STD: XII ONE MARK TEST – 5 **Lesson: 4 & 8**

Marks: 30 / Time: 45 Min. CHEMISTRY

Choose the correct answer.

1. Assertion: Ce^{4+} is used as an oxidizing agent in volumetric analysis.
   Reason: Ce^{4+} has the tendency of attaining +3 oxidation state.
   a) Both assertion and reason are true and reason is the correct explanation of assertion.
   b) Both assertion and reason are true but reason is not the correct explanation of assertion.
   c) Assertion is true but reason is false.
   d) Both assertion and reason are false
2. Which transition element is used in light bulb filaments?
   a) Al b) Ni c) W d) Fe
3. Which one of the following is more basic in nature?
   a) $La(OH)_3$ b) $Ce(OH)_3$ c) $Gd(OH)_3$ d) $Lu(OH)_3$
4. Which of the following transition metal is present in Vitamin B_{12}?
   a) Cobalt b) Platinum c) Copper d) Iron
5. Sc (Z=21) is a transition element but Zinc (z=30) is not because
   a) both Sc^{3+} and Zn^{2+} ions are colourless and form white compounds
   b) in case of Sc, 3d orbital are partially filled but in Zn these are completely filled
   c) last electron as assumed to be added to 4s level in case of zinc
   d) both Sc and Zn do not exhibit variable oxidation states
6. The actinoid elements which show the highest oxidation state of +7 are
   a) Np, Pu, Am b) U, Fm, Th c) U, Th, Md d) Es, No, Lr
7. How many moles of I2 are liberated when 1 mole of potassium dichromate react with potassium iodide?
   a) 1 b) 2 c) 3 d) 4
8. Which one of the following elements show high positive electrode potential?
   a) Ti^{+} b) Mn^{2+} c) Co^{2+} d) Cr^{2+}
9. Among the transition metals of 3d series, the one that has highest negative (M^{2+} / M) standard electrode potential is
   a) Ti b) Cu c) Mn d) Zn
10. Which of the following pair has maximum number of unpaired electrons?
    a) Mn^{2+}, Fe^{3+} b) Co^{3+}, Fe^{2+} c) Cr^{3+}, Mn^{4+} d) Ti^{2+}, V^{3+}
11. Which of the following lanthanoids have half-filled 4f orbital?
    a) Gd b) Tb c) Lu d) La
12. Which one of the following statements related to lanthanons is incorrect?
    a) Europium shows +2 oxidation state
    b) The basicity decreases as the ionic radius decreases from Pr to Lu
    c) All the lanthanons are much more reactive than aluminium
    d) Ce^{4+} solutions are widely used as oxidising agents in volumetric analysis
13. The correct order of increasing oxidizing power in the series
    a) $VO_2^{+} < Cr_2O_7^{2-} < MnO_4^{-}$ b) $Cr_2O_7^{2-} < VO_2^{+} < MnO_4^{-}$
    c) $Cr_2O_7^{2-} < MnO_4^{-} < VO_2^{+}$ d) $MnO_4^{-} < Cr_2O_7^{2-} < VO_2^{+}$
14. Which reagent is used in the conversion of ethylene into ethylene glycol?
    a) Chromyl chloride b) Zeigler – Natta catalyst
    c) Cold dilute alkaline $KMnO_4$ d) Acidified $K_4Cr_2O_7$
15. Which of the following statements is not true?
    a) on passing H_2S, through acidified $K_2Cr_2O_7$ solution, a milky colour is observed
    b) $Na_2Cr_2O_7$ is preferred over $K_2Cr_2O_7$ in volumetric analysis
    c) $K_2Cr_2O_7$ solution in acidic medium is orange in colour
    d) $K_2Cr_2O_7$ solution becomes yellow on increasing the P^H beyond 7

16. A conjugate acid-base pair differs only by
a) an electron b) a proton c) a hydroxyl ion d) none of the above

17. Which of the following fluro compounds is most likely to behave as a Lewis base?
a) BF_3 b) PF_3 c) CF_4 d) SiF_4

18. The relationship between the solubility product (Ksp) and molar solubility (S) for $Ag_2(CrO_4)$ is
a) $K_{sp} = S^3$ b) $K_{sp} = S^2$ c) $K_{sp} = 4S^3$ d) $K_{sp} = 3S^2$

19. Equal volumes of three acid solutions of pH 1,2 and 3 are mixed in a vessel. What will be the H^+ ion concentration in the mixture?
a) 3.7×10^{-2} b) 10^{-6} c) 0.111 d) none of these

20. Which among the following is a Lewis base?
a) BF_3 b) SO_3 c) SF_4 d) CaO

21. Following solutions were prepared by mixing different volumes of NaOH of HCl different concentrations.
i. 60 mL $\frac{M}{10}$ HCl + 40mL $\frac{M}{10}$ NaOH ii. 55 mL $\frac{M}{10}$ HCl + 45 mL $\frac{M}{10}$ NaOH
iii. 75 mL $\frac{M}{5}$ HCl + 25mL $\frac{M}{5}$ NaOH iv. 100 mL $\frac{M}{10}$ HCl + 100 mL $\frac{M}{10}$ NaOH
pH of which one of them will be equal to 1?
a) iv b) i c) ii d) iii

22. Dissociation constant of NH_4OH is 1.8×10^{-5} the hydrolysis constant of NH_4Cl would be
a) 1.8×10^{-19} b) 5.55×10^{-10} c) 5.55×10^{-5} d) 1.80×10^{-5}

23. According to Arrhenius concept, an acid and a base respectively
a) hydrogen ion donor & hydroxyl ion donor
b) hydrogen ion acceptor & hydrogen ion donor
c) hydroxyl ion donor & hydroxyl ion donor
d) electron donor & electron acceptor

24. Concentration of the Ag^+ ions in a saturated solution of $Ag_2C_2O_4$ is 2.24×10^{-4} mol L^{-1} solubility product of $Ag_2C_2O_4$ is
a) 2.42×10^{-8} mol^3 L^{-3} b) 2.66×10^{-12} mol^3 L^{-3}
c) $4.5 \times 10^{-11} \times mol^3$ L^{-3} d) 5.619×10^{-12} mol^3 L^{-3}

25. In which of the following cases, the sparingly soluble salt solution is unsaturated?
a) Ionic product > solubility product (Ksp)
b) Ionic product < solubility product (Ksp)
c) Ionic product = solubility product (KcD)
d) Both (a) and (b)

26. The relationship between the solubility product and molar solubility of $Al_2(SO_4)_3$ is
a) S^2 b) $4S^3$ c) $108S^5$ d) $27S^5$

27. MY and NY_3, are insoluble salts and have the same K_{sp} values of 6.2×10^{-13} at room temperature. Which statement would be true with regard to MY and NY_3?
a) The salts MY and NY_3 are more soluble in 0.5M KY than in pure water
b) The addition of the salt of KY to the suspension of MY and NY_3 will have no effect on their solubility's
c) The molar solubilities of MY and NY_3 in water are identical
d) The molar solubility of MY in water is less than that of NY_3

28. If the hydrogen ion concentration of the solution is 10^{-5}M, its hydroxyl ion concentration is
a) 10^{-5} M b) 10^{-9}M c) 10^{-14}M d) 10^{-7}M

29. The pH of 10^{-5} M KOH solution will be
a) 9 b) 5 c) 19 d) none of these

30. The pH of an aqueous solution is Zero. The solution is
a) slightly acidic b) strongly acidic c) neutral d) basic