STD: XI　　　　　ONE MARK TEST – 4　　　　Marks: 35
　　　　　　　　　　　CHEMISTRY　　　　　　　Time: 45 Min.

1. The group of elements in which the differentiating electron enters the anti penultimate shell of atoms are called
　a) p-block elements　　b) d-block elements　　c) s-block elements　d) f-block elements

2. The elements with atomic numbers 31 belongs to :
　a) d-block　　b) f-block　　c) p-block　　d) s-block

3. Which of the following elements will have the highest electronegativity?
　a) Chlorine　　b) Nitrogen　　c) Cesium　　d) Fluorine

4. A property which progressively increases down a group in the periods table is :
　a) Ionization enthalpy　　b) Electronegativity
　c) Electron gain enthalpy　　d) Strength as a reducing agent.

5. In the third period, the first ionization potential is of the order.
　a) Na > Al > Mg > Si > P　　b) Na < Al < Mg < Si < P
　c) Mg > Na > Si > P > Al　　d) Na< Al < Mg < P < Si

6. The law of triad is applicable to :
　a) Chlorine, bromine and iodine　　b) Hydrogen, oxygen and nitrogen
　c) Sodium, neon and calcium　　d) All of the above

7. Identify the wrong statement.
　a) Amongst the isoelectronic species, smaller the positive charge on cation, smaller is the ionic radius
　b) Amongst isoelectric species greater the negative charge on the anion, larger is the ionic radius
　c) Atomic radius of the elements increases as one moves down the first group of the periodic table
　d) Atomic radius of the elements decreases as one moves across from left to right in the 2nd period of the periodic table.

8. Excluding hydrogen and helium, the smallest element in the periodic table
　a) lithium　　b) Oxygen　　c) Fluorine　　d) Chlorine

9. The correct order of electron gain enthalpy with negative sign of F, Cl, Br and I having atomic number 9, 17, 35 and 53 respectively is
　a) I > Br > Cl >F　　b) F > Cl > Br >I　　c) Cl > F > Br >I　　d) Br > I > Cl > F

10. Which of the following is the lightest metal ?
　a) Calcium　　b) Lithium　　c) Magnesium　　d) Sodium

11. Which one of the following is the least electronegative element?
　a) Bromine　　b) Chlorine　　c) Iodine　　d) Hydrogen

12. With respect to chlorine, hydrogen will be
　a) Electropositive　　b) Electronegative　　c) Neutral　　d) None of these.

13. How does electron affinity change when we move from left to right in a period in the periodic table?
　a) Generally increases　　b) Generally decreases
　c) Remains unchanged　　d) First increases and then decreases

14. Halogens belong to the :
　a) s-block　　b) p-block　　c) d-block　　d) f- block

15. IE_1 and IE_2 of Mg are 179 and 348 kcal mol^{-1} respectively. The energy required for the reaction $Mg \rightarrow Mg^{2+} + 2e^-$ is
　a) +169 kcal mol^{-1}　　b) -169 kcal mol^{-1}　　c) +527 kcal mol^{-1}　　d) -527 kcal mol^{-1}

16. If K_b and K_f for a reversible reactions are 0.8×10^{-5} and 1.6×10^{-4} respectively, the value of the equilibrium constant is,
　a) 20　　b) 0.2×10^{-1}　　c) 0.05　　d) none of these

17. In which equilibrium pressure has no effect
　a) $PCl_{5(g)} \leftrightarrow PCl_{3(g)} + Cl_{2(g)}$　　b) $H_{2(g)} + I_{2(g)} \leftrightarrow 2HI_{(g)}$
　c) $2SO_{2(g)} + O_{2(g)} \leftrightarrow 2SO_{3(g)}$　　d) $NH_4Cl_{(g)} \leftrightarrow NH_{3(g)} + HCl_{(g)}$

18. The formation of ammonia from $N_2(g)$ and $H_2(g)$ is a reversible reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g) + Heat$. What is the effect of increase of temperature on this equilibrium reaction
   a) equilibrium is unaltered
   b) formation of ammonia is favoured
   c) equilibrium is shifted to the left
   d) reaction rate does not change

19. In an equilibrium reaction $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$, $\Delta H = -3000$ calories, which factor favours dissociation of HI
   a) Low temperature
   b) High pressure
   c) High temperature
   d) Low pressure

20. Which one of the following is incorrect statement?
   a) for a system at equilibrium, Q is always less than the equilibrium constant
   b) equilibrium can be attained from either side of the reaction
   c) presence of catalyst affects both the forward reaction and reverse reaction to the same extent
   d) Equilibrium constant varied with temperature

21. A chemical reaction is at equilibrium when
   a) Reactants are completely transformed into products
   b) The rates of forward and backward reactions are equal
   c) Formation of products is minimized
   d) Equal amounts of reactants and products are present

22. $\frac{K_c}{K_p}$ for the reaction, $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ is
   a) $\frac{1}{RT}$
   b) $\sqrt{RT}$
   c) RT
   d) $(RT)^2$

23. In the heterogenous equilibrium $CaCO_{3(s)} \leftrightarrow CaO_{(s)} + CO_{2(g)}$ the K_{eq} value is given by
   a) partial pressure of CO_2
   b) activity CaO
   c) activities of $CaCO_3$
   d) $[CaO]/[CaCO3]$

24. If x is the fraction of PCl_5 dissociated at equilibrium in the reaction $PCl_5 \rightleftharpoons PCl_3 + Cl_2$ then starting with 0.5 mole of PCl_5, the total number of moles of reactants and products at equilibrium is
   a) 0.5 – x
   b) x + 0.5
   c) 2x + 0.5
   d) x + 1

25. For which of the following K_p is less than K_c?
   a) $N_2O_4 \rightleftharpoons 2NO_2$
   b) $N_2 + 3H_2 \rightleftharpoons 2NH_3$
   c) $H_2 + I_2 \rightleftharpoons 2HI$
   d) $CO + H_2O \rightleftharpoons CO_2 + H_2$

26. In the reaction, $Fe(OH)_3(s) \rightleftharpoons Fe^{3+}(aq) + 3OH^-(aq)$, if the concentration of OH^- ions is decreased by ¼ times, then the equilibrium concentration of Fe^{3+} will
   a) not changed
   b) also decreased by ¼ times
   c) increase by 4 times
   d) increase by 64 times

27. Theory of 'active mass' indicates that the rate of chemical reaction is directly proportional to the_____.
   a) Equilibrium constant
   b) Properties of reactants
   c) Volume of apparatus
   d) Concentration of reactants

28. For the formation of two moles of $SO_3(g)$ from SO_2 and O_2, the equilibrium constant is K_1. The equilibrium constant for the dissociation of one mole of SO_3 into SO_2 and O_2 is
   a) $\frac{1}{K_1}$
   b) K_1^2
   c) $\left(\frac{1}{K_1}\right)^{1/2}$
   d) $\frac{K_1}{2}$

29. Under a given set of experimental conditions, with an increase in the concentration of the reactants, the rate of a chemical reaction
   a) Decreases
   b) Increases
   c) Remains unaltered
   d) First decreases and then increases

30. Equimolar concentrations of H_2 and I_2 are heated to equilibrium in a 1 litre flask. What percentage of initial concentration of H_2 has reacted at equilibrium if rate constant for both forward and reverse reactions are equal
   a) 33%
   b) 66%
   c) $(33)^2$ %
   d) 16.5%

XI - Chemistry

1-M   Answer   Key   30 - Marks

1) d)   13) a)   24) b)
2) c)   14) b)   25) b)
3) d)   15) c)   26) d)
4) b)   16) a)   27) d)
5) b)   17) a)   28) c)
6) a)   18) c)   29) b)
7) a)   19) c)   30) a)
8) c)   20) a)   31)
9) c)   21) b)   32)
10) b)   22) d)   33)
11) d)   23) c)   34)
12) a)   35)

P. Prakash M.Sc , B.Ed

PG ASSIT IN CHEMISTRY