YEAR 11 PHYSICS WORKSHEET 3

3. (a) State the three modes of heat transfer and give real life example of each

(b) With the aid of a diagram, explain the natural phenomenon which causes sea breeze.

(c) How much heat energy is required to heat 2kg of water from $25^\circ C$ to $30^\circ C$?

(d) Water of mass 0.2kg is at a temperature of $100^\circ C$. It is to be cooled to a temperature of $40^\circ C$ by mixing it some cold water which is at a temperature of $20^\circ C$.

(i) Calculate how much heat energy will be lost by 0.2kg water when it cools from a temperature of $100^\circ C$ to a temperature of $40^\circ C$.

(ii) Calculate how much heat energy will be gained by cold water when its temperature rises from $20^\circ C$ to $40^\circ C$.

(iii) Assuming no heat is lost to the surrounding, calculate the mass of cold water required to achieve the above.

(e) A hot brass cube of mass 0.4kg is placed in a 0.5kg of water and the temperature of water increases by 2^oC.

(i) How much heat energy was gained by the water?

(ii) How much heat energy was lost by the brass cube?

(iii) If the change in temperature of brass was 27^oC, find the heat capacity for brass.

(f) The table below shows some heat energy properties of water and silver.

Substance	**Melting Point** $^\circ C$	**Heat of Fusion** $\left(\times 10^5 \frac{J}{Kg}\right)$	**Boiling Point** $^\circ C$	**Heat of Vaporization** $\left(\times 10^5 \frac{J}{Kg}\right)$	**Specific Heat Capacity** $\frac{J}{Kg^\circ C}$
Water	0	3.33	100	22.6	4200
Silver	961	0.88	2193	23	2352

Calculate the heat energy absorbed when 0.01kg of solid silver at 961^oC melts.

(g) Draw the heating curve of the following substance

Ice at -10^oC heated is to form steam at 100^oC

[Label all the changes of state for the above]