Answer on Question # 70309**, Chemistry / General Chemistry**

      Ammonia NH_3 chemically reacts with oxygen gas O_2 to produce nitric oxide NO and water H_2O. What mass of water is produced by the reaction of 5.1g of oxygen gas? Round your answer to 2 significant digits.

Solution:

$$4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$$
$$n(O_2) = \frac{m(O_2)}{M(O_2)} = \frac{5.1}{32} = 0.16 \ (mol)$$
$$\frac{n(O_2)}{n(H_2O)} = \frac{5}{6} \Rightarrow$$
$$n(H_2O) = \frac{6 \times n(O_2)}{5} = \frac{6 \times 0.16}{5} = 0.19 \ (mol)$$
$$m(H_2O) = n(H_2O) \times M(H_2O) = 0.19 \times 18 = 3.42 = 3.4 \ (g)$$

Answer: 3.4 g.