Chemistry Questions

1. What is the molecular formula of a compound whose empirical formula is CH_2O and molar mass is 180? (H = 1, C = 12, 0=16): (A) $C_6H_{12}O_6$ (B) $C_4H_8O_3$ (C) $C_6H_{10}O_5$ (D) $C_4H_8O_2$

2. Which of the following pollutants is biodegradable? (A) Plastics (B) Sewage compounds (C) Metal scraps D. Hydrogen sulphide

3. Which of the following equations represents the reaction leading to the removal of permanent hardness of water? **(A) $MgSO_4+Na_2CO_3$ $MgCO_3+Na_3SO_4$** (B) **$Ca(OH)_2+2HCl$ $CaCl_2+2H_2O$** **(C) $Ca(HCO_3)_2+Ca(OH)_2$ $2CaCO_3+2H_2O$** (D) $MgSO_4+BaCl_2$ $MgCl_2+$ **$BaSO_4$**

4. How many mole of $AgNO_3$, are there in 500 cm^3 of 0.01 M $AgNO_3$ solution? A. 0.005 mole B. 0.05 mole C. 0.5 mole D. 1 mole

5. Which of the following statements explains why tetraoxosulphate (IV) acid is regarded as a strong acid? A Tetraoxosulphate (VI) acid is dibasic. B. The acid is concentrated. C. The acid is completely ionized in aqueous solution. D. Tetraoxosulphate (VI) ions are very reactive.

6. To what temperature must a gas be raised from 273K in o der to double both its volume and pressure? A. 300K B. 546K C. 819K D. 1092K

7. If 3 moles of electrons are required to deposit 1 mole of a metal, M during the electrolysis of its molten chloride, the empirical formula of the metallic chloride is: A. M_3Cl. B. M_3Cl_2 C. M_2Cl_3 D. MCl_3

8. Nuclear reactions can be used in the following except: A. gauging the thickness of objects. B. making atomic bombs. C. curing cancer. D purifying water

9. Which of the following compounds crystallizes without water of crystallization? A. Na_2Co_3 B. $CuSO_4$ C. $MgSO_4$ **D.** NaCl

10. The products of the electrolysis of dilute sodium chloride solution with platinum electrodes **are** A. **hydrogen and** oxygen. B. oxygen and chlorine. C. **chlorine and water.** **D.** sodium amalgam **and chlorine.**

11. Which of the **following** statements is not **correct of Group 7 elements?** A. They are diatomic B. They are good oxidizing agent **C.** They are highly **electronegative.** **D.** They have **relatively low ionization Potentials.**

12. Which of the following statements is **not correct?** **Cathode** rays A. **are positive charged B. travel** in straight lines. C. are deflected **away from negative plates. D. are very light,**

13. $CH_4(g)+2O_2$ $2H_2O_{(1)}+CO_{2(g)}$ $\Delta H = 890KJ\ mol^{-1}$ **ΔH in the reaction represented by the equation is called the enthalpy of: A. formation. B. combustion. C. activation D. neutralization.**

15 **Compounds that have the same molecular formula but different structures are said to be**
A. isomeric B. isotopic. C. polymeric D. allotropic

16. When **a crystal** was added to its solution, **it did not** dissolve and the solution remained unchanged, showing **that the** solution was: A. concentrated B. unsaturated C. colloidal D. saturated.

17. When steam is passed over white-hot coke, the products are: A. carbon (IV) oxide and nitrogen. B. carbon (II) oxide and hydrogen. C. carbon (II) oxide and nitrogen D. carbon (IV) oxide and hydrogen.

18. The maximum number of electrons that can be accommodated in the shell having the principal quantum number 3 is; A. 3 B. 9 C. 18 D. 32

19. Methanol is obtained from wood by A. esterification. B. destructive dis illa ion.
C. combustion D fractional distillation.

20. Study carefully the reaction represented by the equation $2H_2O_{2(l)}$ $O_{2(g)}+2H_{20(1)}$ Which of the following will not increase the reaction rate? A. Heating the hydrogen peroxide B Adding a pinch of MnO_2 to the reactant. C Increasing the concentration of the H_2O_2 D. Adding water to the reactant

21. Which of the following processes is a physical reaction? A. Electrolysis B Hydrolysis C, Allotropic change D. Neutralization

22. The following acids are monobasic except A. methanoic acid B. dioxonitrate (III) acid.
C. ethanedioic acid. D. oxochlorate I) acid

23. The rate of a reaction is proportional to the number of effective collisions occurring per second between the reactants" This statement is associated with the A. kinetic theory, B rate law. C. atomic theory.
D. collision theory

24 In the reaction represented by the following equation; $2H_2S_{(q)}+SO_{2(g)}$ --> $2H_2O_{(1)}+3S_{(s)}$ SO_2 is acting as
A. a reducing agent. B. an oxidizing agent, C. a dehydrating agent. D. a bleaching agent.

25. When iron rusts, it undergoes A. chemical decomposition. B. hydrolysis. C. redox reaction,
D. combustion.

26. The following salts are readily soluble in water except: A. Na_2CO_3 B. $Pb(NO_3)_2$ C KCI D. $FeSO_4$

27 When sucrose is warmed with Fehling's solution. A. a silver minor is produced. B. solution turns milky.
C. brick-red precipitate is formed D. there is no precipitate.

28 The ionic radii of metals are usually A. greater than their atomic radii. B. unaffected by the charge on the ion.
C less than their atomic radii D. greater than those of non-metals.

31. Which of the following compounds is not a raw material for the manufacture of plastics? A. Ethene B. Ethane C. Monochloroethene D. Propene

32. The energy required to remove the most loosely bound electron from an atom in the gaseous state is known as the A. bond energy B. ionization energy, C. potential energy. D. activation energy.

33 If a reaction is said to be exothermic, which of the following statements is a correct deduction from the information? A. The reaction vessel gets hotter as the reaction proceeds. B. ΔH for the reaction is positive C. The rate of reaction increases with time D. The activation energy of the reaction is high.

34 Which of the following pH values is likely to be that of a slightly alkaline solution? A 2 B 5 C. 7 D. 8

35 Which of the following minerals contains fluorine as one of its constituent elements?
A. Cryolite B. Bauxite. C. Potash alum D. Kaolin

36. The product of the reaction between propanoic acid and ethanol is A ethylpropanoate.
B. ethylethanoate. C. methylpropanoate. D. propylethanoate

37. Which of the following accounts for the difference in the mode of conduction of electricity by metals and aqueous salt solutions? A. electrons are present in metals but not in salt solutions.
B. Metals are conductor while salts are electrolytes. C electricity is carried by mobile electrons in metals but by ions in aqueous salts solution. D. Salts ionize in aqueous solution while metals do not.

38. Starch undergoes complete hydrolysis to produce A. maltose. B. lactose. C. fructose D. glucose.

39. Which of the following solids has a network structure? A. Diamond B. Iodine C. Sulphur D. Graphite

40. The properties of electrovalent compounds include the following except: A. high melting point and boiling point. B. conduction of ele tricity in the molten state. C. high volatility at room temperature.
D. ionization in aqueous solution,

41. Which of the following pairs illustrates isotopy? A. But-l-ene and but 2-ene B. carbon and hydrogen
C. Oxygen and ozone D. Hydrogen and deuterium

42. Carbon is often deposited in the exhaust-pipe of cars because of the A. presence of carbon in petrol.
B. dehydrogenation of petrol. C. incomplete combustion of petrol, D. presence of additives in petrol.

43. Sulphur burns in air to form: A. an acidic oxide B. a basic oxide C. an amphoteric oxide D. a neutral oxide.

44. Chlorine is used in water treatment as: A. a germicide. B. a decolorizing agent.
C. an antioxidant D. a coagulating agent.

45. What amount of copper will be deposited if a current of 1 0 A was passed through a solution of copper (II) salt for 965 seconds? (IF= 96500 C): A. 0.005 mole B. 0.025 mole C. 0.05 mole D. 1.00 mole

47. Consider the reaction represented by the following equation:
$CaCl_{2(aq)} + H_2C_2O_{4(aq)} \quad CaC_2O_{4(s)} + 2HCl_{(aq)}$ which of the following would dissolve the precipitate of CaC_2O_4 formed? A. Stirring the mixture vigorously B. adding more calcium chloride solution, C. Increasing the concentration of the ethanedioic acid D. Adding concentrated hydrochloric acid.

48. What volume of distilled water should be added to 400 cm^{-3} of 2.0 mole dm^{-3} H_2SO_4 to obtain 0.20 mole dm^{-3} of solution? A. 600 cm^3 B. 800 cm^3 C. 1,000 cm^3 D. 3,600 cm^3

49. What volume of propane is left unreacted when 20 cm^3 of oxygen and 20 cm^3 of propane react according to the following equation? $C_3H_8 + 5O_{2(g)} \quad 3CO_{2(g)} + 4H_2O$ A. 16 cm^3 B. 5 cm^3 C. 14 cm^3 D. 15 cm^3

50. The component of air that is removed when air is bubbled into alkaline pyrogallol solution is: A. Carbon (IV) oxide. B. oxygen C. water vapour. D. nitrogen.

51. Which of the following compounds of tin is a strong reducing agent? A. $SnCL_2$ B. $SnCL_4$ C. SnO_2 D. SnH_4

52. Which of the following pairs are both substances deliquescent? A. $CaCl_2$ and H_2S_4 B. NaOH and $MgSO_4\,7H_2O$ C. $CaCl_2$ and NaOH D. CuO and NaCl

53. An alkene may be converted to an alkane by A. halogenation. B. hydrolysis. C. dehydration. D. hydrogenation.

54. The product of the reaction between ethanol and excess acidified $K_2Cr_2O_7$ is; A. ethanal B. ethylethanoate C. ethanoic acid D. ethyne.

55. What does the following equation illustrate? $^{238}/_{92}\mathbf{U} \quad {}^{234}_{90}\mathbf{Th} + {}^{4}_{2}\mathbf{He}$
A. Nuclear fission B. Nuclear fusion C, Artificial radioactivity D. Spontaneous disintegration

56. Zinc displaces copper from an aqueous solution of copper (II) salt because A. copper is a transition element. B. copper is moderately reactive metal C. zinc and copper have reducing properties. D. zinc is more reactive than copper.

57. The components of universal indicator solution can best be separated by: A. evaporation. B. chromotography C. crystalization. D. fractional distillation.

58. When naphthalene on heating changes from the solid state directly to the gaseous state, it undergoes: A. evaporation. B. sublimation. C. decomposition. D. ionisation.

59. How many faradays of electricity are required to liberate 9 g of aluminium? (Al = 27) A. 0.1 B. 0.3 C. 1.0 D. 3.0

60. $Mg_{(s)} + 2HCl_{(aq)} \quad MgCL_{2(aq)} + H_{2(g)}$ From the equation above, what mass of hydrogen would be produced if 12.0 got magnesium reacted completely with dilute hydrochloric acid? (H = 1, Mg = 24) A. 1.0 g B. 2.0 g C. 6.0 g D12.0g

D. oxiaizing agent

62. Alkanols have unexpectedly high boiling points relative to their molar masses because of intermolecular
A. hydrogen bonding. B. metallic bonding. C. covalent bonding. D. ionic bonding.

63. If an element X with electronic configuration 2,8,3, combines with another element Z with electronic configuration 2,8,6, the compound formed will have the formula A. XZ. B. XZ_2 C. X_2Z. D. X_2Z_3

64. Which of the following molecules is linear in shape? A. CH_4 B. H_20 C. H_2S D. Ci_2

65. What is the percentage by mass of copper in copper (I) oxide (Cu_2O)? [0 = 16;Cu = 64] A. 88.9%
B. 80.0% C. 66.7% D. 20.0%

66. The most suitable method for preparing lead (II) chloride is by A. action of dilute HCI on $PbSO_4$. B. action of dilute HCI on lead. C. mixing aqueous solutions of Pb $(NO_s)_2$ and NaCl. D. bubbling chlorine into a solution of Pb $(NO_3)_2$.

67. Sodium chloride cannot conduct electricity in the solid state because it A. is a normal salt. B. is highly soluble in water. C. is an electrovalent compound. D. does not contain mobile ions.

68. Alums are classified as: A. simple salts. B. acid sa ts. C. anhydrous salts. D. double salts.

69. $H_3O^+_{(aq)} + OH^-_{(aq)}$ $2H_2O(_1)$. The heat change accompanying the process represented by this equation is the heat of: A. neutralization. B. formation. C solution. D. dilution

70. In which of the following processes are larger molecules broken down into smaller molecules?
A. Vulcanization of rubber B. Hydrogenation of palm oil C. Hydrolysis of starch
D. Polymerization

71. What is the amount (in mode) of hydrogen gas that would be produced if 0.6 mole of hydrochloric acid reacted with excess zinc according to the following equation? $Zn_{(s)} + 2HCl_{(aq)}$ $ZnCl_{2(aq)} + H_{2(g)}$ A. 0.1 mole B. 0.2mole C. 0.3mole D. 1.0 mole

72. Chlorine is prepared on a large scale by the A. electrolysis of concentrated sodium chloride solution.
B. action of manganese (IV) oxide on hot concentrated hydrochloric acid. C. action of concentrated tetraoxosulphate (VI) acid on sodium chloride. D. oxidation of concentrated hydrochloric acid with potassium tetraoxomanganate (VII)

73. Which of the following statements is correct about the following system at equilibrium? $PCl_{5(g)}$ $PCl_{3(g)} + Cl2_{(g)}$ ΔH positive A. Increase in temperature increases the yield of PCl_5 B. PCl_5 is less stable at high pressures. C. The concentrations of PCl_3 and Cl_2 increase at higher pressures. D. Decrease In pressure favours the forward reaction.

74. Isotopes of a given element have the same: A. Neutron B. atomic number C. chemical properties.

76. Which of the following statements is correct about catalysts? They A. alter the rate of chemical reactions, B. are generally specific in action. C. remain changed chemically at the end of the reaction. D. shift the equilibrium position in a reversible reaction.

77. If the change in free energy (ΔG) of a reaction is negative, it can be deduced that the reaction will: A. not proceed in the direction indicated. B. be reversible. C. not occur at room temperature. D. be feasible.

78. Which of the following denotes an alpha particle? A. $^{1}_{o}n$ B. $^{4}_{2}He$ C. $^{0}_{-1}e$ D. $^{9}_{4}Be$

79. When an atom gains an electron, it becomes: A. chemically inactive B. negatively charged C. oxidized D. a cation.

80. "Equal volumes of all gases at the same temperature and pressure contain the same number of molecules" is an expression of: A. Charle'sLaw B.Boyle's Law C. Graham's Law D. Avogadro's Law.

81. The following acids are monobasic except: A. trioxonitrate (V) acid B. hydrochloric acid C. ethanoic acid. D. tetraoxophosphate (V) acid.

82. An arrangement of two different metals in aqueous solutions of their salts to produce an electric current is known as: A. electrochemical cell B. activity series C thermocouple. D. voltameter.

83 The rate of production of hydrogen gas from the reaction between zinc granules and hydrochloric acid can be increased by: A. cooling the reaction mixture B. using zinc powder instead of zinc granules. C. using zinc rod instead of zinc granules. D, carrying out the reaction at a higher pressure.

84. Nitrogen is prepared on a large scale by the A. fractional distillation of liquefied air.
B. decomposition of ammonium dioxonitrate (III). C. electrolysis of brine. D. Haber process

85. Which of the following metals will be the most suitable for use where lightness and resistance to corrosion are of importance? A. Lead B aluminum. C. Iron. D. Copper

86. The products formed when sodium hydrogen trioxocarbonate (IV) is heated strongly are: A. carbon (IV) oxide and sodium hydride. B. carbon (IV) oxide and sodium trioxocarbonate (IV). C. carbon (IV) oxide and steam. D. sodium trioxocarbonate (IV), carbon (IV) oxide and steam.

87 Pipe-borne water is usually chlorinated in order to: A. improve the taste of the water. B. remove the hardness in the water. C. coagulate sediments in the water. D. kill harmful bacteria in the water.

88. In linear molecules, the bond angle is: A. 90^{o} B. 104^{o} C. 180^{o} D. 120^{o}

89. An increase in the pressure of a gas results in a decrease in its: A. mass. B. vapour density. C. volume. D. concentration.

90. An acid is a substance which in the presence of water produces: A. salts. B. oxygen.
C. effervescence. D. hydroxonium ions.

92. Which of the following ions will migrate to the cathode during electrolysis? A. Zinc ions. B. Chloride ions. C, Sulphide ions. D. Tetraoxosulphate (VI) ions .

93. What quantity of electrons (in mole) is lost when one mole of iron (II) ions is oxidized to iron (III) ions?
A. 5 mole B. 4 mole C. 3 mole D. 1 mole.

94. The position of equilibrium in a reversible reaction is affected by: A. particle size of the reactants B. change in concentration of the reactants. C. change in size of the reaction vessel. D. vigorous stirring of the reaction mixture.

95. Ethene undergoes mainly additional reactions because it is A. a gas. B. a hydrocarbon.
C. unsaturated. D. easily polymerized.

96. The reaction between alkanoic acids and alkanols in the presence of a mineral acid is known as:
A. specification. B. hydrolysis. C. polymerization. D. esterification.

97 Which of the following is used widely in the manufacture of flavours and perfumes?
A. Alkanoates. B. Alkanines. C. Alkanes reaction. D. complex sugars

98 When chlorine is added to slaked lime, the product obtained is A. bleaching powder.
B. chlorinated water C. hydrochloric acid. D. oxochlorate (I) acid.

99 Which of the following, when heated strongly in air will leave a metal as residue?

A. Sodium trioxnirate (V) B. Potassium trioxinitrate (V) C. Silver trioxonitrate (V) D. Lead trioxonitrate (V).

100 Which of the following methods is suitable for the preparation of an insoluble salt? A. Action of an acid on a metal. B. Double decomposition. C. Neutralization. D. Action of an acid on a trioxocarbonate (IV) salt