

Multiple Choice

1. The total number of atoms present in 0.554 mol of $[\text{Fe}(\text{CO})_3(\text{PH}_3)_2]$ compound is:

- D** A) 7.0×10^{25} B) 7.0×10^{24}
C) 6.0×10^{24} D) 5.0×10^{24}
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2. The number of moles contained in 22.2 g of pyridine " $\text{C}_5\text{H}_5\text{N}$ " is:

- B** A) 0.32 B) 0.28 C) 0.25 D) 0.22
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3. The mass (in gram) of 4.4×10^{22} molecule of table sugar " $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ " is:

- C** A) 20.0 B) 22.0 C) 25.0 D) 27.0
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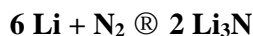
4. The percentage by mass of platinum "Pt" in $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$ is:

- D** A) 74% B) 72% C) 69% D) 65%
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5. The empirical formula of the compound that is 62.1% C, 10.4% H and 27.5% O by mass, is:

- A** A) $\text{C}_3\text{H}_6\text{O}$ B) $\text{C}_3\text{H}_5\text{O}$ C) $\text{C}_2\text{H}_5\text{O}$ D) $\text{C}_2\text{H}_6\text{O}$
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6. Lithium "Li" metal and nitrogen " N_2 " gas react to give lithium nitride " Li_3N " according to:



In a particular experiment 5.2 g of Li was allowed to react with excess N_2 and 7.4 g Li_3N were produced. The percentage yield of Li_3N is:

- B** A) 80% B) 85% C) 87% D) 92%
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7. An element combines with oxygen to form an oxide with the formula X_2O_5 . If 30.6 g of this element combines with 24.0 g of oxygen, therefore the atomic mass of the element "in a.m.u." is:

- D** A) 176 B) 142 C) 88 D) 51
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8. Three separate aqueous solutions of lithium iodide "LiI", sodium iodide "NaI" and potassium iodide "KI", each solution contains 60.0 g of the solute in one liter of solution, therefore the molarity of:

- B** A) the three solutions is the same.
B) LiI solution is the highest.
C) NaI solution is the highest.
D) KI solution is the highest.
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9. The volume (in mL) of water that must be added to 100 mL of a stock solution of 6.0 M HNO_3 in order to prepare 0.8 M HNO_3 by dilution is:

C

- A) 750 B) 700 C) 650 D) 600
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10. The molality "m" of an aqueous solution that is 25% by mass phosphoric acid " H_3PO_4 " is:

A

- A) 3.4 B) 3.1 C) 2.9 D) 2.7
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11. The standard temperature and pressure (STP) in the context of gases, refers to:

B

- A) a temperature of zero degree Kelvin "**0.0 K**" and a pressure of **1.0 atm**.
B) a temperature of zero degree Celsius "**0.0°C**" and a pressure of **1.0 atm**.
C) a temperature of **273°C** and a pressure of **1.0 atm**.
D) a temperature of **273°C** and a pressure of **0.0 atm**.
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12. A sample of a gas in a 3.0 L fixed volume closed container at a temperature of 27.0°C and a pressure of 620 torr. If the gas is heated to 147.0°C, the pressure of the gas (in torr) will be:

A

- A) 868 B) 914 C) 949 D) 1015
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13. The molar mass (in $\text{g}\cdot\text{mol}^{-1}$) of a gas that 0.9848 g of it occupies 1.5 L at a temperature of 22.5°C and a pressure of 356 mmHg is:

B

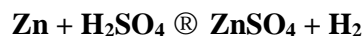
- A) 44 B) 34 C) 32 D) 28
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14. At a temperature of 25°C and a pressure of 1.0 atm, the ratio of the speed of effusion of CO_2 gas to that of SO_2 gas is:

C

- A) 1.6 B) 1.4 C) 1.2 D) 1.1
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15. Zinc " Zn " reacts with aqueous sulfuric acid to give hydrogen " H_2 " gas according to:



In an experiment, 4.0 L of wet hydrogen is collected at a temperature of 27°C and a pressure of 748 torr. Knowing that the vapor pressure of water at 27°C is 26.74 torr, therefore, the mass (in g) of Zn that has been consumed is:

D

- A) 40 B) 30 C) 20 D) 10
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