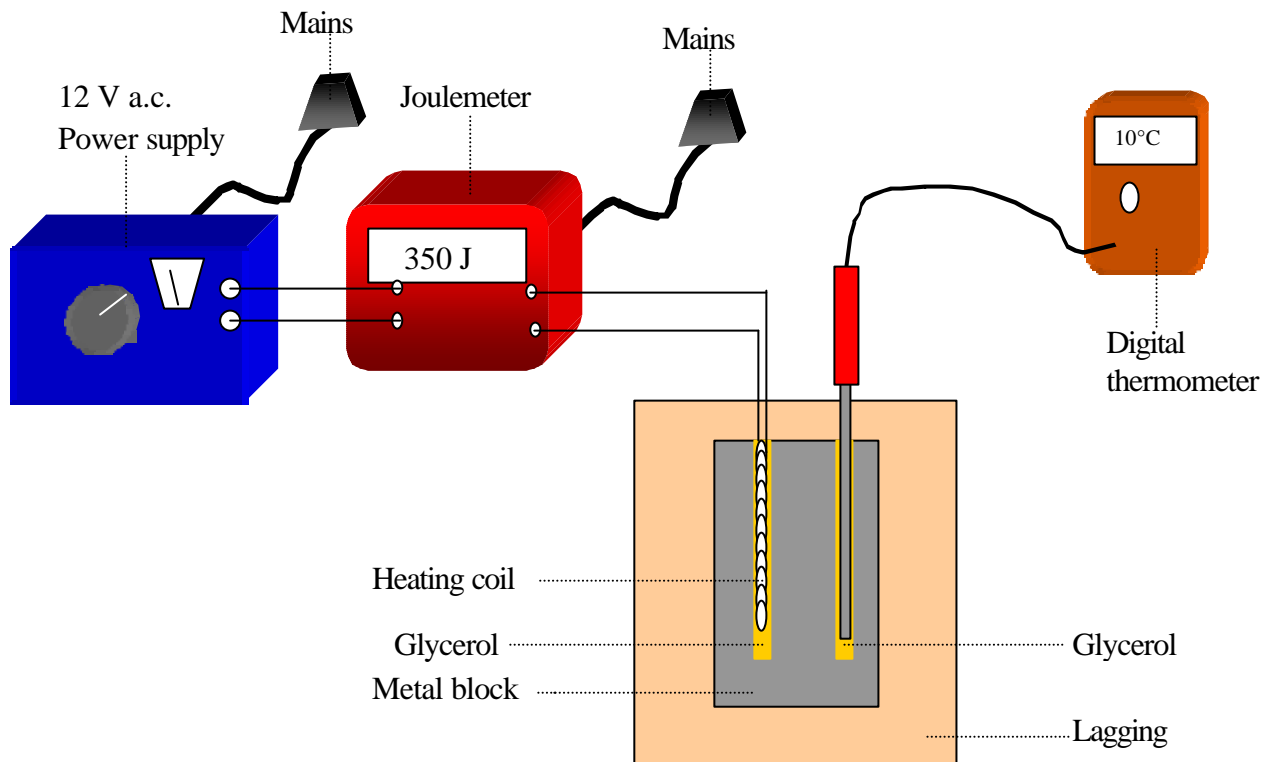


MEASUREMENT OF THE SPECIFIC HEAT CAPACITY OF A METAL BY AN ELECTRICAL METHOD

Apparatus

Joulemeter, block of metal, heating coil to match, beaker, lagging, thermometer accurate to $0.1\text{ }^{\circ}\text{C}$, glycerol, electronic balance and a low voltage a.c. supply.



Procedure

1. Find the mass of the metal block m .
2. Set up the apparatus as shown in the diagram.
3. Record the initial temperature θ_1 of the metal block.
4. Plug in the joulemeter and switch it on.
5. Zero the joulemeter and allow current to flow until there is a temperature rise of $10\text{ }^{\circ}\text{C}$.
6. Switch off the power supply, allow time for the heat energy to spread throughout the metal block and record the highest temperature θ_2 .
7. The rise in temperature $\Delta\theta$ is therefore $\theta_2 - \theta_1$.
8. Record the final joulemeter reading Q .

Results

Mass of metal block $m =$

Initial temperature of the block $\theta_1 =$

Final temperature of the block $\theta_2 =$

Rise in temperature $\Delta\theta = \theta_2 - \theta_1 =$

Final joulemeter reading $Q =$

Calculations

The specific heat capacity of the metal c can be calculated from the following equation:

Energy supplied electrically = energy gained by the metal block

$$Q = mc\Delta\theta .$$