COMPREHENSIVE ASSESSMENT 2023-2024

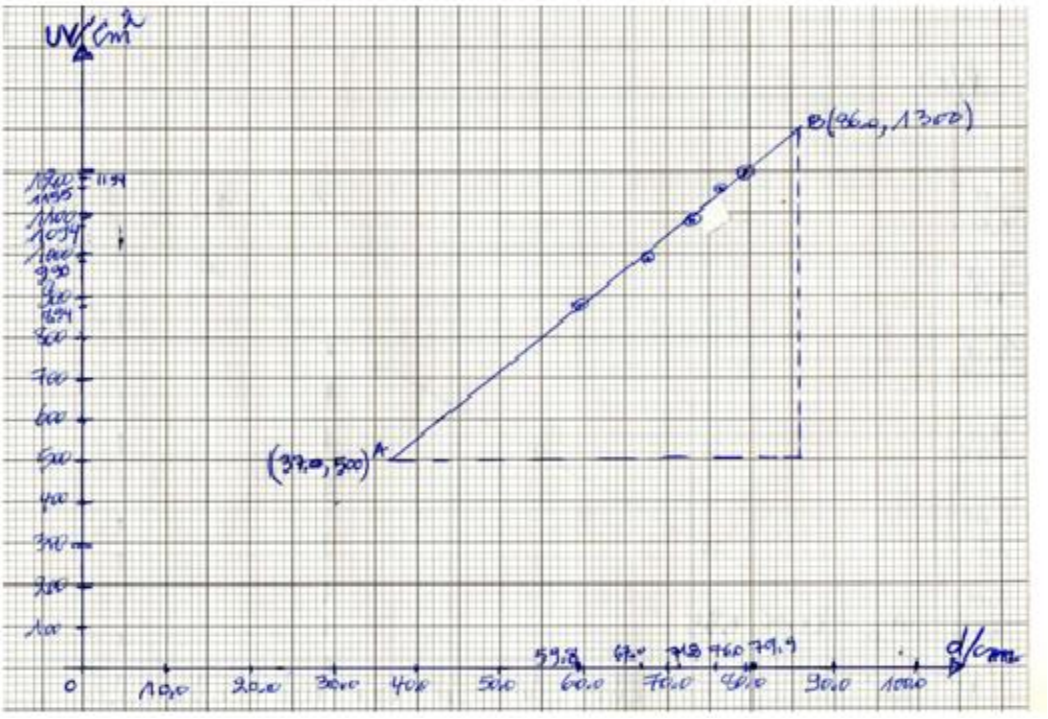
MARKING SCHEME OF S4 ALTERNATIVE TO PHYSICS PRACTICAL EXAM

The following marking scheme is a guide

a) (i) Table of results +(ii)

u/cm**(1mark)**	v/cm**(1mark)**	uv/cm^2**(1mark)**	d/cm**(1mark)**
30.0	29.8	894.0**(2marks)**	59.8
45.0	22.0	990.0**(2marks)**	67.0
50.0	21.8	1090.0**(2marks)**	71.8
55.0	21.0	1155.0**(2marks)**	76.0
60.0	19.9	1194.0**(2marks)**	79.9

b) Graph of uv against d



Title of graph **(1mark)**

Two labelled axes with arrows **(2 mark x 2=4marks)**

Two suitable scales on the axes (**1 mark x 2=2marks)**

Plotted points **(1mark x 5=5 marks)**

Well judged best fit line **(1mark)** allow at least 3 good plots on line

c) Slope G of the graph

(i) Indication on the graph **(2mark)**

(ii) $G = \frac{1300-500}{86.0-37.0}$ cm **(1mark)**

=16.3 cm **(1mark)**

Accept the value of G between 14.0 cm and 18 cm

d) The slope G is the focal length of the lens used **(1mark)**

Because $\frac{1}{f} = \frac{1}{u} + \frac{1}{v} = \frac{v+u}{uv}$ **(1mark)** then $f = \frac{uv}{u+v} = \frac{uv}{d} = G$ **(1mark)**

e)

- Convex lenses are thicker in the middle and thinner at the sides, **(1mark)** while concave lenses are thinner in the middle and thicker at the sides. **(1mark)**
- Convex lenses converge light rays, **(1mark)** while concave lenses diverge light rays. **(1mark)**
- Convex lenses form real images when the object is outside the focal point and virtual images when it's closer than the focal length, **(1mark)** while concave lenses form only virtual images. **(1mark)**