

CHM1025 Practice Questions – Chapters 6, 7 & 8

Chapter 6

1. What is the mass of 4.91×10^{21} platinum atoms in grams?
2. Determine the number of moles OR the mass of the following:
 - a. 4.25 kg carbon dioxide
 - b. 1.89 kmol sulfur trioxide
3. How many grams of Cl are in 55.0 g of the following CFCs?
 - a. CF_2Cl_2
 - b. $\text{C}_2\text{F}_3\text{Cl}_3$
4. Calculate mass percent composition of C:
 - a. $\text{C}_4\text{H}_{12}\text{N}_2$
 - b. $\text{C}_3\text{H}_9\text{N}$
5. Calculate:
 - a. Molecular formula from the empirical formula CH_2 , with a molar mass of 56.11 g/mol
 - b. Empirical formula for a compound that, when decomposed, produces 1.78 g of N and 4.05 g of O.

Chapter 7

1. Which of the following is not a redox reaction?
 - a. $2\text{Mg}(\text{s}) + \text{O}_2(\text{g}) \rightarrow 2\text{MgO}(\text{s})$
 - b. $2\text{HBr}(\text{aq}) + \text{Ca}(\text{OH})_2(\text{aq}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + \text{CaBr}_2(\text{aq})$
 - c. $\text{Ca}(\text{s}) + \text{Cl}_2(\text{g}) \rightarrow \text{CaCl}_2(\text{s})$
 - d. $\text{Zn}(\text{s}) + \text{Fe}^{2+}(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + \text{Fe}(\text{s})$
2. Balance the chemical equation: $\text{Fe}(\text{s}) + \text{HCl}(\text{aq}) \rightarrow \text{FeCl}_3(\text{aq}) + \text{H}_2(\text{g})$
3. Precipitation reactions are best classified as which type of reaction?
 - a. Single displacement
 - b. Double displacement
 - c. Decomposition
 - d. None of the above
4. Which of the following is not a strong acid?
 - a. HClO_4
 - b. HF
 - c. HNO_3
 - d. HBr
5. Which of the following compounds is insoluble?
 - a. AgBr
 - b. $\text{Pb}(\text{NO}_3)_2$
 - c. NaF
 - d. CaCl_2

Chapter 8

1. What is the percent yield for a process in which 10.4g CH₃OH reacts with excess O₂ forming 10.1g CO₂ forms, according to the following equation?



- a. 97.1%
- b. 70.7%
- c. 52.1%
- d. 103%
- e. 37.9% =

2. Nitrogen and hydrogen react to form ammonia according to the following balanced equation: N₂(g) + 3H₂(g) → 2NH₃(g). Calculate the number of moles of hydrogen required to react with 0.0880 mole of nitrogen, and the number of moles of ammonia that will form.

3. What mass of CaSO₄ is produced according to the given equation when 5.00g of each reactant are combined?



- a. 10.0g
- b. 11.6g
- c. 6.94g
- d. 8.72g
- e. 5.02g

4. Given the thermochemical equation: H₂(g) + Br₂(l) → 2HBr(g), ΔH = -72.4kJ/mol, calculate the amount of heat released when a kilogram of Br₂(l) is consumed in this reaction.

- a. 7.24x10⁴ kJ
- b. 453 kJ
- c. 906 kJ
- d. 227 kJ
- e. 724 kJ

Answer Key:

Chapter 6

1. 1.59g
2.
 - a. 96.6 mol
 - b. 1.51×10^5 g
3.
 - a. 32.3g
 - b. 31.2g
4.
 - a. 54.5%
 - b. 60.9%
5.
 - a. C_4H_8
 - b. NO_2

Chapter 7

1. B
2. $2Fe(s) + 6HCl(aq) \rightarrow 2FeCl_3(aq) + 3H_2(g)$
3. B
4. B
5. A

Chapter 8

1. B
2. 0.264 mol H_2 , 0.176 mol NH_3
3. C
4. B