



Total Marks :100

12 - Std

Time : 1.30 Hrs

## CHEMISTRY

- Which one of the following reaction represents Calcination.
  - $2Zn + O_2 \longrightarrow 2ZnO$
  - $2ZnS + 3O_2 \longrightarrow 2ZnO + 2SO_2$
  - $MgCO_3 \longrightarrow MgO + CO_2$
  - Both (a) and (c)
- Which of the metal is extracted by Hall - Heroult process
  - Al
  - Ni
  - Cu
  - Zn
- Wolframite ore is separated from tinstone by the process of
  - Smelting
  - Calcination
  - Roasting
  - Electro Magnetic Separation
- Flux is a substance which is used to Convert
  - Mineral into silicate
  - Infusible impurities to soluble impurities
  - Soluble impurities to infusible impurities
  - All of these
- Zinc is obtained from ZnO by
  - Carbon reduction
  - Reduction using Silver
  - Electrochemical process
  - Acid leaching
- The incorrect statement among the following is
  - Nickel is refined by Mond's Process
  - Titanium is refined by van Arkel's process
  - Zinc blende is concentrated by froth flotation
  - In the metallurgy of gold the metal is leached with dilute sodium chloride solution
- In diborane the number of electrons that accounts for banana bonds is
  - Six
  - Two
  - Four
  - Three
- Oxidation state of carbon in its hydrides
  - +4
  - 4
  - +3
  - +2
- The basic structural unit of silicates is
  - $(SiO_3)^{2-}$
  - $(SiO_4)^{2-}$
  - $(SiO)^-$
  - $(SiO_4)^{4-}$
- Which of the following is not  $sp^2$  hybridised
  - Graphite
  - Graphene
  - Fullerene
  - Dry ice
- Duralumin is an alloy
  - Cu, Mn
  - Cu, Al, Mg
  - Al, Mn
  - Al, Cu, Mn, Mg
- In which of the following  $NH_3$  is not used?
  - Nessler's reagent
  - Reagent for the analysis of IV group basic radical
  - Reagent for the analysis of III group basic radical
  - Tollen's reagent
- The basicity of Pyrophosphorus acid ( $H_4P_2O_5$ ) is
  - 4
  - 2
  - 3
  - 5
- Assertion: bond dissociation energy of fluorine is greater than chlorine gas  
Reason: Chlorine has more electronic repulsion than fluorine
  - Both assertion and reason are true and reason is the correct explanation of assertion
  - Both assertion and reason are true but reason is not the correct explanation of assertion
  - Assertion is true but reason is false
  - Both assertion and reason are false
- Most easily liquefiable gas is
  - Ar
  - Ne
  - He
  - Kr
- Which of the following is strongest acid among all
  - HI
  - HF
  - HBr
  - HCl
- Which one of the following is has the same number of unpaired electrons as present in  $V^{3+}$ ,
  - $Ti^{3+}$
  - $Fe^{3+}$
  - $Ni^{2+}$
  - $Cr^{3+}$
- The magnetic moment of  $Mn^{2+}$  ion is
  - 5.92 BM
  - 2.80 BM
  - 8.95 BM
  - 3.90 BM
- In acid medium potassium permanganate oxidized oxalic acid to
  - Oxalate
  - Carbon dioxide
  - Acetate
  - Acetic acid
- Which of the following lanthanoid ion is diamagnetic
  - $Eu^{2+}$
  - $Yb^{2+}$
  - $Ce^{2+}$
  - $Sm^{2+}$
- Which of the following oxidation states is most common among the lanthanoids
  - +4
  - +2
  - +5
  - +3
- The actinoid elements which show the highest oxidation state of +7 are
  - Np, Pu, Am
  - U, Fm, Th
  - U, Th, Md
  - Es, No, Lr
- IUPAC name of the Complex  $K_3 [Al(C_2O_4)_3]$  is
  - Potassiumtrioxalatoaluminium (III)
  - Potassiumtrioxalatoaluminate (II)
  - Potassium trisoxalato aluminate (III)
  - Potassium trioxalato aluminate (III)
- Which type of isomerism is exhibited by  $Pt (NH_3)_2 Cl_2$ 
  - Coordination isomerism
  - Linkage isomerism
  - Optical isomerism
  - Geometrical isomerism
- Which kind of isomerism is possible for a complex  $[(Co(NH_3)_4 Br_2] Cl$ ?

- a) Geometrical and ionization b) Geometrical and optical c) Optical and ionization d) Geometrical only
26. A complex in which the oxidation number of the metal is zero is  
 a)  $K_4[Fe(CN)_6]$  b)  $[Fe(CN)_3(NH_3)_3]$  c)  $[Fe(CO)_5]$  d) Both (b) and (c)
27. Which of the following is paramagnetic in nature  
 a)  $[Zn(NH_3)_4]^{2+}$  b)  $[Co(NH_3)_6]^{3+}$  c)  $[Ni(H_2O)_6]^{2+}$  d)  $[Ni(CN)_4]^{2-}$
28. Choose the correct statement  
 a) Square planar complexes are more stable than octahedral complexes  
 b) The spin only magnetic moment of  $[Cu(Cl)_4]^{2-}$  is 1.732 BM and it has square planar structure  
 c) Crystal field splitting energy ( $\Delta_o$ ) of  $[FeF_6]^{4-}$  is higher than the ( $\Delta_o$ ) of  $[Fe(CN)_6]^{4-}$   
 d) Crystal field stabilization energy of  $V(H_2O)_6^{2+}$  is higher than the crystal field stabilization of  $[Ti(H_2O)_6]^{2+}$
29. Solid  $CO_2$  is an example of  
 a) Covalent solid b) Metallic solid c) Molecular solid d) Ionic solid
30. The vacant space in bcc lattice unit cells is  
 a) 48% b) 23% c) 32% d) 26%
31. The yellow colour in NaCl crystal is due to  
 a) extraction of electrons forming F-centres b) Reflection of light from Cl<sup>-</sup> ions at the surface  
 c) Refraction of light from Na<sup>+</sup> ions d) all of the above
32. The cation leaves its normal position in the crystal and moves to some interstitial position; the defect is the crystal is known as  
 a) Schottky defect b) F-centre c) Frenkel defect d) Non-stoichiometric defect
33. The crystal with a metal deficiency defect is  
 a) NaCl b) FeO c) ZnO d) KCl
34. The decomposition of phosphine ( $PH_3$ ) on tungsten at low pressure is a first order reaction. It is because the  
 a) Rate is proportional to the surface coverage b) Rate is inversely proportional to the surface coverage  
 c) Rate is independent of the surface coverage d) Rate of decomposition is slow
35. The addition of a catalyst during a chemical reaction alters which of the following quantities  
 a) Enthalpy b) Activation energy c) Entropy d) Internal energy
36. The rate constant of a reaction is  $5.8 \times 10^{-2} \text{ s}^{-1}$ . The order of the reaction is  
 a) First order b) Zero order c) Second order d) Third order
37. If the initial concentration of the reactant is doubled, the time for half reaction is also double. The order of the reaction is  
 a) Zero b) One c) Fraction d) None
38. The half-life period of a radioactive element is 140 days. After 560 days, 1g of the element will be reduced to  
 a)  $(1/2)$  g b)  $(1/4)$  g c)  $(1/8)$  g d)  $(1/16)$  g
39. Conjugate base for Brønsted acids  $H_2O$  and  $HF$  are  
 a)  $OH^-$  and  $H_2F^+$  respectively b)  $H_3O^+$  and  $F^-$  respectively  
 c)  $OH^-$  and  $F^-$  respectively d)  $H_3O^+$  and  $H_2F^+$  respectively
40. Which of these is not likely to act as a Lewis base  
 a)  $BF_3$  b)  $PF_3$  c) CO d)  $F^-$
41. If the solubility product of lead iodide is  $3.2 \times 10^{-8}$ , its solubility will be  
 a)  $2 \times 10^{-3} \text{ M}$  b)  $4 \times 10^{-4} \text{ M}$  c)  $1.6 \times 10^{-5} \text{ M}$  d)  $1.8 \times 10^{-5} \text{ M}$
42. The pH of  $10^{-5} \text{ M}$  KOH solution will be  
 a) 9 b) 5 c) 19 d) more of these
43.  $H_4PO_4^-$  is the conjugate base of  
 a)  $PO_4^{3-}$  b)  $P_2O_5$  c)  $H_3PO_4$  d)  $HPO_4^{2-}$
44. The number of electrons that have a total charge of 9650 coulombs is  
 a)  $6.22 \times 10^{23}$  b)  $6.022 \times 10^{24}$  c)  $6.022 \times 10^{22}$  d)  $6.022 \times 10^{34}$
45. Faraday constant is defined as  
 a) Charge carried by 1 electron b) Charge carried by one mole of electrons  
 c) Charge required to deposit one mole of substance d) Charge carried by  $6.22 \times 10^{10}$  electrons
46. How many faradays of electricity are required for the following reaction to occur  $MnO_4^- \rightarrow Mn^{2+}$   
 a) 5F b) 3F c) 1F d) 7F
47. During electrolysis of molten sodium chloride, the time required to produce 0.1 mole of chlorine gas using a current of 3A is  
 a) 55 minutes b) 107.2 minutes c) 220 minutes d) 330 minutes
48. Which of the following electrolytic solutions has the least specific conductance  
 a) 2N b) 0.002N c) 0.02N d) 0.2N
49. Among the following cells  
 I) Leclanche cell II) Nickel-cadmium cell III) Lead storage battery IV) Mercury cell primary cells  
 are  
 a) I and IV b) I and III c) III and IV d) II and III

50. Which of the following is incorrect for physisorption?  
 a) reversible  
 b) increases with increase in temperature  
 c) Low heat of adsorption  
 d) increases with increase in surface area
51. Fog is colloidal solution of  
 a) Solid is gas  
 b) Gas is gas  
 c) Liquid is gas  
 d) Gas is liquid
52. The most effective electrolyte for the coagulation of  $As_2S_3$  Sol is  
 a) NaCl  
 b)  $Ba(NO_3)_2$   
 c)  $K_3[Fe(CN)_6]$   
 d)  $Al_2(SO_4)_3$
53. The Phenomenon observed when a beam of light is passed through a colloidal solutions is  
 a) Cataphoresis  
 b) Electrophoresis  
 c) Coagulation  
 d) Tyndall effect
54. Which are of the following is an example of homogeneous catalysis  
 a) Manufacture of ammonia by Haber's process  
 b) manufacture of sulphuric acid by contact process  
 c) Hydrogenation of oil  
 d) Hydrolysis of sucrose in presence of dil.HCl
55. Adsorption of a gas is solid metal surface is spontaneous and exothermic then  
 a)  $\Delta H$  increases  
 b)  $\Delta S$  increases  
 c)  $\Delta G$  increases  
 d)  $\Delta S$  decreases
56. Which are of the following is the strongest acid  
 a) 2-Nitrophenol  
 b) 4-Chlorophenol  
 c) 4-Nitrophenol  
 d) 3-Nitrophenol
57. Carboic acid is  
 a) Phenol  
 b) Picric acid  
 c) Benzoic acid  
 d) Phenylacetic acid
58. Assertion : Phenol is more acidic than ethanol  
 Reason : Phenoxide ion is resonance stabilised  
 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
59. Isopropylbenzene on air oxidation in the presence of dilute acid gives  
 a)  $C_6H_5COOH$   
 b)  $C_6H_5COCH_3$   
 c)  $C_6H_5COC_6H_5$   
 d)  $C_6H_5OH$
60. Which of the following compound can be used as antifreeze in automobile radiators?  
 a) Methanol  
 b) Ethanol  
 c) Neopentyl alcohol  
 d) Ethane-1,2 diol
61. On reacting with neutral ferric chloride phenol gives  
 a) Red colour  
 b) Violet Colour  
 c) Dark Green Colour  
 d) No Colouration
62. In the following reaction  

$$HC \equiv CH \xrightarrow[HgSO_4]{H_2SO_4} \text{Product x}$$
 x will not give  
 a) Tollen's test  
 b) Victor Meyer test  
 c) Iodoform test  
 d) Fehling solution test
63.  $CH_3Br \xrightarrow{KCN} (A) \xrightarrow{H_3O^+} (B) \xrightarrow{PCl_5} (C)$  Product is  
 a) Acetyl chloride  
 b) Chloroacetic acid  
 c)  $\alpha$ -chloro cyclo ethanoic acid  
 d) none of these
64. Which are of the following reduces Tollen's reagent  
 a) Formic acid  
 b) Acetic acid  
 c) Benzophenone  
 d) None of these
65. Which are of the following reaction is an example of disproportionation reaction  
 a) Aldol condensation  
 b) Cannizzaro reaction  
 c) Benzoin Condensation  
 d) None of these
66. The reagent used to distinguish between acetaldehyde and benzaldehyde is  
 a) Tollens reagent  
 b) Fehling's solution  
 c) 2,4 dinitrophenyl hydrazine  
 d) Semicarbazide
67. In which of the following reaction new carbon-carbon bond is not formed  
 a) Aldol condensation  
 b) Friedel-Craft reaction  
 c) Kolbe's reaction  
 d) Wolff-Kishner reduction
68. Carboxylic acids have higher boiling points than aldehydes, ketones and even alcohols of comparable molecular mass. It is due to their  
 a) More extensive association of carboxylic acid via van der Waals force of attraction  
 b) Formation of carboxylate ion  
 c) Formation of intramolecular H-bonding  
 d) Formation of intermolecular H-bonding
69. Which of the following reagent can be used to convert nitrobenzene to aniline  
 a) Sn / HCl  
 b) Zn/Hg / NaOH  
 c) Zn/NH<sub>4</sub>Cl  
 d) All of these
70. Which are of the following will not undergo Hoffmann bromamide reaction  
 a)  $CH_3CO NH CH_3$   
 b)  $CH_3CH_2CO NH_2$   
 c)  $CH_3CO NH_2$   
 d)  $C_6H_5CO NH_2$
71. The product formed by the reaction of an aldehyde with a primary amine  
 a) Carboxylic acid  
 b) Aromatic acid  
 c) Schiff's base  
 d) Ketone
72. Nitrobenzene on reaction with  $Ca HNO_3$  /  $H_2SO_4$  at 80-100°C forms which are of the following products  
 a) 1,4-dinitrobenzene  
 b) 2,4,6-trinitrobenzene  
 c) 1,2-dinitrobenzene  
 d) 1,3-dinitrobenzene
73. Secondary nitroalkanes react with nitrous acid to form  
 a) Red Solution  
 b) Blue Solution  
 c) Green Solution  
 d) Yellow Solution
74. Which of the following amines does not undergo acetylation  
 a) t-butylamine  
 b) Ethylamine  
 c) Diethylamine  
 d) Triethylamine

