## CHEMISTRY

## QUESTION SET – 3

1. Charle's law is represented mathematically as
   a. PV = constant
   b. $V_1 = V_0(1+\frac{273}{t})$
   c. $Vt = V_0(1+\frac{t}{273})$
   d. $\frac{V1}{V2} = \frac{T2}{T1}$

2. The bond dissociation energy of $H_2$, $Cl_2$, and HCl are 104, 58, and 103 kcal $mol^{-1}$ respectively. The enthalpy of formation of HCl would be
   a. -22 kcal $mol^{-1}$
   b. -44 $kcalmol^{-1}$
   c. +44 $kcalmol^{-1}$
   d. +22kacl $mol^{-1}$

3. From the given ions such as, $Li^+$, $K^+$, $Ca^{2+}$, $Na^+$, which of the following is the strongest reducing reagent?
   a. $Na^+$
   b. $Li^+$
   c. $Ca^{2+}$
   d. $K^+$

4. Which of the following sets of quantum numbers is permissible for an electron in an atom?

   (a) n=2, l=1,m=0,s=+1/2

   (b) n=3, l=1,m=-2, s = -1/2

   (c) n=1,l=1,m=0, s = +1/2

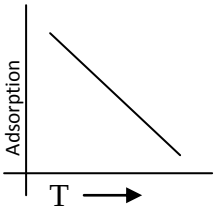
   (d) n=2, l=0,m=0,s = 1

5. In NaCl crystal, $Cl^-$ ions are present in fcc arrangements. Find out the number of $Cl^-$ ions in its unit cell.
   a. 4 b. 6 c.8 d.10

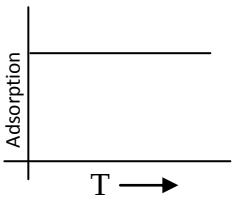
6. Calculate the amount of $CaCl_2$ (i=2.47) dissolved in 2.5L of water such that its osmotic pressure is 0.75 atm at 27°C
   a.1.0 g
   b.9.2 g
   c.3.42 g
   d.2.42g

7. Which of the following graphs represents the chemisorptions?

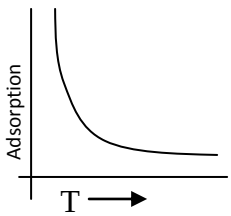
   a.



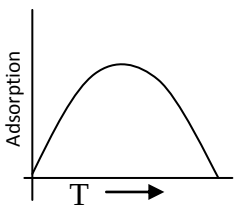

   b.




   c.




   d.



8. Identify the name reaction during conversion of butyl chloride into dibutyl ether
   a.Williamson'sSynthisis b.Perkin's reactions
   c.Wurtz Reaction d.Grignards Reagent
9. Conversion of benzoyl chloride into benzaldehyde reduction with $H_2$/Pd-$BaSO_4$ is known as
   a. Stephan Reaction b.Rosenmond Reduction
   c. Clemmenson's Reaction d.Riemer –Tiemann
10 Ziegler –Natta catalyst is an organometallic compound containing
   a. Zirconium b.Rhodium
   c. Titanium d.Iron
11. The structure of $IF_7$ is
   a. Octahedral b. triogonalbipyramidal
   c. Octahedral d. Pentagonal bipyramidal
12. The order of the screening effect of the electrons of s, p, d, f orbitals of given shell of an atom on its outer shell electrons is
   a. $s > p > d > f$ b. $f > d > P > S$
   c. $p < d < s > f$ d. $f > p > d > s$
13. A solution is made by dissolving 40 g of $H_2SO_4$ in 250 ml of water. The molarity of the solution prepared is
   a. 2M b. 1M
   c. 4 M d. 5 M
14. Ferric ion forms a Prussian blue coloured ppt. Due to the formation of

   (a)$K_4[Fe(CN)_6]$

   (b) $Fe_4[Fe(CN)_6]_3$

   (c)$KMnO_4$

   (d)$Fe(OH)_3$

15. The presence of $NH_4^+$ radical in solution can be detected by

   (a)Fehling's solution

   (b) Benedict's solution

   (c)Schiff's reagent

   (d)Nessler's reagent

16. The pH of $10^{-8}$ M HCl solution is

   (a) 8 (b) 6

   (c) 6.98 (d) 7.02

17. The order of reactivity of various alkyl halides towards $SN_1$ reaction is

   (a) $3^0 > 2^0 > 1^0$ (b) $1^0 > 2^0 > 3^0$

   (c) $3^0 = 2^0 = 1^0$ (d) $1^0 > 3^0 > 2^0$

18. Which of the following compounds on oxidation gives benzoic acid?

(a)Chlorophenol

(b) Chlorotoluene

(c)Chlorobenzene

(d)Benzyl Chloride

19.The charge required for the reduction of 1 mol of $K_2Cr_2O_7$ to $Cr^{3+}$ ion is

(a)0.6 faraday (b)2.4 x96500C

(c)6 x96500C (d)12.4 x96500F

20. The order of the reaction when rate of reaction is equal to rate constant is
(a) 1 (b) 2 (c) Half (d) zero

**Answer of Set - 8**

1. C
2. A
3. B
4. A
5. A
6. C
7. C
8. A
9. B
10. C
11. D
12. A
13. A
14. B
15. D
16. C
17. A
18. D
19. C
20. D