

Assignment #4 KEY

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ASSIGNMENT #4: Exercises #57, 58, 60, 62 & 64

Complete ALL assignments on a separate piece of paper and attach to your booklet when handing in at the end of the unit. Be sure to clearly **number** each assignment with a heading.

EXERCISES:

57. Translate the following word equations into chemical symbols and balance the resulting equations. Do not include the phases.

- (a) potassium + water \longrightarrow potassium hydroxide + hydrogen
- (b) strontium + water \longrightarrow strontium hydroxide + hydrogen
- (c) aluminum and chlorine react to produce aluminum chloride
- (d) copper(I) oxide and carbon react to form copper and carbon dioxide
- (e) ammonia and sulphuric acid form ammonium sulphate

In each of the following write a balanced chemical equation, including the phases.

- 58. Liquid phosphoric acid reacts with aqueous barium hydroxide to give water and a precipitate of barium phosphate.
- 60. Nitrogen trifluoride gas and hydrogen gas react to form nitrogen gas and gaseous hydrogen fluoride.
- 62. Sodium nitrate crystals and solid sodium metal react to form solid sodium oxide and nitrogen gas.
- 64. Gaseous xenon hexafluoride reacts violently with water to form solid xenon trioxide and gaseous hydrogen fluoride.

ANSWERS:

- 57. (a) $2\text{K} + 2\text{H}_2\text{O} \longrightarrow 2\text{KOH} + \text{H}_2$
- (b) $\text{Sr} + 2\text{H}_2\text{O} \longrightarrow \text{Sr}(\text{OH})_2 + \text{H}_2$
- (c) $2\text{Al} + 3\text{Cl}_2 \longrightarrow 2\text{AlCl}_3$
- (d) $2\text{Cu}_2\text{O} + \text{C} \longrightarrow 4\text{Cu} + \text{CO}_2$
- (e) $2\text{NH}_3 + \text{H}_2\text{SO}_4 \longrightarrow (\text{NH}_4)_2\text{SO}_4$
- 58. $2\text{H}_3\text{PO}_4(\text{l}) + 3\text{Ba}(\text{OH})_2(\text{aq}) \longrightarrow \text{Ba}_3(\text{PO}_4)_2(\text{s}) + 6\text{H}_2\text{O}(\text{l})$
- 59. $\text{Al}_2\text{O}_3(\text{s}) + 3\text{H}_2\text{SO}_4(\text{aq}) \longrightarrow 3\text{H}_2\text{O}(\text{l}) + \text{Al}_2(\text{SO}_4)_3(\text{aq})$
- 60. $2\text{NF}_3(\text{g}) + 3\text{H}_2(\text{g}) \longrightarrow \text{N}_2(\text{g}) + 6\text{HF}(\text{g})$
- 61. $\text{Na}_2\text{CO}_3(\text{s}) + 2\text{HBr}(\text{aq}) \longrightarrow \text{CO}_2(\text{g}) + 2\text{NaBr}(\text{aq}) + \text{H}_2\text{O}(\text{l})$
- 62. $2\text{NaNO}_3(\text{s}) + 10\text{Na}(\text{s}) \longrightarrow 6\text{Na}_2\text{O}(\text{s}) + \text{N}_2(\text{g})$
- 63. $\text{BCl}_3(\text{g}) + 3\text{H}_2\text{O}(\text{g}) \longrightarrow \text{B}(\text{OH})_3(\text{s}) + 3\text{HCl}(\text{g})$
- 64. $\text{XeF}_6(\text{g}) + 3\text{H}_2\text{O}(\text{l}) \longrightarrow \text{XeO}_3(\text{s}) + 6\text{HF}(\text{g})$