(e) Remove the mass and note the pointer reading. Hang the 100 g mass at the end of the metre rule. Determine the depression **D**.

D = ... (1 mark)

Remove the mass.

(f) Now hang the 130 g mass on the rule using a loop of thread and adjust its position along the metre rule until the depression is equal to **D**. Record the value of **X** at this point.

X = ... cm   (1 mark)

(g) Displace the end of the rule slightly downwards and release it so that it makes vertical oscillations. Time 20 oscillations and determine periodic time, **T**.

Time (t) for 20 oscillations .... (s)

Periodic time T = ... (s)   (2 marks)

(h) (i) On the grid provided plot a graph of d (y-axis) against X.   (5 marks)

   (ii) Determine the slope S of the graph.   (3 marks)

   (iii) Determine the constant K given that

$$K = \frac{T^2}{4\pi^2 S}, \text{ where } \pi = 3.14$$ (1 mark)

In 1 (d), candidates failed to score maximum mark in the table due to:

i)   Inability to maintain a common reference point y_1
ii)   Lack of adequate arithmetical skills in evaluating $y_1 - y_2$ especially where this involved decimals.
iii)   Inaccurate reading of the linear scale

In part (f) many candidates failed to recognize the relation between the depression asked in part (e) and that being asked here.

In (g) candidates' errors included;

i)   Determining the frequency eg. $\frac{20}{t}$ instead of the periodic time T.