**EXPERIMENTAL EXAMINATION**

## Experimental problem 1

Build an opaque-object projector whose projected images have magnification greater than one:

a. Draw the instrument and trace the light rays through the optical elements used.
b. Estimate the focal length of the lens.
c. Find the object-lens distance condition for magnification greater than one.

Note. You need not use every item provided.

Equipment provided.
2 cardboard boxes.
1 lens.
1 cardboard tube.
1 ruler.
1 light bulb with holder.
1 switch.
Aluminium foil.
A flat sheet of expanded polystyrene.
Tracing paper.
Black card.
A letter A painted on cardboard.
Opaque adhesive tape.
White paper glue.

## Experimental problem 2

Study how the oscillation period of the pendulum provided varies with the position of its centre of mass relative to the axis of oscillation.

- Draw the arrangement used.
- Estimate the errors in your measurements.
- Develop a model explaining the results obtained.

Equipment provided:

A pendulum with adjustable centre of mass and centre of oscillation.
Stopwatch.
Ruler.
Millimetre graph paper.