Latent Heat In-Class Practice Test   Total: _____ / 22

Question 1   **(11 marks)**

A 45.5 g block of ice is heated from a temperature of -30.4 °C until it melts completely at 0.00 °C. Heat continues to be applied until the resulting liquid begins to boil at 1.00×10^2 °C.

(a) Calculate the amount of energy required to heat the block of ice from -30.4 °C until it begins to melt.   (2 marks)

(b) Calculate the amount of energy required to melt the ice.   (2 marks)

(c) Calculate the amount of energy required to heat the liquid from 0.00 °C to 1.00×10^2 °C.   (2 marks)

(d) Once the liquid had reached its boiling point, calculate the amount of energy required to boil it all off.   (2 marks)

(e) If it was determined that the Bunsen burner had a power output of 1.24 kW, calculate the amount of time taken for the solid ice to be completely boiled off.   (3 marks)

Question 2   **(3 marks)**

How much heat would be absorbed by a person's skin if they were to come into contact with 10.0 g of steam at 100 °C? (Assume that body temperature remains constant at 37 °C.)

Question 3   **(5 marks)**

An adult wants to cool a hot cup of soup which is at 85 °C before giving it to a child. 0.30 kg of soup is in an insulated cup and the adult adds a 0.1 kg ice block at 0 °C to the soup. If the thermal properties of the soup are the same as those of water, calculate the final temperature of the soup when the ice has just melted.

Question 4   **(3 marks)**

A bath towel containing 5.00×10^2 mL of water at 20 °C is placed in the sun to dry. Calculate the quantity of heat required to evaporate all the water from the towel.