Assignment 6

- When 100 kg of a substance absorbs 700 cal, its temperature rises by 2°C. Determine the specific heat capacity of the substance.

- If 2 kg of a gas at 300°C has a pressure of 0.5 atm and its volume changes by 50% (from 100 L to 150 L), calculate the new pressure of the gas.

- A solid with a mass of 50 g has dimensions of 10 cm x 10 cm x 5 cm. Calculate the density of the solid if its weight is 0.25 kg.

- A liquid with a density of 0.9 g/cm³ is poured into a container with a volume of 120 cm³. Determine the mass of the liquid.

- A copper block with a mass of 2 kg has a specific heat capacity of 0.385 J/g°C and is heated to a temperature of 25°C. If it is then placed in a water bath at 50°C, how much heat is transferred to the water if the final temperature of the copper block is 20°C?

- A 1000 g substance is heated in a calorimeter from 20°C to 30°C. If the calorimeter has an empty mass of 500 g and a specific heat capacity of 0.8 J/g°C, determine the total enthalpy change of the substance.

- If 200 g of a gas at 20°C is expanded to double its volume at constant pressure, calculate the final temperature of the gas.

- A metal block with a mass of 500 g and a specific heat capacity of 0.45 J/g°C is heated to 100°C and then placed in a water bath at 50°C. If the final temperature of the water bath is 60°C, determine the mass of water.

- A 1 kg substance has a specific heat capacity of 0.4 J/g°C. If it is heated from 20°C to 80°C, calculate the total heat energy added.

- A 500 g substance with a specific heat capacity of 0.5 J/g°C is heated from 10°C to 50°C, and then it is cooled to 10°C. Calculate the total heat energy gained or lost.

- A 200 g gas has a pressure of 2 atm and a volume of 100 cm³. If its temperature changes to 300°C and the volume changes to 150 cm³, calculate the new pressure of the gas.

- A 1000 g liquid has a density of 1 g/cm³. If its volume is 50 cm³, calculate the mass of the liquid.