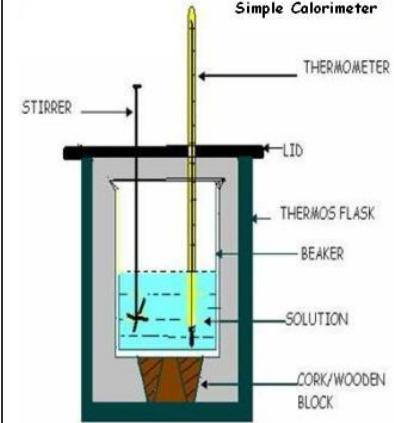
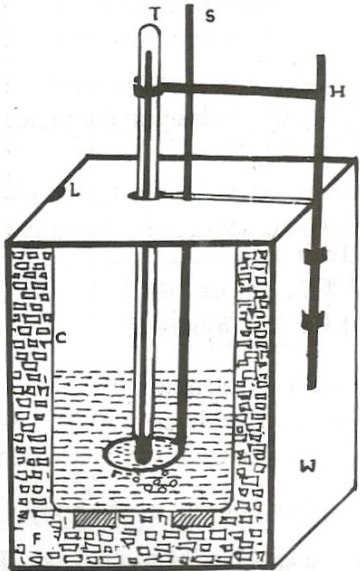


CLASS-10  
PHYSICAL SCIENCE  
PERIOD PLANS  
**CHAPTER: 01 – HEAT**

**PERIOD PLAN-05 :** Calorie meter – structure – working

Content Analysis	Class Room Environment	Teaching Learning Material
<p><b>Calorimeter :</b> A device used to measure the quantity of heat.</p> <p><b>Description :</b> Calorimeter consists of a thin cylindrical copper vessel. The copper vessel is placed in a wooden box. The gap between vessel and wooden box is filled with insulating material like wool/fur. The wooden box contains a wooden lid. The lid has a slot that a stirrer is to be immersed through it into the copper vessel. Also the lid has a hole to immerse laboratory thermometer. ( It may also have an holder for thermometer at a side of the wooden box.)</p>	<p><b>Conversation :</b> About the description of calorimeter by showing the parts using calorimeter.</p> 	<p>Calorimeter model and photos</p>
<p><b>Working procedure :</b> First we have to find the mass of the calorimeter (<math>m_1</math>). Fill nearly half of the calorimeter with water and find the mass of calorimeter with water (<math>m_2</math>). Measure the initial temperature with laboratory thermometer (<math>T_1</math> °C). This is the temperature of both water and also calorimeter.</p> <p>Take a few lead shots and place them in hot water. Heat them up to a temperature 100°C. So measure the temperature of lead shots (<math>T_2</math> °C). Transfer the lead shots into calorimeter quickly with minimum loss of heat. Stir the mixture well. Note the final temperature (<math>T_3</math> °C). Measure the final mass of calorimeter along with water and lead shots (<math>m_3</math>).</p> <p style="text-align: center;">Heat (<math>Q</math>) = <math>m \cdot s \cdot \Delta T</math></p> <p>According to the method of mixtures :</p> <p>Heat lost by the solid = Heat gained by calorimeter + Heat gained by water</p> $(m_3 - m_2) \cdot S_1 \cdot (T_2 - T_3) = m_1 \cdot S_c \cdot (T_3 - T_1) + (m_2 - m_1) \cdot S_w \cdot (T_3 - T_1)$ $S_1 = \frac{[m_1 S_c + (m_2 - m_1) S_w] [T_3 - T_1]}{(m_3 - m_2) (T_2 - T_3)}$ <p>This way we can find the specific heat of a solid.</p>	<p><b>Explanation :</b> Explains the procedure for determination of specific heat of a solid using calorimeter.</p> 	<p>AV-Clip</p>
<p><math>S_w = 1 \text{ cal/gm } ^\circ\text{C}</math>  <math>S_c = 0.095 \text{ cal/gm } ^\circ\text{C}</math>  <math>S_l = 0.031 \text{ cal/gm } ^\circ\text{C}</math>  <math>S_i = 0.115 \text{ cal/gm } ^\circ\text{C}</math></p>		