You have been asked to determine the specific latent heat of fusion of ice by the method of mixtures.

(a) Draw the labeled experimental setup that you would use for this experiment.

(b) (i) For this experiment, you have been provided with ice in the following three forms.

As a large piece of ice :

As small pieces of ice :

As crushed ice :

What is most suitable form of ice to be used in this experiment?

(ii) Give a scientific reason for rejecting each of the other two forms of ice.

(c) What are the readings that you should take, before the addition of ice in to the water?

(d) Certain experimental steps are usually followed in this experiment in order to minimize the heat lost to the environment. What are these steps?

(e) State the readings taken after addition of ice into the water.

(f)   Accurate results cannot be obtained by using just enough water to melt the ice. Give two reasons for this.

(g)   When calculating the specific latent heat of fusion of ice (L) using the readings obtained in part (c) and part (e), the temperature of ice is generally assumed to be 0 °C. If the actual temperature of ice is -2 °C, by what fraction does the value for L calculated after making the above assumption deviate from the actual value of L?

Specific latent heat of fusion of ice   = 3.3×10^5 J kg^{-1}

Specific heat capacity of ice   = 2.2×10^3 J kg^{-1} K^{-1}