# Sarajevo School of Science and Technology

# CHEMISTRY - Entrance Exam

Name:

## *Circle the correct answer.*

- 1. The highist temperature of the following group is:
  - a) -250 °F
  - b) 20 °C
  - c) 217 °F
  - d) 105 °C
- 2. The largest volume of the following group is that of
  - a) 380 g of water at  $4^{\circ}C$
  - b) 600 g of chloroform at  $20^{\circ}$ C (density = 1.5 g/cm<sup>3</sup>)
  - c) 0.5 l of milk
  - d)  $100 \text{ cm}^3 \text{ of steel (density} = 7.86 \text{ g/cm}^3)$
- 3. The species that has the same number of electrons as  ${}_{16}S^{32}$  is
  - a) <sub>17</sub>Cl<sup>35<sup>-</sup></sup>
  - 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  $6.02 \times 10^{23}$  F atoms
  - c) Contains  $1.20 \times 10^{24}$  F atoms

- d) Weighs  $6.02 \times 10^{23} \text{ g}$
- 5. The gratest number of N atoms is found in
  - a)  $50.0 \text{ g } N_2 \text{O};$
  - b) 17 g NH<sub>3;</sub>
  - c) 150 cm<sup>3</sup> of liquid pyradine,  $C_6H_5N$  ( $\rho = 0.983$  g/cm<sup>3</sup>)
  - d)  $1 \mod N_2$

Fill in missing parts of the following formulas:

- 6.  $AgNO_3 + \_ \rightarrow AgCl + KNO_3$
- 7.  $\_$  + H<sub>2</sub>S  $\rightarrow$  PbS + HNO<sub>3</sub>
- 8.  $BaCO_3 + HCl \rightarrow H_2CO_3 + \_$
- 9.  $Al(OH)_3 + \_$   $\rightarrow Al_2(SO_4)_3 + H_2O$
- 10.  $CaCl_2 + \_\_ \rightarrow CaCO_3 + NH_4Cl$
- 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
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- 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 moleb)0.2 molec)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 x 10<sup>3</sup> b)6.023 x 10<sup>19</sup> c)4.84 x 10<sup>17</sup> d)6.023 x 10<sup>23</sup>

### 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 x 6.02 x 10<sup>23</sup> 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<sub>4</sub>

c) 0.6N  $H_2SO_4$ 

d)4.6 gram of C<sub>2</sub>H<sub>5</sub>OH