

# CHEM 121O (Rowley)

## Exam 3 (Chapters 5-6) Fall 2025

### Formulas

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$$q = mc\Delta T$$

$$\Delta U_{rxn} = \frac{-C\Delta T}{n_{rxn}} \quad \left( n_{rxn} = \frac{n_{limiting}}{\nu_{limiting}} \right)$$

$$\nu\lambda = c$$

$$E = h\nu = \frac{hc}{\lambda}$$

$$\frac{1}{\lambda} = R_H \left( \frac{1}{n_1^2} - \frac{1}{n_2^2} \right)$$

$$q = n\Delta H_{rxn}$$

$$\Delta H_{rxn} = \frac{-mc\Delta T}{n_{rxn}} \quad \left( n_{rxn} = \frac{n_{limiting}}{\nu_{limiting}} \right)$$

$$\Delta H_{rxn} = \sum_{products} \nu \Delta H_f - \sum_{reactants} \nu \Delta H_f$$

$$\Delta E = R_H \left( \frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$$

### Constants

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$$R = 8.314 \frac{J}{mol K}$$

$$1cal = 4.184J$$

$$c_{H_2O} = 4.184 \frac{J}{g K}$$

$$h = 6.626 \times 10^{-34} J s$$

$$R = 0.08206 \frac{L atm}{mol K}$$

$$R_H = 2.179 \times 10^{-18} J$$

$$R_H = 1.097 \times 10^7 m^{-1}$$

$$c = 2.998 \times 10^{8m/s}$$

## Periodic Table of the Elements