1. The purity of a solid sample can best be determined by its (a) boiling point (b) melting point (c) conductivity (d) solubility
2. A substance is said to be impure if (a) it’s melting point range is wide (b) it dissolves in water with difficulty (c) it has a low melting point (d) it is colored
3. Which of the following substances is a mixture? (a) sulphur powder (b) bronze (c) distilled water (d) ethanol
4. Which of the following is not TRUE of mixtures? (a) mixtures can consist of compounds (b) mixtures consists of a two or more constituents which can be separated by physical methods (c) the constituents of mixtures are usually chemical combined together (d) none of the above
5. Which is an example of a physical change? (a) metal rusting (b) silver tarnishing (c) water boiling (d) paper burning
6. Jolene wants to experiment with sugar cubes. Which of the following causes a sugar cube to only change physically not chemically? (a) burning the sugar cube with a match (b) crushing the sugar cube and dissolving it in water (c) dehydrating the sugar cube what sulfuric acid (d) chewing the sugar cube and digesting it
7. A compound U melts at 820C and boils at 1130C. if U was found to be insoluble in water, a mixture of U in water could be separated by (a) chromatography (b) sublimation (c) filtration (d) the use of separating funnel
8. A mixture of iodine and sulphur crystals can be separated by treatment with (a) water to filter off sulphur (b) carbon (iv)sulphide to filter off iodine (c) ethanic acid to filter off sulphur (d) methanol to filter off iodine
9. A mixture of NaCl(s) and CaCO3(s) is best separated by (a) dissolution followed by filtration (b) sublimation followed by crystallization (c) dissolution followed by evaporation (d) dissolution followed by crystallization (e) sublimation followed by dissolution
10. Filtration method is used to separate (a) immiscible liquids (b) insoluble solid from liquid (c) miscible liquids (d) soluble solid from (e) solvents from it’s solution
11. Which of the substances lettered p to v in the equation below would be left on the filter paper, if the reaction mixture were filtered?

P(aq) + Q(aq)$\rightarrow $V (s) + V (s) + R (aq) + T(g) (a) P (b) Q (c) V (d) T (e) R

1. The components of universal indicator solution can be separated by (a) chromatography (b) filtration (c) evaporation (d) crystallization (e) fractional distillation
2. Which of the following ions is monoatomic? Mg2+ (b) OH- (c) CN- (d) NH4+
3. A metallic ion X2+ with an inert gas structure contains 18 electrons, How many protons are there in this ion? (a) 20 (b) 18 (c) 16 (d) 2
4. If the mass number of X is 24 and X2+ contains 10 electrons, the nucleus of X will consist of (a) 3 protons and 16 neutrons (b) 10 protons and 14 neutrons (c) 10 protons and 12 neutrons (d) 12 protons and 12 neutrons
5. What is the relative atomic mass of hydrogen which contains 99.30% of $$ atoms and 0.70% $$atoms (a) 1.017 (b) 1.99 (c) 50.35 (d) 199.70
6. An element X has isotopic masses of 6 and 7. If the relative mass abundance is 1 to 12.5 respectively,what is the relative atomic mass of X? (a) 6.0 (b) 6.1 (c) 6.9 (d) 7.0
7. Calculate the percentage by mass of X in X2CO3.10H2O. If the mass of X2CO3.10H2O is 286g [H=1, C=12, O=16] (a) 17.08% (b) 16.08% (c) 18.08% (d) 19.08
8. Calculate the relative molecular mass of calcium hydrogen tetraoxosulphate (vi) [(ca = 40, H = 1 S = 32, 0 = 16] (a) 106 (b) 136 (c) 137 (d) 234
9. Which of the following is the configuration of sodium ion (Na+) if the atom is represented as 2311 Na? (a) 1s2 2s22p6 (b) 1s2 2s22p6 3s2 (c) 1s22s2 2p6 (d) 1s2 2s2 2p6 3s2 3p6 3d2 4s2
10. 2.25g of sample of an oxide gave 2.50g of another oxide of copper on reduction also gave 2.0g of copper these results are in accordance with the law of: (a) constant composition (b) conservation of matter (c) multiple proportions (d) definite proportions
11. Two compounds of chlorine and tin contain 83.12% and 78.76% of tin respectively. This information is in accordance with (a) law of definite proportion (b) law of multiple proportion (c) Avogadro’s hypothesis (d) law of equivalent proportions
12. Deduce the respective values of x, y and z in the equation below x P(s) + yO2(g) $\rightarrow $ zP2O5(g) (a) 5, 4, 2 (b) 2, 4, 5 (c) 4,5, 2 (d) 5, 2, 4
13. What are the values of x, y and z respectively in the following equation? MnO2(s) + xHCl (aq) $\rightarrow $Mncl2 + yH2O + ZCl2 (g)(a) 4, 1, 2 (b) 1, 2, 1 (c) 2, 1, 2 (d) 4, 2, 1
14. What volume of hydrogen would be left over when 300cm3 of oxygen and 1000cm3 of hydrogen are exploded in a sealed tube?

[2H2(g) + O2(g)🡪 2H2O(g)] (a) 200cm3 (b) 400cm3 (c) 600cm3 (d) 700cm3\

1. The number of oxygen molecules present in 16.0g of the gas is (Avogadro’s number = 6.02 x 1023)

(a) 6.00x1022 (b) 6.02x1023 (c) 3.01x1023 (d) 1.51x1023

27. The number of atoms of chlorine present in 5.5g of NaCl is (a)6.02x1022(b)5.85x1023 (c)6.02x1023(d)5.85x1024[Na=23, Cl=35.5] [Avogadro’s number= 6.02x1023]

28. Calculate the volume of carbon (IV) oxide measured at stp produced when 1kg of potassium hydrogen trioxocarbonate (IV) is totally decomposed by heat (a) 28dm3 (b) 56dm3 (c) 112dm3 (d) 196dm3

29. Consider the following equation

2Na + 2H2O 🡪 2NaOH + H2

Calculate the mass of sodium required to produce 0.40g of sodium hydroxide [H = 1, O = 16, Na = 23] (a) 0.23g (b) 0.46g (c) 2.3g (d) 4.6g

30. What weight of NaCl is needed to make 2.0dm3 of a 1.5M solution (a) 116g (b) 175g (c) 87g (d) 58g [Na = 23, Cl = 35.5]

31. A 0.1moldm-3 solution of sodium hydroxide was distilled with distilled water to 0.001moldm-3, what is the dilution factor? (a) 1000.00 (b) 100.00 (c) 10.00 (d) 0.10

32. When ice is changing to water, it’s temperature remains the same because the heat gained is (a) used to separate the molecules (b) lost partially to the atmosphere (c) used to increase the volume of ice (d) less than activation energy

33. Which of the following variable is a measure of the average kinetic energy of the molecule of a gas? (a) density (b) pressure (c) temperature (d) volume

34. The collision between gas molecules is perfectly elastic because (a) cohesive forces between the molecules are negligible (b) there is no loss of energy during collision (c) they are highly compressible (d) they move randomly in straight lines

35. The pressure of a fixed mass of gas is x/4mmHg, what will be it’s new pressure if the new volume of the gas is four-times it’s initial volume at constant temperature (a)four times the initial pressure (b) the same as the initial pressure (c) one quarter times the initial pressure (d) half the initial pressure

36. If the volume of a gas at s.t.p is tripled at a temperature that is one third the initial temperature, calculate the pressure of the gas at that temperature [standard pressure =760mmHg ; standard temperature =273K] (a) 86cm3 (b) 84.5cm3 (c) 84.4cm3 (d) 86.4cm3

37. What temperature in kelvin must a gas at 273K be raised to, in order to double both it’s pressure and volume? (a)298 (b) 300 (c) 546 (d) 1092

38. If 30cm3 of oxygen diffuse through a porous plug in 7s, how long will it take 60cm3 of chlorine to diffuse through the same plug ? (a) 12s (b) 14s (c) 21s (d) 30s [O =16, CL =35.5]

39. If 100cm3 of hydrogen diffused through a porous pot in 1.00second, how long will it take the same volume of oxygen to diffuse through the same pot under the same conditions?[ H =1.0, O =16.0] (a) 2.5s (b) 4.0s (c) 16.0s (d) 25.0s

40. The element with electronic configuration 1s2 2s2 2p6 3s2 3p1 belong to (a) s-block, period 3, group1 (b) p-block, period 3, group 2 (c) s-block, period 3, group 3 (d) p-block, period 3, group 3

41. The ionization energy is affected by the following factor except (a) distance of the outermost electron from the nucleus (b) size of the positive nuclear charged (c) ability to attract shared electron (d) screening effect of the inner electrons

42. Which of the following arrangement is in order of increasing ionization energy? (a) Al, Si, P, S (b) Si, Al, S, P (c) S, P, Si, Al (d) P, Si, S, Al

43. The molecular lattice of iodine is held together by (a) dative bond (b) metallic bond (c) hydrogen bond (d) Van Der Waal’s force

44. The greater the difference in electronegativity between bonded atoms, the (a) lower the polarity of the bond (b) higher the polarity of the bond (c) weaker the bond (d) higher the possibility of the substance formed being a molecule

45. Which of the following statement is NOT true of electrovalent compounds? (a) they are solids (b) they do not vaporize easily (c) they usually dissolve in water (d) the element forming the compound s normally have their valency electron in a shared state

46. An element X with electronic configuration 1s2 2s2 2p6 3s2 combine withanother element Y with the electronic configuration 1s2 2s2 2p63s2 3p5. What is the formula of the compound formed (a) X2Y5 (b) X2Y3 (c)XY3 (d) XY2

47. If a metal R form a compound with a formula R(NO3)2, the formula of its tetraoxosulphate (vi) is (a) R(SO4)2 (b) RSO4 (c) R2SO4 (d) R2(SO4)3

48. Consider the reaction represented by the equation.

23892U + 10n13956Ba + 9436Kr + 310n.

The reaction represents a (a) nuclear fission (b) nuclear fusion (c) radioactive decays (d) spontaneous disintegration

49. A radioactive element weighing 1kg has a half life of 100years, what would be it’s mass in grams in 300years (a) 125 (b) 500 (c) 250 (d) 750

50. Helium is preferred to hydrogen in filling balloons because hydrogen (a) is inflammable (b) is diatomic (c) exhibits allotropy (d) is a component of water

51. Which of the following gases is used to retard the vaporization of the filament in a light bulb? (a) argon (b) helium (c) hydrogen (d) oxygen

52. In the purification of town water supply, alum is used principally to (a)kill bacteria (b)control the PH of water (c)improve the taste of water (d)coagulate small particles of mud

53. Which of the following constitutes is an advantage in the use of hard water? (a)formation of scum with soap(b)furring of kettles (C)blockage of water pipes(d)formation of strong bones

54. Water can be identified by the use of (a) anhydrous copper(ii) tetraoxosulphate (vi) (b) anhydrous sodium trioxocarbonate (iv) (c) potassium heptaoxodichromate (vii) (d) copper (ii) trioxocarbonate(iv)

55. Calcium hydroxide is added to the treatment of town supply to kill (a)kill bacteria in the water (b)facilitate the coagulation of organic particle (c)facilitate sedimentation (d)improve the taste of water.

56. Hardness of water is caused by the presence of the ions of (a) magnesium and silver (b)calcium and magnesium (c) sodium and potassium (d) calcium and sodium

57. Effect of water pollution include the following except (a) depletion of dissolved oxygen (b) depletion of heavy metal ion (c) ecological change (d) increase turbidity

58. What are the two gasses associated with the formation of acid rain? (a) CO2, and HCl (b) CO2 and N2 (c) SO2 and NO2 (d) HCl and SO2

59. The real harmful effect of the release of chlorofluorocarbons into the atmosphere is that is eventually causes (a) excessive ultraviolet light from the sun to reach the earth surface (b) excessive release of infra-redlight from the sun to the earth surface (c) corrosive effect of the chemicals on humans and animals (d) acidic effect of chemical on humans

60. A gas that burns with a pop sound if a lighted splinter is placed into a test tube containing it is likely to be (a) hydrogen (b) oxygen (c) chlorine (d) sulphur

61. In the bosch process of manufactured using hydrogen, the raw materials used are (a)coke and steam (b) methane and water (c) methane and steam (d) coke and water

62. Which of the following halogens is liquid at room temperature? (a) chlorine (b) bromine (c) iodine (d) fluorine.

63. When chlorine is passed into water and subsequently exposed to sunlight, the gas evolved is (a) HCl (b) HOCl (c) O2 (d) Cl2O2

64. Chlorine reacts with metals to form chlorides except (a)Cl2 + Fe 🡪 FeCl2 (b) 3Cl2 + 2Al 🡪 2AlCl3 (c) 2Cl2 + Sn 🡪 SnCl4 (d) Cl2 + 2Na 🡪 2NaCl

65. Dry hydrogen chloride gas when dissolved methylbenzene (a) turns blue litmus paper red (b) turns red litmus paper blue (c) does not affect litmus paper (d) bleaches litmus paper

66. Which of the following gases will bleach moist litmus paper (a)cl2 (b)co2 (c)so3 (d)N2o

67. 2X(aq)+Mno2(s)+4H+(aq)🡪X2(g)+Mno2(aq)+2H2o.The reaction above can be used for the laboratory preparation of all halogens except fluorine because it is (a)a poisonus gas (b)an oxidizing agent (c)electronegative in nature (d)highly reactive

68. When concentrated H2so4 is added to NaCl the gas evolved is (a)bleaches damp blue litmus paper (b)forms a white precipitate with BaCl2(aq) (d)turns red litmus paper blue

69. A colourless, odourless, liquid T gives effervescence with sodium trioxocarbonate (iv) and a white precipitate with siliver trioxonitrate(v) solution. T is most probably (a) sodium chloride solution (b) barium chloride solution (c) dilute trioxonitrate (v) acid (d) dilute hydrochloric acid

70. These are various methods of preparing oxygen except (a) KI (aq) + H202(aq) + H2S04(aq)🡪 (b) KMn04(aq) + H2S04(aq) + H202🡪 (c) H202(aq) 🡪 (d) Mn02 + H202🡪

71. When X is heated with manganese(iv) oxide, oxygen is produced X is (a) Kcl (b) kcl03 (c) CaC03 (d) Znc03

72. Which of the following oxides is basic? (a) N02 (b) Al203 (c) S02 (d) Cu0

73 Mineral acids are usually added to commercial hydrogen peroxide to (a) oxidize it (b) decompose it (c) minimize it’s decomposition (d) reduce it to water and oxygen

74. Acid + metallic peroxide 🡪 X + Y in the equation above X and Y are (a) hydrogen and water (b) hydrogen peroxide and salt (c) water and salt (d) salt and acid

75. Name the gas with the following characteristics

1. A good bleaching agent
2. Used in ventilating stuffy chambers
3. Used as a disinfectant in water and sewage

(a)CO (b) Cl2 (c) O3 (d) N2O

76. An example of neutral oxide is (a) Al2O3 (b) BaO2 (c) CO (d) H2O2

77. If sulphur is dissolved in carbon (iv) sulphide and the solution is allowed to evaporate, the allotrope of sulphur formed is (a)plastic sulphur (b) amorphous sulphur (c) rhombic sulphur (d) monoclinic sulphur

78. A piece of filter paper moistened with lead(ii) ethanoate solution turns black when the paper is dropped into a gas jar containing an unknown gas. The gas is likely to be (a) sulphur(iv)oxide (b) hydrogen chloride (c) sulphur(vi)oxide (d) hydrogen sulphide

79. Tetraoxosulphate(vi)ions are finally tested are (a) acidified silver nitrate (b) acidified barium chloride (c) lime water (d) dilute hydrochloric acid

80. Suitable reagents for the laboratory preparation of nitrogen are (a) sodium dioxonitrate (V) and ammonium chloride (c) sodium dioxonitrate (III) and ammonium chloride(v) (d) sodium chloride and ammonium dioxonitrate (iii)

81. The gas that gives brown colouration in brown ring test is (a) NO (b) CO2 (c) NO2 (d) CO

82. The products of the thermal decomposition of ammonium trioxonitrate (V) are (a) NO2 and oxygen (b) NH3 and oxygen (c) Nitrogen and water (d) N2O and water

83. Ammonia gas is suitable for performing the “Fountain experiment because the gas is (a) colourless (b) a cooling agent (c) alkaline to litmus (d) Very soluble in water

84. The gas formed when ammonium trioxonitrate (V) is heated with sodium hydroxide is (a) hydrogen (b) nitrogen (IV) oxide (c) oxygen (d) ammonia