ALBERTA CHEMISTRY 20 · UNIT D · 10 QUESTIONS

Quantitative Relationships in Chemical Changes — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **A 100 mL sample of a 5.00 mol/L stock solution is diluted to a concentration of 2.00 mol/L. The final volume of the diluted solution is**

- A 250 mL
- B 40.0 mL
- C 125 mL
- D 500 mL

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2 $C_3H_8(g) + 5\ O_2(g) \rightarrow 3\ CO_2(g) + 4\ H_2O(g)$

The number of moles of $CO_2(g)$ produced when 2.50 mol of $C_3H_8(g)$ burns completely is

A 2.50 mol

B 5.00 mol

C 10.0 mol

D 7.50 mol

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3 **A compound consists of 52.1% C, 13.1% H, and 34.8% O by mass. Use C = 12.01, H = 1.01, O = 16.00 g/mol. The empirical formula of the compound is**

A C_2H_4O

B C_2H_6O

C CH_4O

D C_3H_8O

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4

$2\ KClO_3(s) \rightarrow 2\ KCl(s) + 3\ O_2(g)$

The mass of $O_2(g)$ (32.00 g/mol) produced when 24.5 g of $KClO_3(s)$ (122.55 g/mol) decomposes completely, to the nearest tenth of a gram, is _____ g

ANSWER

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5

$Fe_2O_3(s) + 3\ CO(g) \rightarrow 2\ Fe(s) + 3\ CO_2(g)$

If 2.00 mol of $Fe_2O_3(s)$ and 4.50 mol of $CO(g)$ are allowed to react as completely as possible, the amount of Fe(s) produced is

A 3.00 mol

B 2.00 mol

C 4.00 mol

D 4.50 mol

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6

$Mg(s) + 2\ HCl(aq) \rightarrow MgCl_2(aq) + H_2(g)$

A student reacts 4.86 g of Mg(s) (24.31 g/mol) with excess HCl(aq) and collects 0.180 mol of $H_2(g)$. The percent yield of the reaction is

A 45.0%

B 90.0%

C 80.0%

D 111%

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7

$HNO_3(aq) + KOH(aq) \rightarrow KNO_3(aq) + H_2O(l)$

The volume, in millilitres, of 0.125 mol/L $HNO_3(aq)$ required to neutralize 40.0 mL of 0.200 mol/L KOH(aq), to the nearest tenth of a millilitre, is _____ mL

ANSWER _____

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8 **The total number of moles of ions present in 250 mL of a 0.400 mol/L $Na_2SO_4(aq)$ solution, assuming complete dissociation, is**

- **A** 0.100 mol
- **B** 0.200 mol
- **C** 0.400 mol
- **D** 0.300 mol

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9 **$2\ NaN_3(s) \rightarrow 2\ Na(s) + 3\ N_2(g)$**
An airbag uses the decomposition of $NaN_3(s)$ (65.0 g/mol). The volume of $N_2(g)$ produced at STP when 65.0 g of $NaN_3(s)$ decomposes completely is

- **A** 22.4 L
- **B** 11.2 L
- **C** 33.6 L
- **D** 44.8 L

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10

$BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2\ NaCl(aq)$
100 mL of 0.300 mol/L $BaCl_2(aq)$ is mixed with 100 mL of 0.200 mol/L $Na_2SO_4(aq)$. The mass of $BaSO_4(s)$ (233.39 g/mol) that forms, to the nearest tenth of a gram, is _____ g

ANSWER

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ANSWER KEY

1.	A	**5.**	A	**9.**	C
2.	D	**6.**	B	**10.**	4.7
3.	B	**7.**	64.0		
4.	9.6	**8.**	D		

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