

**B**

### Multiple Choice

1. The number of hydrogen "H" atoms present in 6.20 g of table sugar " $C_{12}H_{22}O_{11}$ " is:

☐ A)  $2.4 \times 10^{23}$                       B)  $2.6 \times 10^{23}$   
C)  $2.7 \times 10^{23}$                       D)  $2.9 \times 10^{23}$

2. The mass (in g) of sodium "Na" present in 30.0 g of  $Na_2SO_4$  is:

☐ A) 12.2                      B) 11.8                      C) 10.5                      D) 9.7

3. Copper "Cu" is usually added to gold "Au" to obtain a hard alloy suitable for making jewelry. A 24.0 g piece of such jewelry contains  $5.70 \times 10^{22}$  atom of Cu. The percentage by mass of gold in this jewelry is:

☐ A) 72.72%                      B) 74.94%                      C) 76.85%                      D) 78.75%

4. The empirical formula of a certain pesticide which has the percentage by mass composition of 19.36% Ca, 34.26% Cl and 46.38% O is:

☐ A)  $CaCl_2O_3$                       B)  $CaCl_2O_4$                       C)  $CaCl_2O_6$                       D)  $CaCl_3O_4$

5. A metal "M" reacts with oxygen to give  $M_2O_3$  metal oxide. If 9.6 g of oxygen combines with 10.8 g of this metal, the atomic mass (in a.m.u.) of this metal is:

☐ A) 27                      B) 45                      C) 51                      D) 55

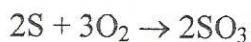
6.  $GeF_3H$  is formed from  $GeH_4$  and  $GeF_4$  in the combination reaction:



If the reaction yield is 92.6%, the numbers of moles of  $GeF_4$  needed to produce 8.0 moles of  $GeF_3H$  are:

☐ A) 6.18                      B) 6.48                      C) 6.78                      D) 6.98

7. According to the following reaction:



The maximum mass of  $SO_3$  (in g) that can be produced by the reaction of 8.0 g of sulfur, S, with 10.0 g of oxygen " $O_2$ " gas is:

☐ A) 15.2                      B) 17.6                      C) 16.7                      D) 18.4

8. The volume (in mL) of 0.251 M potassium iodide "KI" solution that contains 13.5 g KI is:

☐ A) 385                      B) 368                      C) 346                      D) 324

9. The molality "m" of a 25% by mass of glucose " $C_6H_{12}O_6$ " solution is:

☐ A) 1.85                      B) 1.75                      C) 2.25                      D) 2.15

10. The number of moles of  $\text{NH}_3$  gas present in 50 L cylinder at  $31.5^\circ\text{C}$  and a pressure equals 20.0 atm is:
- ☐ A) 40                      B) 42                      C) 45                      D) 50
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11. 18.39 g of Freon gas occupies 3 L at STP. Therefore, the molar mass of this gas is:
- ☐ A) 142.6                      B) 137.4                      C) 132.8                      D) 128.7
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12. The density (in  $\text{g.L}^{-1}$ ) of  $\text{N}_2\text{O}_5$  gas at  $33^\circ\text{C}$  and 1.0 atm pressure is:
- ☐ A) 4.3                      B) 3.9                      C) 3.6                      D) 3.2
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13. The volume (in L) of oxygen gas " $\text{O}_2$ " at  $153^\circ\text{C}$  and 0.820 atm that can be produced by the decomposition of 22.4 g of  $\text{KClO}_3$  is:
- $$2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$$
- ☐ A) 10.5 L                      B) 10.8 L                      C) 11.2 L                      D) 11.7 L
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14. Two identical balloons are filled at the same temperature and pressure. One contains Argon gas "Ar" and the other contains Helium "He" gas. The argon gas leaks out of its balloon at a rate of 150 mL per hour. Therefore, the rate of leakage (in mL per hour) of helium gas of its balloon is:
- ☐ A) 1497                      B) 848                      C) 474                      D) 424
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15. At STP, the average kinetic energy of the molecules of  $\text{N}_2$  gas,  $\text{O}_2$  gas and  $\text{Cl}_2$  gas is:
- ☐ A) equal for the three gases.  
B) the greatest for the  $\text{N}_2$  gas molecules.  
C) the greatest for the  $\text{O}_2$  gas molecules.  
D) the greatest for the  $\text{Cl}_2$  gas molecules.
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