Sample Questions

Fundamentals of Chemistry

1. Which of the following statements is NOT true about first order reactions?
   a. The graph between log (a-x) vs. time is a straight line with intercept equal to log(a₀) and slope equal to -K/2.303  
   b. The initial rate of reaction doubles when the reactant is doubled  
   c. Half-life is independent of initial concentration of reactant  
   d. Unit of rate constant is sec⁻²

2. Which of the following gases is obtained when calcium carbide is hydrolyzed?
   a. Methane  
   b. Acetylene  
   c. Ethane  
   d. Methylene

3. Solubility product of AgI at 25°C is 1 * 10⁻¹⁶. What will be the solubility of AgI in 10⁻⁴ N solution of KI (in mol/L)?
   a. 1 * 10⁻¹₀  
   b. 1 * 10⁻¹²  
   c. 1 * 10⁻₂⁰  
   d. 1 * 10⁻²²

4. Which isomerism do nitro alkane and alkyl nitrile exhibit?
   a. Geometrical Isomerism  
   b. Stereoisomerism  
   c. Metamerism  
   d. Functional Isomerism

5. The volume of 0.5M H₂SO₄ solution required to neutralize 100 ml of 0.2 NaOH solution is _________.
   a. 10 ml  
   b. 20 ml  
   c. 80 ml  
   d. 100 ml
6. Which of the following is the correct order of reactivity for unimolecular nucleophillic substitution reaction among alkyl halides?

a. R-I > R-Br > R-Cl > R-F  
b. R-F > R-Cl > R-Br > R-I  
c. R-Cl > R-F > R-Br > R-I  
d. R-F > R-Br > R-Cl > R-I

7. Why does nitration of benzene require the presence of H₂SO₄?

a. H₂SO₄ helps in the generation of the electrophile NO₂⁺  
b. H₂SO₄ provides sufficient surface area for reaction to occur  
c. H₂SO₄ stabilizes HNO₃  
d. H₂SO₄ activates the benzene ring towards nitration

8. Which of the following is NOT a ‘non-typical transition element’?

a. Zinc  
b. Manganese  
c. Cadmium  
d. Mercury

9. The decreasing order of the stability of dihalides of Si, Ge, Sn & Pb is:

a. GeX₂ > SiX₂ > PbX₂ > SnX₂  
b. GeX₂ > SiX₂ > SnX₂ > PbX₂  
c. SnX₂ > PbX₂ > GeX₂ > SiX₂  
d. PbX₂ > SnX₂ > GeX₂ > SiX₂

All set to take the AMCAT?

Schedule your AMCAT if you've not done it so far!