OCR
Oxford Cambridge and RSA

A level Physics B

H557/01 Fundamentals of physics

Question Set 23

1 A student performs Young's double slit experiment as shown in **Fig. 1.1**.

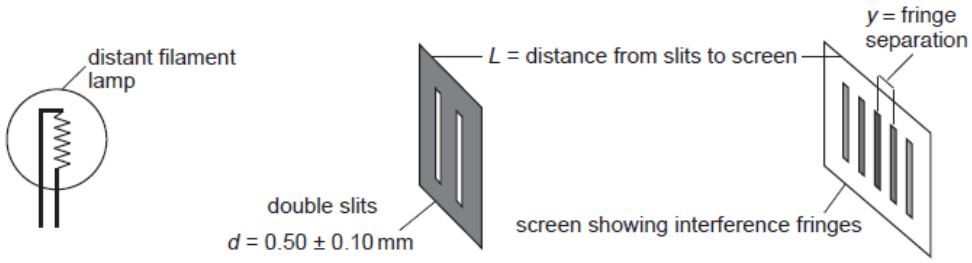

Fig. 1.1

The student investigates how the fringe spacing y varies with the distance L from slits to screen.
The student measures the slit separation $d = 0.5 \pm 0.1$ mm.
Fig. 1.2 shows the data obtained with uncertainties.

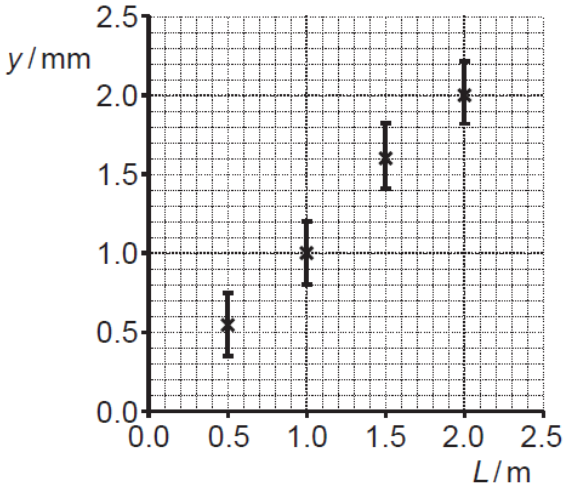

Fig. 1.2

(a) Suggest a reason why only uncertainties in the fringe spacing are shown on the graph.

[1]

(b) Draw a line of best fit on the graph and measure its gradient with an uncertainty estimate.

gradient = ... ± .....

[3]

(c) Use the gradient to estimate an average wavelength for the light together with an uncertainty estimate. Make your method clear.

wavelength = ... ± .....m

[3]

(d) State **one** way in which you could refine or develop this practical design or procedure toreduce uncertainty.

[1]

Total Marks for Question Set: 8