \text{ V}$. The emf (in volts) for the reaction $\text{Cu}^{2+} + \text{Zn} \rightarrow \text{Cu} + \text{Zn}^{2+}$ will be
(A) 1.10 (B) -0.42
(C) +0.42 (D) indeterminate as the temperature is not mentioned

15. Tyndall effect is shown by
 (A) suspension (B) true solution
 (C) colloidal solution (D) very dilute solution
16. Major component of Portland cement is
 (A) tricalcium silicate (B) calcium oxide
 (C) magnesium oxide (D) calcium sulphate
17. The d-d transitions in Transition metal ions Fe^{3+} , Cr^{3+} are allowed due to
 (A) g-g nature of their transitions (B) u-u nature of their transitions
 (C) d-p mixing (D) change in angular momentum quantum number is zero
18. The pH of 0.005 M Sulfuric acid will be nearly
 (A) 2 (B) 12 (C) 2.3 (D) 5
19. The name of the compound $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_3$ is
 (A) hexadiene (B) 1,2,3,4-hexadiene
 (C) 3,5-hexadiene (D) 1,3-hexadiene
20. The oxidation number of bromine in HBrO_3 is
 (A) 3 (B) 1 (C) 5 (D) 6
21. At the same temperature and pressure, the gas having the highest average kinetic energy per mole is:
 (A) H_2 (B) O_2 (C) CH_4 (D) All have same kinetic energy
22. In the case of melting ice, the degrees of freedom of the system is
 (A) one (B) two (C) three (D) zero
23. Which one of the following compounds does not decolourize bromine water?



24. Which one of the following compounds can exist as cis-trans isomers?
 (A) Pent-1-ene (B) 2-Methylhex-2-ene (C) 1,1-Dimethylcyclopropane (D) 1,2-Dimethylcyclohexane
25. Predict the major product 'P' in the following sequence of reactions-



PS: Answers will be given in OMR separate sheet using Blue/Black Ball Point Pen only. Calculator, though not necessary, is allowed.