MHT-CET Practice Question Paper

Subject : Chemistry

Time: 50 minutes **Test no : 02** **Marks : 100**

All the questions are compulsory and contain two marks for each

1. Lithium has a bcc structure. Its density is 530 kg m^{-3} and its atomic mass is 6.94 g mol^{-1} calculate the edge length of a unit cell of lithium metal. (N_0 = 6.02 × 10^{23} mol^{-1})
   a) 527 pm b) 264 pm
   c) 154 pm d) 352 pm
2. A metal has a fcc lattice. The edge length of the unit cell is 404 pm. The Density of the metal is 2.72 g cm^{-3} . The molar mass of the metal is _____. (N_0, $Avagadro's\ constant$ = 6.02 × 10^{23} mol^{-1})
   a) 40 g mol^{-1} b) 30 g mol^{-1}
   c) 27 g mol^{-1} d) 20 g mol^{-1}
3. The Vacant Space in bcc lattice unit cell is
   a) 23% b) 32 %
   c) 26 % d) 48 %
4. What is the packing efficiency of arrangements in a body-centred unit cell?
   a) 64.00% b) 68.00%
   c) 74.00% d) 53.26%
5. True solutions contain solute particles with diameters in the range of ____ nm.
   a) 0.1 to 2
   b) 1 to 20
   c) 10 to 200
   d) 100 to 2000
6. Depending on the physical states of solvents and solutes, there are _____ types of solutions.
   a) 5 b) 7
   c) 9 d) 12
7. If we continue the addition of solute in a given amount of solvent, the dissolution stops after the some time. The solution at this point is said to be _____.
   a) supersaturated
   b) saturated
   c) unsaturated
   d) none of these
8. Solubility is expressed in the concentration unit(s) of _____.
   a) mol L^{-1} b) mol g^{-1}
   c) mole fraction d) mol kg^{-1}
9. The Conjugate base of HSO^-_4 is____
   a) SO_4^{2-} b) $H_3SO_4^+$
   c) H_2SO_4 d) H_3O^+
10. According to Lewis theory, an Acid is any Species which_____
    a) Donates a share in an electron pair
    b) Accepts a share in an electron pair
    c) Accepts a proton
    d) Donates a proton
11. Which of the following is NOT a weak acid?
    a) H_2SO_4 b) H_2
    c) CH_3COOH d) HF
12. The value of Kw for pure water at 298 K is ___
    a) 7 b) 14
    c) $1x10^{-7}$ d) $1x10^{-14}$
13. Which of the following equations is correct for isochoric process according to first law of thermodynamics?
    a) $\Delta U = Q_v$ b) $\Delta U = Q + W$
    c) $\Delta U = W$ d) $Q = -W$
14. ΔU is equal to _____.
    a) isochoric work b) isobaric work
    c) adiabatic work d) isothermal work
15. What is the amount of work done when 0.5 mole of methane, $CH_{4(g)}$, is subjected to combustion at 300 K?
    (given, R = 8.314 $JK^{-1}\,mol^{-1}$)
    a) -2494 J b) -4988 J
    c) +4988 J d) +2494 J
16. The equation used to represent the electron gain enthalpy is _____.
    a) $X_{(g)} + e^- \dashrightarrow X^-_{(g)}$
    b) $X_{(s)} + e^- \dashrightarrow X^-_{(g)}$

c) $X_{(g)} \text{----} \rightarrow X^{+}_{(g)} + e^{-}$
d) $X_{(s)} \text{----} \rightarrow X^{+}_{(g)} + e^{-}$

17. The conductivity of 0.1 mol L^{-1} KCL solution is 1.41 x 10^{-3} S $^{cm-1}$.What is its molar conductivity (in S cm^2 mol^{-1})?
a) 14.1 b) 1.41
c) 1410 d) 141

18. The overall reaction taking place at anode during electrolysis of fused sodium chloride using suitable electrode is _____.
a) oxidation of chloride
b) reduction of sodium ions
c) reduction of chlorine
d) oxidation of sodium atoms

19. Which of the following electrolytes is used to maintain electrical neutrality in the Daniel cell?
a) KCl b) KOH
c) NH_4Cl d) NaCl

20. In dry cell, what acts as negative electrode?
a) Zinc
b) Graphite
c) Ammonium chloride
d) Manganese dioxide

21. Which one of the following statements is not correct for order of reaction?
a) Order can be determined experimentally
b) order of reaction is equal to the sum of the powers of concentration terms in differential rate law
c) it is not affected with stoichiometric coefficient of the reactants
d) order can't be fractional

22. The rate of the reaction A ----→ Products at the initial concentration of 3.24 x $^{10-2}$ M is nine times its rate at another initial concentration of 1.2 x 10^{-3} M. The order of reaction is _____.
a) 1/2 b) 3/4
c) 3/2 d) 2/3

23. For the reaction $O_{3(g)} + O_{(g)} \rightarrow 2O_{2(g)}$, if the rate law expression is, rate = $k[O_3]$ [O] the molecularity and order of the reaction are respectively _____.
a) 2 and 2 b) 2 and 1.33
c) 2 and 1 d) 1 and 2

24. What is the most abundant element on earth?
a) Hydrogen b) Nitrogen
c) Oxygen d) Silicon

25. Which halogen has the highest value of negative electron gain enthalpy
a) Florine b) Chlorine
c) Bromine d) Iodine

26. Which halogen forms and oxyacid dad contains the halogen atom in try positive oxidation state
a) Florine b) Chlorine
c) Bromine d) Iodine

27. Which is the correct order of increasing energy of listed orbitals in the atom of titanium? (At. No. Z = 22)
a) 3s 3p 3d 4s b) 3s 3p 4s 3d
c) 3s 4s 3p 3d d) 4s 3s 3p 3d

28. Which of the following ion is diamagnetic?
a) Sc^{3+} b) V^{3+}
c) Ni^{2+} d) Fe^{2+}

29. A compound absorbs light in the wavelength region 490 – 500 nm its complementary colour is:
a) Red b) Blue
c) Orange d) Blue-green

30. The oxidation number of Ni in $[Ni(C_2O_4)_3]^{4-}$ is _____.
a) +3 b) +4
c) +2 d) +6

31. The name of complex ion. $[Fe(CN)_6]^{3-}$ is _____.
a) tricyanoferrate(III) ion
b) hexacyanoferrate(III) ion
c) hexacyanoiron(III) ion
d) hexacyanitoferrate(III) ion

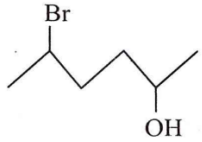
32. If the Effective Atomic Number (EAN) of $[A(NH_3)_6]Cl_3$ is 33, the atomic number of the element (A) will be _____.
a) 23 b) 27
c) 24 d) 29

33. What is the chemical location of Nicola's prism?
a) Al_2O_3 b) $CaSO_4$
c) $CaCO_3$ d) Na_3AlF_6

34. (+) 2-Methylbutan-1-ol and (-) 2-methylbutan-1-ol have different values for which property?
    a) Boiling point
    b) Relative density
    c) Refractive index
    d) Specific rotation

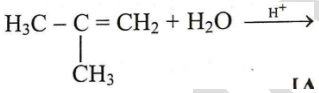
35. Which of the following alkyl halide is more reactive towards nucleophilic substitution reaction?
    a) $H_3C - CH_2$ - F
    b) $H_3C - CH_2$ - Cl
    c) $H_3C - CH_2$ - Br
    d) $H_3C - CH_2$ - I

36. The correct IUPAC name of the compound is _____.



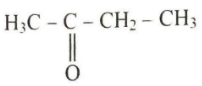
    a) 5-Bromohexan-2-ol
    b) 2-Hydroxy-5-bromohexane
    c) 2-Bromo-5-hydroxyhexane
    d) 2-Bromohexan-5-ol

37. In presence of few drops of conc. H_2SO_4, the product formed in the following reaction is :



    a) 2-methylpropan-2-ol
    b) 2-methylpropanal
    c) 1,2-dihydroxy-2-methylpropane
    d) 2-methylpropanoic acid

38. 23 g of sodium when reacts with ethanol liberates _____.
    a) 22.4 dm^3 dihydrogen at NTP
    b) 0.5 dm^3 dihydrogen at NTP
    c) 11.2 dm^3 dihydrogen at NTP
    d) 11.2 dm^3 dioxygen at NTP

39.  is a/an _____.
    a) symmetrical ketone
    b) unsymmetrical ketones
    c) ester
    d) aldehyde

40. The compound CH_3CHO is commonly called as _____.
    a) acetaldehyde b) acetic acid
    c) acetal d) acetone

41. Compound 'X' on oxidation yields dimethyl ketone. 'X' is_____.
    a) methanol
    b) ethanol
    c) isopropyl alcohol
    d) propan-1-ol

42. Which of the following can be categorised as an amine?
    a) R-NH_2 b) Ar-N_2X
    c) R-NC d) RONO

43. The functional group in secondary amines is known as _____.
    a) amino group b) imino group
    c) tertiary nitrogen d) azo group

44. IUPAC name of benzylamine is_____.
    a) phenylmethanamine
    b) cyclohexanamine
    c) aniline
    d) phenylethanamine

45. A carbohydrate that cannot be hydrolysed to smaller unit is called _____.
    a) polysaccharide b) trisaccharide
    c) disaccharide d) monosaccharide

46. Sucrose on warming with dilute sulfuric acid yields _____.
    a) glucose and maltose
    b) glucose and lactose
    c) glucose and fructose
    d) only glucose

47. Fisher projection formula of glucose contains _____ chiral C-atoms.
    a) 1 b) 2
    c) 3 d) 4

48. A molecule or group of molecules which are repeated to get a polymer is termed as _____.
    a) monomer b) oligomer
    c) dimer d) tetramer

49. Which of the following is regenerated fibre?
    a) Nylon 6 b) Nylon 6.6
    c) Viscose rayon d) Terylene

50. The monomer of natural polymer rubber is _____.

a) neoprene b) isoprene
c) chloroprene d) butadiene