# GGSIPU Chemistry 2005

**1. The standard e.m.f.for the cell reaction, $2Cu^{+}_{aq} \rightarrow Cu_{s} + Cu^{2+}_{aq}$ is +0.36 V at 298 K.The equilibrium constant of the reaction is :**

**a $5\times10^{6}$ b $1.4\times10^{12}$**

**c $7.4\times10^{12}$ d $1.2\times10^{6}$**

**2. The standard e.m.f of the cell ,Cds | $CdCL_2$aq 0.1 M || AgCLs | Ags in which the cell reaction is :**

**$Cds+2AgCLs \rightarrow 2Ags+Cd^{2+}aq+2CL^{-}aq$**

**Is 0.6915 V at $0^0$ C and 0.6753 V at $25^0$ C.The enthalpy change of the reaction at $25^0$ C.The enthalpy change of the reaction at $25^0$ C is :**

**a -176 kJ b -234.7 kJ**

**c +123.5 kJ d -167.26 kJ**

**3. Which of the following statement is true ?**

**a The relative lowering of vapour pressure of a solution is equal to the mole fraction of the solute present in the solution.**

**b Passage of solute molecules towards solution side through semipereable membrance is osmosis.**

**c The boiling point of a solution is always lower than the solvent**

**d The boiling point of a liquid is the temperature at which its vapour becomes equal to 260 mm**

**4. The deviation from the ideal gas behavior of a gas can be expressed as :**

**a $Z=\frac{P}{VRT}$ b $Z=\frac{PV}{nRT}$**

**c $Z=\frac{nRT}{PV}$ d $Z=\frac{VR}{PT}$**

**5. Which of the following statement is not true ?**

**a The pressure of a gas is due to collis ion of the gas molecules with the walls of the container**

b The molecular velocity of any gas is proportional to the square root of the absolute temperature

c The rate of diffusion of a gas directly proportional to the density of the gas at constant pressure

d Kinetic energy of an ideal gas is directly proportional to the absolute temperature

6. The unit of second order reaction rate constant is :

a $L^{-1}.mol.s^{-1}$

b $L^{2}.mol^{-2}.s^{-1}$

c $L.mol^{-1}.s^{-1}$

d $s^{-1}$

7. Hess' law states that :

a the standard enthalpy of an overall reaction is the sum of the enthalpy changes in individual reactions

b enthalpy of formation of a compound is same as the enthalpy of decomposition of the compound into constituent elements,but with opposite sign

c at constant temperature the pressure of a gas is inversely proportional its volume

d the mass of a gas dissolved per litre of a solvent is proportional to the pressure of the gas in equilibrium with the solution

8. The half-life of a reaction is halved as the initial concentration of the reactant is doubled.The order of the reaction is :

a 0.5 b 1

c 2 d 0

9. One gram of A decays by $\beta$-emission to 0.125 g in 200 years.The half life period of the reaction is :

a 0.014 years b 6.66 years

c 66.6 years d 666 years

10. Isotopes are :

a atoms of different elements having same mass number

b atoms of same elements having same mass number

c atoms of same element having different mass number

d atoms of different element having same number of neutrons

11. Acid hydrolysis of sucrose is a :

a pseudo first order reaction

b zero order reaction

c second order reaction

d unimolecular reaction

12. The product obtained after posirtron emission from $31^{GA^{68}}$ is :

a $30^{GA^{68}}$ b $30^{Zn^{68}}$

c $31^{Zn^{69}}$ d $31^{Ga^{69}}$

13. The relationship between coefficient of viscosity of a liquid and temperature can be expressed as :

a $\eta = Ae^{ERT}$ b $\eta = Ae^{E/RT}$

c $\eta = ET/R$ d $\eta = Ae^{RT/E}$

14. An aqueous solution in which the $H^+$ ion concentration is greater than $10^{-7}$ M is said to be :

a acidic b alkaline

c neutral d none of these

15. In the hydrolysis of a salt of weak acid and weak base ,the hydrolysis constant $K_h$ is equal to :

a $\frac{K_w}{K_b}$ b $\frac{K_w}{K_a}$

c $\frac{K_w}{K_a x K_b}$ d $K_a x K_b$

16. In the following reaction, AgCL+KI $\rightleftharpoons$ KCL+AgI as KI is added,the equilibrium is shifted towards right giving more AgI precipitat,because :

a both AgCL and AgI are sparingly soluble

b the $K_{sp}$ of AgI is lower than $K_{sp}$ of AgCL

c the $K_{sp}$ of AgI is higher than $K_{sp}$ of AgCL

d bothAgCL and AgI have same solubility product

17. In the nuclear reaction ;

$$13^{AL^{27}} + 2^{He^4} \rightarrow 14^{X^{30}} + 1^{H^1}$$ ,x is :

a Si b AL c Mg d P

18. What kind of molecule $ALCL_3$ is ?

a Bronsted acid b Lewis acid

c Lewis base d Bronsted base

19. How much $K_2Cr_2O_7$ molecular weight = 294.19 is required to prepare one litre of 0.1 N olution ?

a 9.8063 g b 7.3548 g

c 3.6774 g d 4.903 g

20. The ionic strength of a solution containing 0.1 mol/kg of KCL and o.2 mol/kg of $CuSO_4$ is :

a 0.3 b 0.6 c 0.9 d 0.2

21. A gas can expend from 100 mL to 250 mL under a constant pressure of 2 atm.The work done by gas is :

a 30.38 joule b 25 joule

c 5 k Joule d 16 joule

22. If the r.m.s speed of gaseous molecule is xm/sec at a pressure P atm,then what will be the r.m.s speed at a pressure 2P atm and constant temperature ?

a x b 2x c 4x d x/4

23. Ionic mobility of $Ag^+$ Is $\lambda_{Ag^+}$=5X10$^{-1}$ ohm$^{-1}$ cm$^2$ eq$^{-1}$:

a 5.2X10 $^{-9}$ b 2.4X10 $^{-9}$

c 1.52X10 $^{-9}$ d 8.25X10 $^{-9}$

24. Which of the following is the strongest acid ?

a HF b HCL c HBr d HI

25. What is the general outer electronic configuration of the coinage metal ?

a ns $^{2}$ np$^{6}$ b n -1d $^{10}$ ns$^{1}$

b n -1d $^{10}$ ns$^{2}$ d n -1d $^{9}$ ns$^{2}$

26. How does the ionization energy of 1$^{st}$ group elemeny vary?

a Increases down the group

b Decreases down the group

c Remains unchanged

d Variation is not regular

27. What I the oxidation number of cholrine in $ClO_3^-$ ?

a +5 b +3 c +4 d +2

28. What type of hybridsation takes place in the N atom of $NH_3$ ?

a sp $^{2}$ b sp $^{3}$ c dsp $^{2}$ d sp

29. What is the co-ordination number of $CL^-$ in a NaCL crystal ?

a 8 b 6 c 4 d 3

30. How many electrons are involved in oxidation of $KMnO_4$ in basic medium ?

a 1 b 2 c 5 d 3

31.The magnetic moment of $K_3[FeCN_6]$ is found to be 1.7 BM.How many unpaired electron s is/are present per molecule ?

a 1 b 2 c 3 d 4

32. Which among the following is an electron deficient compound ?

a $NF_3$ b $PF_3$

c $BF_3$ d $AsF_3$

33. Arrange the hydra-acids of halogens in increasing order of acidity .

a HF<HCL<HBr<HI

b HI<HBr<HCL<HF

c HF<HBr<HI<HCL

d HF<HI<HBr<HCL

**34. What is the product of the reaction of $H_2O_2$ with $CL_2$ ?**

a $O_2$ + HOCL  b HCL + $O_2$

c $H_2O$ + HCL  d HCL + $H_2$

**35. Which of the following organo-silicon compound on hydrolysis will give a three dimensional silicon ?**

a $R_3SiCL$  b $RSiCL_3$

c $SiCL_4$  d $R_2SiCL_2$

**36. NaOCL is used as a bleching agent and sterilizing agent.It can be synthesized by the action of**

a NaCL with $H_2O$

b $NH_4CL$ with NAOH

c $CL_2$ with cold and delute NaOH

d $Cl_2$ with hot and concentrated NaOH

**37. How can you synthesize nitric oxide in the liboratory ?**

a Zinc with cold and delute $HNO_3$

b Zinc with concentrated $HNO_3$

c Copper with cold and delute $HNO_3$

d Heating $NH_4NO_3$

**38. Which of the following does not have a lone pair on the central atom ?**

a $NH_3$  b $PH_3$  c $BF_3$  d $PCL_3$

**39. Which colourless gas evolves when $NH_4CL$ reacts with Zinc in a dry cell battery ?**

a $NH_3$  b $N_2$  c $H_2$  d $CL_2$

**40. What is the nature of the bond between B and O in $C_2H_5OBH_3$ ?**

a Covalent  b Co -ordinate covalent

c Ionic bond  d Banana shaped bo nd

**41. An alkene gives two moles of HCHO,one mole of $CO_2$ and one mole of $CH_3COCHO$ on ozonolysis.What is its structure ?**

a $CH_2 = C = CH - CH_2 - CH_3$

$CH_3$

b $CH_2 = CH - CH - CH = CH_2$

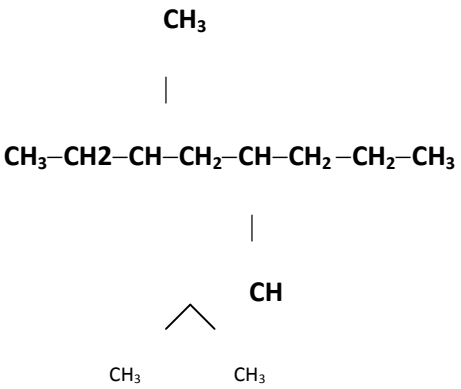
c $CH_2 = C = C - CH_3$

$CH_3$

$CH_3$

d $CH_2 = C = C - CH = CH_2$

**42. IUPAC name of the compound,**




a 4-isoprophyl,6-methyl octane

b 3-methyl,5-1 -methyl elthyl octane

c 3-methyl,5 isoprophyl octane

d 6-methyl,4-1 -methylethyl octane

**43. The order of melting point of ortho,para,meta-nitrophenol is**

a 0>m>p b p>m>o

c m>p>o d p>o>m

**44. When $CHCL_3$ is boiled with NaOH,it gives :**

a formic acid b trihydroxy methane

c acetylene d sodium formate

**45. Which of the following is an example of ketohexose ?**

a Mannose b galactose

c Maltose d Fructose

46. When aniline is treated with sodium nitrite and hydrochloric acid at $0^0$ C,it gives

a phenol and $N_2$

b diazonium salt

c hydrazo compound

d no reaction takes place

47. When benzoic acid is treated with $PCL_5$ at $100^0$C,it gives :

a benzoyl chloride

b 0 -chalorobenzoic acid

c p -chalorobenzoic acid

d benzyl chloride

48. The key step in Cannizaro's reaction is the intermolecular shift of :

a proton b hydride -ion

c hydronium ion d hydrogen bond

49. Aldehydes and ketones can be reduced to hydrocarbon by using :

a $LiALH_4$ b $H_2/pd\text{-}BaSO_4$

c Na -Hg/HCL d $NH_2{-}NH_2/C_2H_5ONa$

50. Cinnamic acid is formed when $C_6H_5{-}CHO$ condenses with $CH_3CO_2O$ in presence of :

a concentrated $H_2SO^4$

b sodium acetate

c sodium metal

d anhydrous $ZnCL_2$

51. What is the product of the reaction of phenol with $CHCL_3$ in aqueous NaOH and subsequent and hydrolysis ?

a Salicylic acid b Salicylaldehyde

c Benzoic acid d Benzaldehyde

52. On treatment with chlorine in presence of sunlight,tolune gives the product :

a o -choloro tolune

b 2,5 -dichloro tolune

c p -chloro toluene

d benzyl chloride

53. Which of the following cycloalkane gives open chain compound,when reacts with bromine ?

a Cyclopropane b Cyclopentane

c Cyclohexane d Cyclooctane

54. Which of the following intermediate have the complete octate around the carbon atom ?

a Carbonium ion b Carbanion

d Free redial d Carbene

55. If the dipole moment of toluene and nitro-benzene are 0.43 D and 3.93 D,Then what is the expected dipole moment of P-nitro toluene ?

a 3.50 D b 2.18 D

c 4.36 D d 5.30 D

56. What is the product when 2-butyne is treated with liquid $NH_3$ in presence of lithium ?

a n-butane b cis -2 butene

c trans -2-butene d 1 -butene

57. In the dichlorination reaction of propane,mixure of products are obtainedHow many isomers the mixture contains ?

a 2 b 3

c 4 d 5

58. Cyclopentadieny1 anion is :

a aromatic b non -aromatic

c non -planer d aliphatic

**59. What is the product of the reaction of 1,3-butadiene with $Br_2$ ?**

**a 1,4 -dibromo butane**

**b 1,2 dibromo butane**

**c 3,4 -dibromo butane**

**d 2,3 -dibromo to butane**

**60. The most common type of reaction in aromatic compound is :**

**a elimination reaction**

**b addition reaction**

**c electrophilic substitution reaction**

**b rearrangement reacttion**