

5 points

Which has the higher enthalpy under the same conditions:

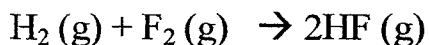
2 Cl or Cl_2

Cl_2

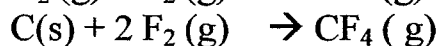
(5)

22.) From the enthalpies of reaction

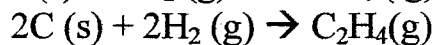
10 points



$\Delta H = -537 \text{ kJ}$



$\Delta H = -680 \text{ kJ}$



$\Delta H = +52.3 \text{ kJ}$

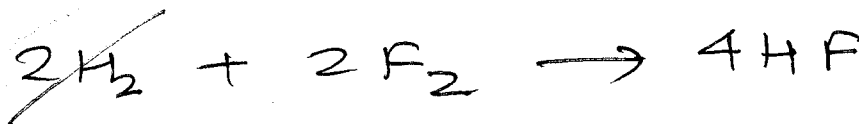
Calculate the ΔH for the following reaction



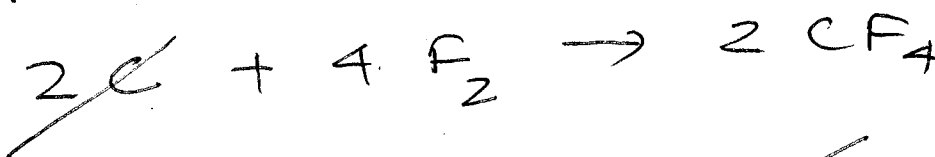
(5)

(-)

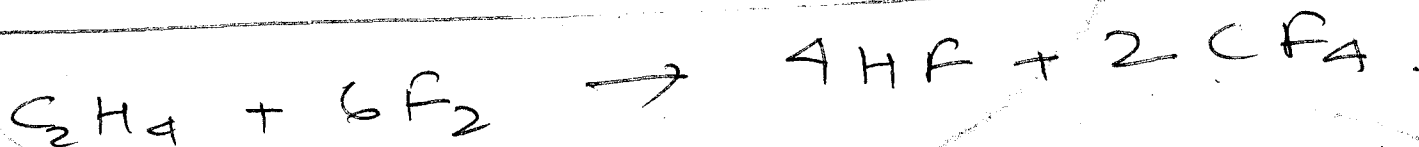
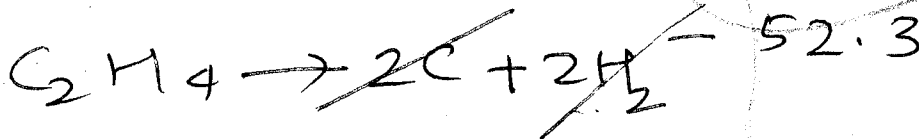
KJ



~~-537×2~~



~~-680×2~~



$\Delta H = -2486.3 \text{ kJ}$

5

Blue

Blue

23) What wavelength of radiation has a photons of energy 2.87×10^{-18} Joules.
(worth 5 points)

$$E = h\nu$$

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

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

2

$$= \frac{6.626 \times 10^{-34} \text{ J}\cdot\text{s} \times 3 \times 10^8 \text{ m/s}}{2.87 \times 10^{-18} \text{ Joules}}$$

$$2.87 \times 10^{-18} \text{ Joules}$$

$$\lambda = 6.926 \times 10^{-8} \text{ meters}$$

$$= 6.93 \times 10^{-8} \text{ meters}$$

24) $2 \text{KClO}_3 (\text{s}) \rightarrow 2 \text{KCl} (\text{s}) + 3 \text{O}_2 (\text{g}) \quad \Delta H = -89.4 \text{ kJ}$

(worth 5 points each)

a. Calculate ΔH for the formation of 0.855 mole of O_2

$$\text{O}_2 \quad \frac{0.855 \text{ mole O}_2}{3 \text{ mole O}_2} \times \frac{-89.4 \text{ kJ}}{3 \text{ mole O}_2}$$

5

$$= -25.479 \text{ kJ}$$

b. ΔH for decomposition of 10.75 g of KCl .

$$\frac{1 \text{ mole}}{74.55} \times 10.75 \text{ g KCl} \quad \left(\frac{39.10 + 35.45}{74.55} \right) \text{ KCl} = 0.14419 \text{ moles}$$

$$0.14419 \times \frac{-89.4 \text{ kJ}}{2 \text{ KCl}} = -6.4 \text{ kJ}$$

pink

21) Consider the following reaction + 5 points



Which has the higher enthalpy under the same conditions:

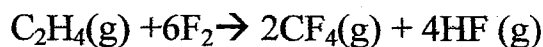
2 Cl or Cl₂

Cl₂

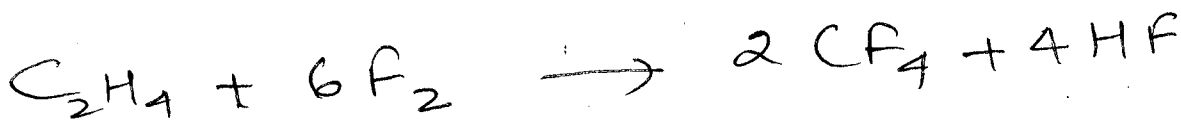
22) From the enthalpies of reaction 10 points



Calculate the ΔH for the following reaction



KJ



$$\Delta H = -2793.3 \text{ KJ}$$

Link

- 24) What wavelength of radiation has a photons of energy 5.87×10^{-18} Joules.
(worth 5 points)

$$E = h\nu$$

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

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

$$= \frac{6.626 \times 10^{-34} \times 3 \times 10^8 \text{ m/s}}{5.87 \times 10^{-18}}$$

$$= 3.386371 \times 10^{-8} = \boxed{3.39 \times 10^{-8} \text{ m}}$$

24. $2 \text{KClO}_3 (\text{s}) \rightarrow 2 \text{KCl} (\text{s}) + 3 \text{O}_2 (\text{g}) \quad \Delta H = -82.4 \text{ kJ}$
(worth 5 points each)

a. Calculate ΔH for the formation of 0.755 mole of O_2

$$0.755 \times \frac{-82.4 \text{ kJ}}{3 \text{ mole O}_2} = -20.73 \text{ kJ}$$

b. ΔH for decomposition of 17.15 g of KCl .

$$17.15 \text{ g} \times \frac{1 \text{ mole}}{74.55} = 0.2300 \text{ moles.}$$

$$0.2300 \times \frac{-82.4}{2} = -9.47 \text{ kJ}$$

Answer Key
Testname: TEST 3

Answer Key
Testname: TEST 3 / Fall 2007 / CH115

- 1) B
- 2) D
- 3) B
- 4) A
- 5) A
- 6) A
- 7) C
- 8) B
- 9) B
- 10) A
- 11) C
- 12) C
- 13) B
- 14) B
- 15) A
- 16) A
- 17) A
- 18) C
- 19) E
- 20) E

- 1) A
- 2) B
- 3) A
- 4) D
- 5) E
- ~~6) B~~
- 7) E
- 8) C
- ~~9) B~~
- 10) E
- 11) B
- 12) B
- 13) C
- 14) A
- 15) E
- 16) C
- 17) C
- 18) E
- 19) B
- 20) C

Blue

Pink