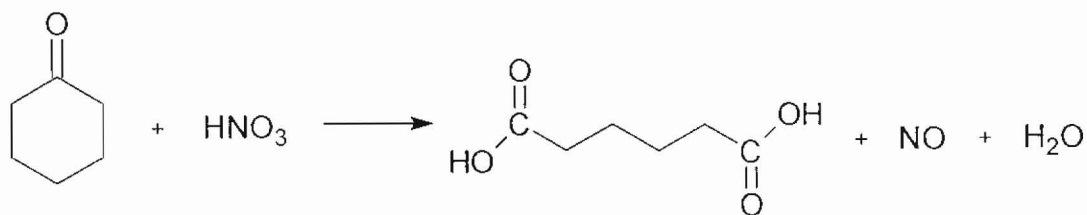
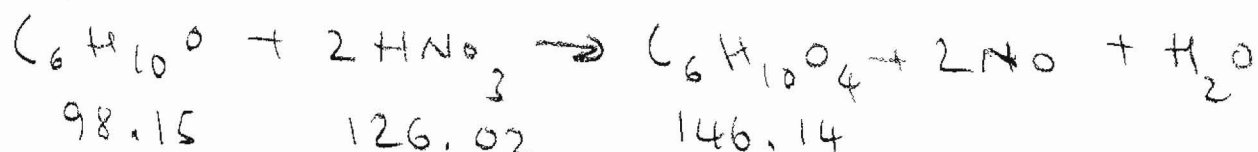


For the first questions, consider the oxidation of cyclohexanone with nitric acid to generate adipic acid:



When the reaction was carried out with 10 g cyclohexanone and 22.0 g of nitric acid, 11.2 g adipic acid were isolated. Atomic weights: C, 12.011; H, 1.008; N, 14.007; O, 15.999.

1. Show a balanced reaction equation for this reaction. Use molecular formulas for organic compounds. (3 pts).



2. What was the limiting reactant? Show your calculations! (3 pts).

$$\frac{10.0}{98.15} \times 126.02 = 12.84 \text{ g HNO}_3 \text{ needed}$$

→ cyclohexanone limiting

3. What % yield of theory was obtained? Show your calculations! (3 pts).

$$\frac{10.0}{98.15} \times 146.14 = 14.89 \text{ g product expected}$$

$$\frac{11.2}{14.89} \times 100 = 75.2\% \text{ o. th. obtained}$$

4. Check all that apply! (6 pts)

Substance	flammable	highly toxic when inhaled
mercury		✓
ethanol	✓	
acetone	✓	