1. **STUDY CHECK**

Convert the following energy units: (a) 200 cal to Kcal (b) 7000 J to cal
Show work to get full credit

2. **STUDY CHECK**

Convert 200°C to K.
Show work to get full credit

3. **STUDY CHECK**

How many calories are absorbed by 100g of Gold ($c_e = 0.0308 \frac{cal}{g°C}$) if its temperature rises from 25°C to 100°C.
Show work to get full credit

4. **STUDY CHECK**

When a hot balloon deflates, it receives 10^7J of work from the external atmosphere and its temperature change from 90°C to 25°C. Given that the air initially contained in the balloon has a mass of 3×10^5g and a specific heat of 1J/g°C. Calculate the internal energy of the hot ballon.
Show work to get full credit

5. **STUDY CHECK**
We mix 2.5mL of NaOH 0.5M with 2.5mL of HCl 0.5M both at 25°C in a constant-pressure calorimeter. The heat of reaction is -40KJ/mol. Calculate the final temperature inside the calorimeter, if the solution density is 1g/mL and the specific heat of the solution is 4.184J/g°C.
Show work to get full credit

6. **STUDY CHECK**
A 2 mol-sample of a chemical reacts in a constant-volume calorimeter with 20g of water and a heat capacity of 11KJ/°C. Calculate the heat of reaction knowing that the temperature of water inside the calorimeter rises 10°C.
Show work to get full credit

7. **STUDY CHECK**
Using the enthalpy tables at the end of the chapter, locate the enthalpy values for: $I_{2(aq)}$, $F_{2(g)}$ and $C_{diamond(s)}$.
Show work to get full credit

8. **STUDY CHECK**
Calculate the number of hydrogen moles needed to generate -200KJ.
Show work to get full credit

9. **STUDY CHECK**

Calculate the enthalpy for this reaction:

$$CS_{2(l)} + 3\,O_{2(g)} \longrightarrow CO_{2(g)} + 2\,SO_{2(g)}$$

Given the following thermochemical equations:

$$\begin{array}{rcll} C_{(s)} + O_{2(g)} & \longrightarrow & CO_{2(g)} & \Delta H_1 = -393.5KJ \\ S_{(s)} + O_{2(g)} & \longrightarrow & SO_{2(g)} & \Delta H_2 = -296.8KJ \\ C_{(s)} + 2\,S_{(s)} & \longrightarrow & CS_{2(l)} & \Delta H_3 = 87.9KJ \end{array}$$

Show work to get full credit

10. **STUDY CHECK**

Classify the following reactions as exothermic and endothermic:

$C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)} +$ 🔥 $\qquad \Delta Q_r = -393.5kJ.$

$C_{(s)} + 2\,S_{(s)} +$ 🔥 $\longrightarrow CS_{2(l)} \qquad \Delta Q_r = +87.9kJ.$

$S_{(s)} + O_{2(g)} \longrightarrow SO_{2(g)} +$ 🔥 $\qquad \Delta Q_r = -296.8kJ.$

Show work to get full credit

11. **STUDY CHECK**

Calculate: (a) the wavelength of radiation with energy of $5.6 \times 10^{-19} J$; (b) the frequency of a radiation with frequency of $4.8 \times 10^{-18} J$; (c) the wavelength of a radiation with frequency of $2 \times 10^{15} Hz$.
Show work to get full credit

12. **STUDY CHECK**

Indicate: (a) the color of a radiation with $\nu = 7.5 \times 10^{14}$ Hz; (b) the type of a radiation with $\nu = 10^{8}$ Hz. Show work to get full credit

13. **STUDY CHECK**

A metal with workfunction of 5eV is exposed to a radiation source with frequency of 9×10^{14}Hz. Indicate whether electrons will be ejected and if so, indicate the kinetic energy of these. Show work to get full credit

14. **STUDY CHECK**

Calculate the De Broglie wavelength of an electron at a velocity of 100m/s given that an electron mass is 9×10^{-31}kg. Show work to get full credit

15. **STUDY CHECK**

Indicate if the following combination of quantum numbers is allowed:

n	ℓ
4	3
4	3
2	1

Show work to get full credit

16. **STUDY CHECK**
The uncertainty on the position of a particle with a mass of 1.7×10^{-27}kg is $\pm 10^{-11}$m. Calculate the uncertainty on the velocity of the particle.
Show work to get full credit

17. **STUDY CHECK**
At a given energy level you can fit 162 electrons. Identify the energy level. Show work to get full credit

18. **STUDY CHECK**
Obtain the abbreviated electronic configuration of Cobalt (Co, Z=27). Show work to get full credit

19. **STUDY CHECK**
Compare the following property for the given couple of elements: (a) Atomic radius of F and I. (b) Electronegativity of Cs and Na. Show work to get full credit

20. **STUDY CHECK**
Obtain the orbital diagram for Li given the electron configuration: $[He]2s^1$. Show work to get full credit