Physics
Theory Part 22

Topics: Measurement and Uncertainties/ Heat

Course: B.Sc/ Physics

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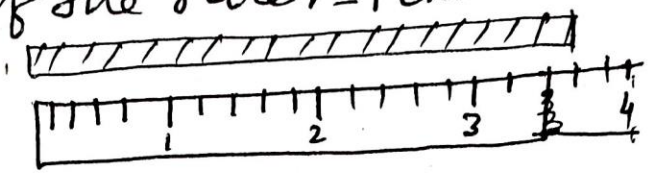
Q2/ Measurement & Error Analysis.
From fig find the uncertainty.

(a) Least Count of the ruler = 1 cm

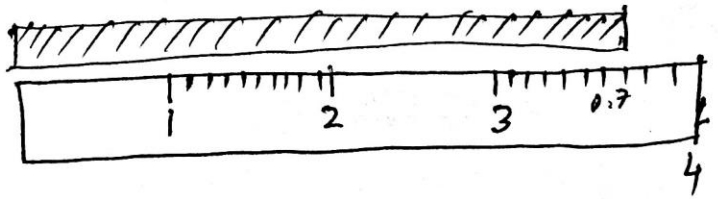


(b) 1 cm further divided into five equal parts ∴ $L.C = \frac{1\text{ cm}}{5} = 0.2\text{ cm}$

So uncertainty = $\pm$ 0.2 cm

(c) $x = 3.6\text{ cm} \pm 0.2\text{ cm}$

Q3



(a) Here 1 cm is divided into further 10 equal parts ∴ $L.C = \frac{1\text{ cm}}{10} = 0.1\text{ cm}$

(b) L.C i,e 0.1 cm is further divided into 3 segments. new $L.C = \frac{0.1}{3} = 0.033$

∴ Uncertainty = $\pm$ 0.03 cm

(c) $x = 3.7 \pm 0.03$ cm

It is a topic of Atmospheric Re-Entry. At the end of a mission when space ship return back towards earth, it has very high speed (≥ 30,000 kmphr). At this speed when it entered the atmosphere the air below it gets highly compressed in a hot ball of plasma which encircles the craft. This caused increase of the temperature of the ship (>1700 °C). This high temp. can burn the ship to ashes if it is not well protected by heat shield materials.

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