

Q.1 The latent heat of fusion of water is 334J/g . How many grams of ice 0°C will melt by the addition of 3034kJ of heat energy.

Q.2 A wave train has a period of 2.00 seconds and a wave length of 7.00 meters, How far will it travel in 8.00 seconds.

Solution.

Q.1 $L = 334\frac{\text{J}}{\text{g}}, Q = 3034\text{kJ} = 3034000\text{J};$

$$m-?$$

The latent heat for a given mass of a ice is calculated by:

$$Q = Lm.$$

The mass of the ice is:

$$m = \frac{Q}{L}.$$

$$m = \frac{3034000\text{J}}{334\frac{\text{J}}{\text{g}}} = 9084\text{g}.$$

Q.2 $T = 2.00\text{s}, \lambda = 7.00\text{m}, t = 8.00\text{s};$

$$l-?$$

A wave train will travel:

$$l = vt.$$

A wave length is:

$$\lambda = vT;$$

$$v = \frac{\lambda}{T};$$

$$l = \frac{\lambda}{T}t.$$

$$l = \frac{7.00\text{m}}{2.00\text{s}} \cdot 8.00\text{s} = 28.00\text{m}.$$

Answer: Q.1 $m = 9084\text{g}.$

Q.2 $l = 28.00\text{m}.$