Multiple Choices

1. Joule (J) =

A) $kg.m^{-1}.s^{-2}$ B) $kg.m^{-2}.s^{-2}$ C) $kg.m.s^{-2}$ D) $kg.m^{2}.s^{-2}$

2. By balancing the following equation: **$CaCO_3$ + n HCl → $CaCl_2$ + CO_2+ H_2O,** the value of **n** should be:

A) 1 B) 2 C) 3 D) 4

3. Number of CO_2 molecules in 52 g is:

A) 7.11×10^{23} B) 1.42×10^{24} C) 3.56×10^{23} D) 4.02×10^{23}

4. The empirical formula of a compound that contains C, H, O (70.6% C, 5.9% H) is:

A) $C_8H_8O_2$ B) $C_4H_6O_2$ C) $C_4H_4O_2$ D) C_4H_4O

5. An element "X" combines with oxygen to form XO_2. If 13.4 g of this element combines with 7.8 g of O_2, therefore the molar mass of X is:

A) 83.45 B) 54.97 C) 47.20 D) 37.50

6. For the following equation: (**2 $FeCl_3$ + 3 H_2S → 6 HCl + Fe_2S_3**)
If 90.0 g of $FeCl_3$ reacts with 52.0 g of H_2S, then the remaining mass (in grams) of the excess compound is:

A) 33.25 B) 23.64 C) 25.21 D) 24.76

7. The molality "m" of an aqueous solution of sugar ($C_{12}H_{22}O_{11}$) is 1.62 molal, then the mole fraction of sugar is:

A) 0.0391 B) 0.0283 C) 0.0841 D) 0.0428

8. When 5.0 g of $KClO_3$ is heated (2 **$KClO_3$ → 2 KCl + 3 O_2**), 1.5 g of O_2 is produced. the percent yield is:

A) 70.6 % B) 90.1 % C) 76.6 % D) 80.0 %

9. The volume of water (in mL) should be added to 400 mL of 0.250 M HCl solution to dilute it to exactly 0.100 M is:

A) 400 B) 500 C) 600 D) 700

10. The mass (in g) of 71.9 mL of water vapor at 0.4 atm and 665°C is:

A) 0.003 B) 0.700 C) 0.070 D) 0.007

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11. The mass (in g) of $KClO_3$ needed to produce 29.5 L of O_2 at 127°C and 760 torr is:

$$(2\ \mathbf{KClO_3} \rightarrow 2\ \mathbf{KCl} + 3\ \mathbf{O_2})$$

A) 12.2 B) 14.6 C) 73.38 D) 24.4

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12. If helium (He) effuses at a rate of 4.0 mol/min, then the rate of effusion of oxygen (O_2) (in mol/min) is

A) 0.20 B) 1.41 C) 8.0 D) 2.0

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13. The lowest density of hydrogen gas at 1 atm will be at:

A) 273 K B) 273 °C C) -10 °C D) 100 °C

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14. If the root mean square speed of a gas $u_{r.m.s} = 681.6\ ms^{-1}$ at 25°C, the gas is:

A) CO_2 B) H_2 C) O_2 D) CH_4

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15. Deviation from the ideal gas behavior is greater at:

A) Low temperature and high pressure.
B) High temperature and high pressure.
C) High temperature and low pressure.
D) Low temperature and low pressure.
