

Brett Robbins Academic Consulting

Chemistry 20 Practice Test

Unit D: Quantitative Relationships in Chemical Changes

10 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

Use the atomic masses Ca = 40.08, O = 16.00, H = 1.01 g/mol.

The molar mass of Ca(OH)_2 is

- | | |
|----------------|-----------------|
| A) 57.09 g/mol | B) 74.10 g/mol |
| C) 97.15 g/mol | D) 114.18 g/mol |

Question 2

The mass of 0.250 mol of sodium chloride, NaCl (molar mass 58.44 g/mol), is

- | | |
|-----------|-----------|
| A) 14.6 g | B) 7.31 g |
| C) 29.2 g | D) 234 g |

Question 3

The number of molecules in 2.00 mol of NH_3 is

(use 6.02×10^{23} molecules/mol)

- | | |
|--------------------------|--------------------------|
| A) 3.01×10^{23} | B) 6.02×10^{23} |
| C) 1.20×10^{24} | D) 2.41×10^{24} |

Question 4

At STP, one mole of any ideal gas occupies 22.4 L.

The volume occupied by 0.500 mol of $\text{O}_2(\text{g})$ at STP is

- | | |
|-----------|-----------|
| A) 5.60 L | B) 11.2 L |
| C) 22.4 L | D) 44.8 L |

Question 5

A solution contains 0.200 mol of solute dissolved in 500 mL of solution.

The concentration of the solution is

- | | |
|----------------|----------------|
| A) 0.100 mol/L | B) 0.200 mol/L |
| C) 0.400 mol/L | D) 1.00 mol/L |

Question 6

Use the atomic masses N = 14.01, H = 1.01, O = 16.00 g/mol.

The percent by mass of nitrogen in NH_4NO_3 is

- | | |
|----------|----------|
| A) 17.5% | B) 35.0% |
| C) 52.5% | D) 70.0% |

Question 7

A compound consists of 40.0% C, 6.7% H, and 53.3% O by mass.

Use C = 12.01, H = 1.01, O = 16.00 g/mol.

The empirical formula of the compound is

- | | |
|-------------------------------------|--------------------------|
| A) CH_2O | B) CHO |
| C) $\text{C}_2\text{H}_4\text{O}_2$ | D) CH_4O |

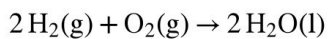
Question 8

The volume of a 6.00 mol/L stock solution required to prepare

250 mL of a 0.500 mol/L solution is

- | | |
|------------|------------|
| A) 3.00 L | B) 125 mL |
| C) 41.7 mL | D) 20.8 mL |

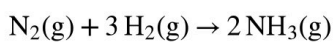
Question 9



The number of moles of $\text{O}_2(\text{g})$ required to react completely with 6.0 mol of $\text{H}_2(\text{g})$ is

- | | |
|------------|------------|
| A) 1.5 mol | B) 3.0 mol |
| C) 6.0 mol | D) 12 mol |

Question 10



The mass of NH_3 (molar mass 17.04 g/mol) produced

when 0.500 mol of $\text{N}_2(\text{g})$ reacts completely is

- | | |
|-----------|-----------|
| A) 34.1 g | B) 8.52 g |
| C) 25.6 g | D) 17.0 g |

Answer Key

- | | | |
|------|------|-------|
| 1. B | 5. C | 9. B |
| 2. A | 6. B | 10. D |
| 3. C | 7. A | |
| 4. B | 8. D | |

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