MHT-CET Practice Question Paper

Subject : Chemistry

Time: 45 minutes **Test no : 04** **Marks : 100**

All the questions are compulsory and contain two marks for each

1. Which one of the following compounds show both Schottky and Frenkel defect?
   a) KCL b) AgI
   c) AgBr d) AgCL
2. Which of these species will have non-zero magnetic moment?
   a) Na^+ b) Mg
   c) F^- d) Ar^+
3. Select a ferromagnetic material from the following.
   a) Dioxygen
   b) Chromium(IV) oxide
   c) Benzene
   d) Dihydrogen monoxide
4. Which of the following is FALSE about ionic solids?
   a) In fused state, ionic solids do not conduct electricity.
   b) In aqueous solution, ionic solids conduct electricity
   c) In solid state, free electrons are available in ionic solids.
   d) In solid state, ionic solids do not conduct electricity.
5. 18 g glucose ($C_6H_{12}O_6$) is added to 178.2 g water. The vapour pressure of water (in torr) for this aqueous solution is _____.
   a) 7.6 b) 76.0
   c) 752.4 d) 759.0
6. Find the K_f if 6 g of urea is dissolved in 0.1 dm^3 of water and it corresponds to 0.15 ^oC in ΔT_f
   (Molecular weight of urea = 60 g mol^{-1})
   a) 0.015 b) 0.15
   c) 0.30 d) 0.030
7. If M, W and V represent molar mass of solute, mass of solute and volume of solutions in litres respectively, which among the following equation is true?
   a) $\pi = \frac{MWR}{TV}$
   b) $\pi = \frac{TMR}{WV}$
   c) $\pi = \frac{TWR}{VM}$
   d) $\pi = \frac{TRV}{WM}$
8. Pure water can be obtained from sea water by _____.
   a) centrifugation b) plasmolysis
   c) reverse osmosis d) sedimentation
9. $(NH_4)_2CO_3$ is a salt of _____.
   a) Weak acid and weak base
   b) Weak acid and strong base
   c) Strong acid and strong base
   d) Strong acid and weak base
10. Which of the following is added to commercial jams and jellies to increase their shelf life?
    a) Magnesium hydroxide
    b) Sodium acetate tartaric acid
    c) Tartaric acid
    d) Sodium benzoate
11. When citric acid is added to milk of magnesia, ____is formed which is a buffer.
    a) Magnesium hydroxide
    b) Magnesium citrate
    c) Sodium citrate
    d) Ammonium citrate
12. Precipitation of whish of the following compounds is responsible for kidney stone?
    a) $CaCO_3$
    b) $Ca_5(PO_4)_3OH$
    c) CaC_2O_4
    d) $CaCl_2$

13. An ideal gas expands in volume from $1x10^{-3}$ m^3 to $1 x 10^{-2}$ m^3 at 300 K against a constant pressure of $1 x 10^5$ N m^{-2}. The work done is _____.
    a) -900 J b) -900 kJ
    c) 270 kJ d) 900 kJ
14. How internal energy will change due to removal of heat and work from the system?
    a) decrease b) increase
    c) remain same d) none
15. Enthalpy of combustion of $C_6H_{6(l)}$ at 298 K to yield $CO_{2(g)}$ and $H_2O_{(l)}$ is ΔH = -781.1 kcal. Calculate ΔU.
    a) -708.1 kcal/mol
    b) -780.1 kcal/mol
    c) -801.7 kcal/mol
    d) -810.7 kcal/mol
16. For which among the following reactions, change in entropy is less than zero
    a) sublimation of iodine
    b) dissociation of hydrogen
    c) formation of water
    d) thermal decomposition of calcium carbonate
17. Which among the following solutions is not used in determination of the cell constant?
    a) 10^{-2} M KCL b) 10^{-1} M KCL
    c) 1 M KCL d) Saturated KCL
18. During the electrolysis of molten sodium chloride, the time required to produce 0.10 mol of chlorine gas using a current of 3 amperes is _____.
    a) 330 minutes b) 55 minutes
    c) 110 minutes d) 220 minutes
19. Device that converts energy of combustion of fuels like hydrogen and methane, directly into electrical energy is known as _____.
    a) fuel cell b) electrolytic cell
    c) dynamo d) Ni-Cd cell
20. The metal that cannot be obtained by electrolysis of an aqueous solution of its salts is _____.
    a) Ag b) Ca
    c) Cu d) Cr
21. The rate $\frac{d[B]}{dt}$ for reaction 3A → 2B is equal to _____.
    a) $-\frac{3}{2}\frac{d[A]}{dt}$ b) $-\frac{2}{3}\frac{d[A]}{dt}$
    c) $-\frac{1}{3}\frac{d[A]}{dt}$ d) $+2\frac{d[A]}{dt}$
22. For a reaction A + B →C, it is found that doubling the concentration of A increases the rate by 4 times and doubling the concentration of B doubles the reaction rate. The overall order of the reaction is ___.
    a) 3 b) 0
    c) 1 d) 2
23. The rate constant is doubled when temperature increases from 27 °C to 37 °C. Activation energy in kJ is _____.
    a) 34 b) 54
    c) 100 d) 50
24. The most abundant noble gases in atmosphere is ____.
    a) neon b) argon
    c) xenon d) krypton
25. The correct decreasing order of energy released when an electron is added to neutral gaseous halogens is _____.
    a) F > Cl > Br > I b) Cl > Br > F > I
    c) F > Br > Cl > I d) Cl > F > Br > I
26. What is the highest oxidation state exhibited by group 17 elements?
    a) +1 b) +3
    c) +5 d) +7
27. The number of unpaid electrons in Ni (atomic number = 28) are:
    a) 0 b) 2
    c) 4 d) 8
28. Which of the following ion has the maximum theoretical magnetic moment?
    a) Fe^{3+} b) Cr^{3+}
    c) Ti^{3+} d) Co^{3+}
29. The colour of light absorbed by an aqueous solution of $CuSO_4$ is _____.
    a) orange-red b) blue-green
    c) yellow d) violet
30. The sum of coordination number and oxidation number of the metal M in the

complex $[M(en)_2(C_2O_4)]Cl$ (where en is ethylenediamine) is _____.
a) 7 b) 8
c) 9 d) 6

31. Formula of hexaaquamanganese(II) phosphate is _____.
a) $[Mn(H_2O)_6](PO_4)$
b) $[Mn(H_2O)_6]_3(PO_4)$
c) $[Mn(H_2O)_6]_3(PO_4)_2$
d) $[Mn(H_2O)_6](PO_4)_3$

32. The strongest ligand in the following is ___.
a) CN^- b) Br^-
c) HO^- d) F^-

33. Two possible stereo-structures of $CH_3CH(OH)COOH$, which are optically active, are called _____.
a) enantiomers b) mesomers
c) diastereomers d) atropisomers

34. 12.3 g 1-bromopropane is treated with alcoholic KOH. What mass of propane is obtained if yield is 50%?
a) 6.05 g b) 12.3 g
c) 4.2 g d) 2.1 g

35. The compound which is not formed when a mixture of n-butyl bromide and ethyl bromide treated with sodium metal in presence of dry ether is _____.
a) butane b) octane
c) hexane d) ethane

36. Which of the major product obtained by hydrolysis of compound formed by reaction between formaldehyde and ethyl magnesium bromide?
a) 2-Methylpropan-2-ol
b) Propan-1-ol
c) Propan-2-ol
d) Ethan-1-ol

37. Which of the following can be used to test the acidic nature of ethanol?
a) $NaHCO_3$
b) Na metal
c) Blue litmus solution
d) Na_2Co_3

38. Reaction of phenol with chloroform in presence of dilute sodium hydroxide finally introduces which one of the following functional group?
a) $CHCl_2$ b) CHO
c) CH_2Cl d) COOH

39. ____ is the most reactive towards nucleophilic addition reactions.
a) Acetaldehyde
b) Acetone
c) Di-tert-butyl ketone
d) Methyl tert-butyl ketone

40. Nitration of benzaldehyde results in _____.
a) o-substitution b) p-substitution
c) m-substitution d) o-substitution

41. Acetic anhydride is obtained from acetyl chloride by the reaction of _____.
a) P_2O_5 b) H_2SO_4
c) CH_3COONa d) CH_3COOH

42. Isopropyl amine is an example of _____.
a) primary amine
b) secondary amine
c) tertiary amine
d) quaternary ammonium salt

43. Alkyl cyanide on reduction produces _____.
a) 1^o amine b) 2^o amine
c) 3^o amine d) quaternary salt

44. With increase in carbon atoms, the boiling point of aliphatic amines_____.
a) increases
b) decreases
c) does not change
d) first decreases and than increases

45. Oligosaccharides on hydrolysis yield _____ units of monosaccharides.
a) two b) two to ten
c) ten to twelve d) ten to fifteen

46. Which of the following is an example of tetrasaccharide?
a) Raffinose b) Cellulose
c) Stachyose d) Glycogen

47. The main constituent of plant cell wall is _____.
a) Starch b) Cellulose
c) sucrose d) glucose

48. Which of the following is not an organic biopolymer?
a) Nucleic acid b) Protein

c) Vitamin d) Carbohydrate

49. ____ is a synthetic polymer.
    a) Silk b) Neoprene
    c) Cellulose nitrate d) Cotton
50. Treatment of rubber with sulphur is called _____.
    a) vulcanization b) sulphonation
    c) hybridization d) condensation