CET MODEL PAPER-2012

1. The mass of glucose that should be dissolved in 50 g of water in order to produce same lowering of vapour pressure as is produced by dissolving 1 g of urea in same quantity of water is
   a) 1g   b) 3g   c) 6g   d)18g

2. The pH of the solution is 5.0 .TO this solution sufficient acid is added to decrease the pH to 2.0 .The H^+ ion concentration?
   a) Increases 1000 times   b) decreases 100 times
   c) Increases 100 times   d) decreases 1000 times

3. The equilibrium constant for $N_2 + 3H_2 \rightleftharpoons 2NH_3$ is 0.0025. The equilibrium constant for $NH_3 \rightleftharpoons \frac{1}{2} N_2 + 3/2 H_2$ at the same temperature is
   a) 0.05   b) 0.0025   c) 20   d) none

4. Given the bond energies $N\equiv N$, $H-H$, $N-H$ bonds are 945, 436, 393 kJ $mole^{-1}$ respectively the enthalpy of the reaction $N_{2\ (g)} + 3H_{2\ (g)} \longrightarrow 2\ NH_{3\ (g)}$ is
   a) −93kJ   b) 102 kJ   c) 90 kJ   d) 105 kJ

5. The oxidation number of oxygen is +2 in
   a) Cl_2O b) F_2O c) Na_2O_2 d) MgO

6. Electronic configuration of four elements A, B, C and D are as follows. Which one will be highly electropositive?
   a) A=2,8, 4   b) B= 2,8,8   c) C=2,8,8,1   d) D= 2,8,8,7

7. An insecticide contains 47.5% C, 2.54% H and 50% Cl by mass. Its empirical formula is

   a) $C_{13}H_8Cl_{15}$ b) $C_{14}H_9Cl_5$ c)$C_{12}H_{10}Cl_5$ d)$C_{15}H_{12}Cl_6$

8. The IUPAC name of the compound is
   a) 5-methylhexanol   b) 2-methylhexanol
   c) 2-methylhex-3-enol   d) 4-methylpent-2-enol

9. A compound with molecular formula C_7H_{16} shows optical isomerism, the compound will be
   a) 2, 3-dimethylpentane   b) 2, 2-dimethylpenatane
   c) 2-methylhexane   d) None of these

10. Which of the following statements is correct?
    a) +I group stabilizes a carbocation   b) +I group stabilizes carbanion
    c) –I group stabilizes carbocation   d) –I group stabilizes carbanion

11. Which of the following has all carbon atoms *sp* hybridized?
    a) $CH_3-CH = CH-CH_3$ b) $CH_3-C \equiv C-CH_3$
    c) $HC \equiv C-C \equiv CH$ d) All of the above

12. The reaction method, which does not give alkane, is
    a) Catalytic hydrogenation of alkenes   b) Hydrolysis of alky magnesium bromide
    c) Kolbe's electrolytic method   d) Dehydrohalogenation of an alkyl halide

13. Which of the following products is formed when methyl magnesium bromide reacts with alcohol?
    a) Acetone   b) Alcohol   c) Methane   d) Ethane

14. When ethyl alcohol is heated with conc.H_2SO_4 at 443K. Ethylene is formed by
    a) Intermolecular hydration   b) Intermolecular hydration

c) Intermolecular dehydration   d) Intramolecular dehydration

15. Ethane is subjected to combustion process. The hybrid state of carbon during combustion changes from
    a) sp^2 to sp^3 b) sp^3 to sp c) sp to sp^3 d) can't be predicted

16. -COOH group present on the benzene ring directs the incoming group to
    a) o-position   b) p-position   c) m-position   d) o and p

17. Which of the following is an example of self-reduction?

    a) $2CuFeS_2 + 4O_2 \longrightarrow Cu_2S + 2FeO + 3SC$

    b) $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

    c) $2Cu_2S + 2Cu_2O \longrightarrow 6Cu + SO_2$

    d) $3Mn_3O_4 + 8Al \longrightarrow 4Al_2O_3 + 9Mn$

18. The position of both, an electron and a helium atom is known within 0.1 nm. Further the momentum of the electron is known within 5.0×10^{-26} kg ms^{-1}. The minimum uncertainty in the measurement of momentum of helium atom is.
    a) 50kgms^{-1} b) 5.0×10^{-26} kg ms^{-1} c) 80 kg ms^{-1} d) 80×10^{-26}kgms^{-1}

19. A proton is about 1840 times heavier than an electron, when it is accelerated by a potential difference of 1kV, its kinetic energy will be
    a) 1840 keV   b) 1/1840 keV   c) 1 keV   d) 920 keV

20. The first three Ionisation energies of an element are 520, 7297, 11.800 kJ respectively. The valency of the element is
    a) 1   b) 2   c) 3   d) 4

21. Which of the following metal ions has lowest ionic mobility in aqueous solution?
    a) Li^+ b) K^+ c) Na^+ d) Cs^+

22. Which of the following elements has the highest electro negativity ?
    a) C   b) Si   c) Sn   d) Pb

23. The common minimum oxidation state shown by transition elements is +2.Which of the following is an exception?
    a) Fe   b) Co   c) Ni   d) Cu

24. In which of the following molecules there is one electron in excess of electron pairs?
    a) NO   b) BF_3 c) $BeCl_2$ d) SF_6

25. About the species O^+_2, O_2^-, O_2, O^{2-}, which one of the following statements is correct?
    a) O^+_2 have the least bond order
    b) O_2 has the highest bond order.
    c) The bond order of O_2 equals the average bond orders of O^+_2 and O_2^-
    d) The sum of bond orders of the species is - 2

26. Hydrogen bond is strongest in
    a) S - H...O   b) O- H...S   c) F - H...F   d) O - H...N

27. The electro negativity values of C, H, 0, N and S are 2.5, 2.1, 3.5, 3.0 and 2.5 respectively. The most polar bond is
    a) C-H   b) N-H   c) S-H   d) O-H

28. $C_{(g)} + O_{2(g)}$ $CO_{2(g)}$ $\Delta H = $ - 394 kJ. In this equation ΔH represents
    a) Enthalpy change when one mole of carbon burns in one mole of oxygen
    b) The enthalpy of formation of carbon dioxide gas
    c) The enthalpy of combustion of carbon   d) All the above are correct.

29. 0.5 mole of NaOH neutralizes 0.25 mole of H_2SO_4 in dilute solution at 298 K. the heat liberated is

a) 57.3 kJ b) 5.73 kJ c) 21.5 kJ d) 28.65 kJ

30. The oxidation number of nitrogen is fraction in
a) NH_4^+ b) NH_3 c) N_2H_2 d) HN_3

31. 2 g of NaOH are dissolved in one liter of water. pH of the solution is?
a) 12.7 b) 11.2 c) 10.8 d) 14.0

32. When a rod of metal A is dipped in an aqueous solution of metal B (concentration of B^{2+} being 1M) at 25^0C. (The standard electrode potentials are A^{2+} / A = -0.76 Volts, B^{2+} / B = + 0.34 volts)
a) B will deposit on A b) A will gradually dissolve
c) Water will decompose into H_2 and O_2 d) No reaction will occur

33. 0.2 molar solution of formic acid is ionized 3.2%. Its ionisation constant is
a) 9.6×10^{-3} b) 2.1×10^{-4} c) 1.25×10^{-6} d) 4.8×10^{-5}

34. SO_2 is 4 times heavier than CH_4 molecule. Than at a given temperature, the rms velocity of SO_2 is
a) 4 times that of CH_4 b) 2 times of CH_4 c) ¼ that of CH_4 d) ½ that of CH_4

35. Daltons law of partial pressure is not applicable to gaseous mixture of
a) H_2 and SO_2 b) H_2 and Cl_2 c) H_2 and CO_2 d) CO_2 and Cl_2

36. Which of the following is most acidic
a) =C—H b) —C—H c) ≡C—H d) all are equal

37. The correct order of boiling point for $1^0, 2^0, 3^0$ alcohol is
a) $1^0 > 2^0 > 3^0$ b) $1^0 < 2^0 < 3^0$ c) $2^0 > 1^0 > 3^0$ d) $2^0 > 3^0 > 1^0$

38. 23g of Na will react with methyl alcohol to give
a) One mole of oxygen b) One mole of hydrogen c) ½ mole of hydrogen d) None

39. To distinguish between phenol and benzyl alcohol we can use
a) Magnesium b) neutral ferric chloride
c) Benzoyl chloride d) none

40. Which does not react with Fehling's solution?
a) HCHO b) CH_3CHO c) HCOOH d) C_6H_5CHO

41. The organic compounds X and Y react with sodium metal and liberate hydrogen gas. X and Y react with each other to give ethyl acetate. The X and Y are
a) CH_3COOH and HCOOH b) CH_3CH_2OH and CH_3COOH
c) CH_3CH_2OH and HCOOH d) HCOOH and CH_3OH

42. Sodium salicylate is formed by the reaction of salicylic acid with sodium bicarbonate. The hydrogen atom which is replaced by sodium is that of
a) COOH b) both OH and COOH c) OH d) none

43. A gaseous carbon compound, which answers the carbylamine test, is soluble in hydrochloric acid and the solution, on treating with sodium nitrite, gives off nitrogen leaving behind a solution, which smells of wood spirit. The compound is
a) Formaldehyde b) Carbon monoxide c) Ethylamine d) Methylamine

44. Which of the following contains largest number of atoms
a) 2 moles of H b) 8.22×10^{24} H atoms c) 18.0g of H_2 c) 10.0g of Cl_2

45. The number milliequivalents in 100ml of 0.5N of HCl solution is
a) 50 b) 100 c) 25 d) 150

46. 2.75 g of HCl upon reaction with a base gave 4.40g of a salt. The equivalent of the salt is
a) 27.5 b) 44.0 c) 71.5 d) 58.4

47. Which of the following in most effective in the coagulation of gold sol?

a) $NaNO_3$ b) $MgCl_2$ c) Na_3PO_4 d) $K_4[Fe(CN)_6]$

48. Vanaspati ghee is manufactured by
a) Hydrogenation of oil   b) oxidation of oil
c) Reduction of oil   d) none of these

49. The electropositive nature of Rb, Na and K is in the order
a) Na> Rb > K   b) Rb > Na > K   c) Na > K> Li   d) Rb > K> Na

50. The lubricating property of graphite is due to
a) Mobile electrons   b) Sp^2 hybridization
c) Sheet like structure in which carbon atoms are held by weak forces   d) All of 1,2,3

51. Insulin, a hormone chemically is
a) A Fat   b) a Oil   c) Protein   d) a Carbohydrate

52. A metal chloride contains 25.5 % by mass of chlorine. The equivalent mass of the metal is
a) 74.5   b) 125.5   c) 103.5   d) 100

53. Which is not true about polymers?
a) Polymers do not carry any charge   b) Polymers have high viscosity
c) Polymers scatter light   d) Polymers have low molecular weight

54. Which of the following can form xanthoproteic acid with conc. Nitric acid
a) Glycine   b)lysine   c) aspartic acid   d)tyrosine

55. Which of the following acts as carrier of vitamin A in human digestive system
a) Carbohydrates   b) Proteins   c) Fats   d) None

56. Identify the one which does not belong to the class of which other 3 belongs
a) Glucose   b) Fructose   c) Galactose   d)Maltose

57. If methyl bromide and ethyl bromide are mixed in equal proportions and the mixture is treated with sodium, the number of possible alkanes formed is
a) 1   b) 2   c) 3   d) 4

58. What is not true about the metallic crystal?
a) There is a delocalized cloud of л - electrons   b) The position of cations is fixed
c) Valence electrons of metal atoms are mobile
d) The mobile electrons are essentially sigma electrons
a) 1, 4   b) 2,4   c) 3, 4   d) None

59. Which of the following statement is not correct?
a) Osmotic pressure is directly proportional to molar concentration
b) Hypertonic solutions have lower concentration with respect to reference solution,
c) Isotonic solutions have same molar concentration
d) Osmotic pressure depends upon temperature

60. The buffering action on acidic buffer is maximum when its pH is equal to
a) 5   b) 7   c) 10   d) pka