QUESTION

Calculate the amount of heat required to raise the temperature of 50g of copper by 45 degree celcius to 95 degree celcius

SOLUTION

The amount of heat Q required to raise the temperature of m_{copper}=50g of copper by 45 degree Celsius (45 ^{o}C=45+273.15=318.15 K - T_{inital}) to 95 (368,15 K – T_{final}) degree celcius is

$$Q = c_{copper} m_{copper} (T_{finall} - T_{initial})$$

Here c_{copper}=386 $\frac{J}{kg \cdot K}$ is specific heat of copper.

Hence

$$Q = 386 \cdot \frac{50}{1000} (368.15 - 318.15) = 965 \ J$$

ANSWER

965 J