Sarajevo School of Science and Technology

Sarajevo, 10 May 2014

C H E M I S T R Y - Entrance Exam

Name: _____

Circle the correct answer.

1. The highist temperature of the folowwing group is:
   a) -250 ^{o}F
   b) 20 ^{o}C
   c) 217 ^{o}F
   d) 105 ^{o}C

2. The largest volume of the following group is that of
   a) 380 g of water at 4^{o}C
   b) 600 g of chloroform at 20^{o}C (density = 1.5 g/cm^{3})
   c) 0.5 l of milk
   d) 100 cm^{3} of steel (density = 7.86 g/cm^{3})

3. The species that has the same number of electrons as $_{16}S^{32}$ is
   a) $_{17}Cl^{35-}$
   b) $_{16}S^{34+}$
   c) $_{18}Ar^{40++}$
   d) $_{16}S^{35--}$

4. One mol of fluorine gas, F_2
   a) Weighs 19.0 g
   b) Contains 6.02 x 10^{23} F atoms
   c) Contains 1.20 x 10^{24} F atoms

d) Weighs 6.02×10^{23} g

5. The gratest number of N atoms is found in

a) 50.0 g N_2O;

b) 17 g NH_3;

c) 150 cm^3 of liquid pyradine, C_6H_5N ($\rho = 0.983$ g/cm^3)

d) 1 mol N_2

Fill in missing parts of the following formulas:

6. $AgNO_3$ + _____ → AgCl + KNO_3

7. _____ + H_2S → PbS + HNO_3

8. $BaCO_3$ + HCl → H_2CO_3 + _____

9. $Al(OH)_3$ + _____ → $Al_2(SO_4)_3$ + H_2O

10. $CaCl_2$ + _____ → $CaCO_3$ + NH_4Cl

11. The high reactivity of fluorine is due to

a) its high electro negativity

b) small size of fluorine atom

c) availability of d-orbitals

d) strong F - F bond

12. The major constituent of air is

a) nitrogen

b) carbon dioxide

c) oxygen

d) hydrogen

13. The gas present in the stratosphere which filters out some of the sun's ultraviolet light and provides an effective shield against radiation damage to living things is

a) helium b) ozone

c) oxygen d) methane

14. The heat required to raise the temperature of body by 1 K is called

a)specific heat

b)thermal capacity

c)water equivalent

d) none of the above

15. The mass of P_4O_{10} that will be obtained from the reaction of 1.33 gram of P_4 and 5.07 of oxygen is

a) 2.05 gram

b) 3.05 gram

c) 4.05 gram

d) 5.05 gram

16. What are the number of moles of CO2 which contains 16 g of oxygen?

a)0.5 mole

b)0.2 mole

c)0.4 mole

d)0.25 mole

17. The luster of a metal is due to

    a)its high density

    b)its high polishing

    c)its chemical inertness

    d)presence of free electrons

18. The number of water molecules present in a drop of water (volume 0.0018 ml) at room temperature is

    a)1.568×10^{3}

    b)6.023×10^{19}

    c)4.84×10^{17}

    d)6.023×10^{23}

19. The mass of one Avogadro number of helium atom is

    a)1.00 gram

    b)4.00 gram

    c)8.00 gram

    d)$4 \times 6.02 \times 10^{23}$ gram

20. The mass number of a nucleus is

    a)always less than its atomic number

    b)the sum of the number of protons and neutrons present in the nucleus

    c)always more than the atomic weight

    d)a fraction

21. The method that cannot be used for removing permanent hardness of water is

a)adding sodium carbonate

b)distillation

c)adding caustic soda

d)boiling

22. The number of electrons presents in H^+ is

a)zero

b)one

c)two

d)three

23. The human body is made up of several chemical elements; the element present in the highest proportion (65%) in the body is

a)carbon

b)hydrogen

c)oxygen

d)nitrogen

24. The number of atoms present in 21.6 gram of silver (atomic weight = 108) are same as the molecules in

a)1.8 gram of H_2O

b)12 moles of $KMnO_4$

c)0.6N H_2SO_4

d)4.6 gram of C_2H_5OH