KCSE CLUSTER TESTS 11

Physics Paper 3

1.

1.

c)

U(cm)	22.5	25.0	32.5	35.0	40.0	45.0	
V(cm)	**50.5**	**41.0**	**29.0**	**27.5**	**26.0**	**24.5**	± 0.5

NB

⇒Starting point for –V- 50 -52

⇒Trends: Decreasing [Non linear]

- All points correct –(5 marks)
- At least 5 points correct- (4marks)
- 3 to 4 points correct – (2 marks)
- 2 correct (1 mark) less than 2 (0 marks)

f) Correct bisection line through (0, 0) to the curve at C – (1 mark)

i. OX perpendicular to U axis.

$OX = 30.75 \pm 0.5cm$ (1mark)

(Read from students graph)

ii. $OY = 30.75 \pm 0.5cm$

(Read from students graph)

g) $f = \dfrac{0X + OY}{4}$

$= \dfrac{30.75 + 30.75}{4}\sqrt{1}$

$f = \dfrac{61.5}{4} = 15.375cm\sqrt{1}$

$f \approx 15cm(2.0s.f)\sqrt{1}$

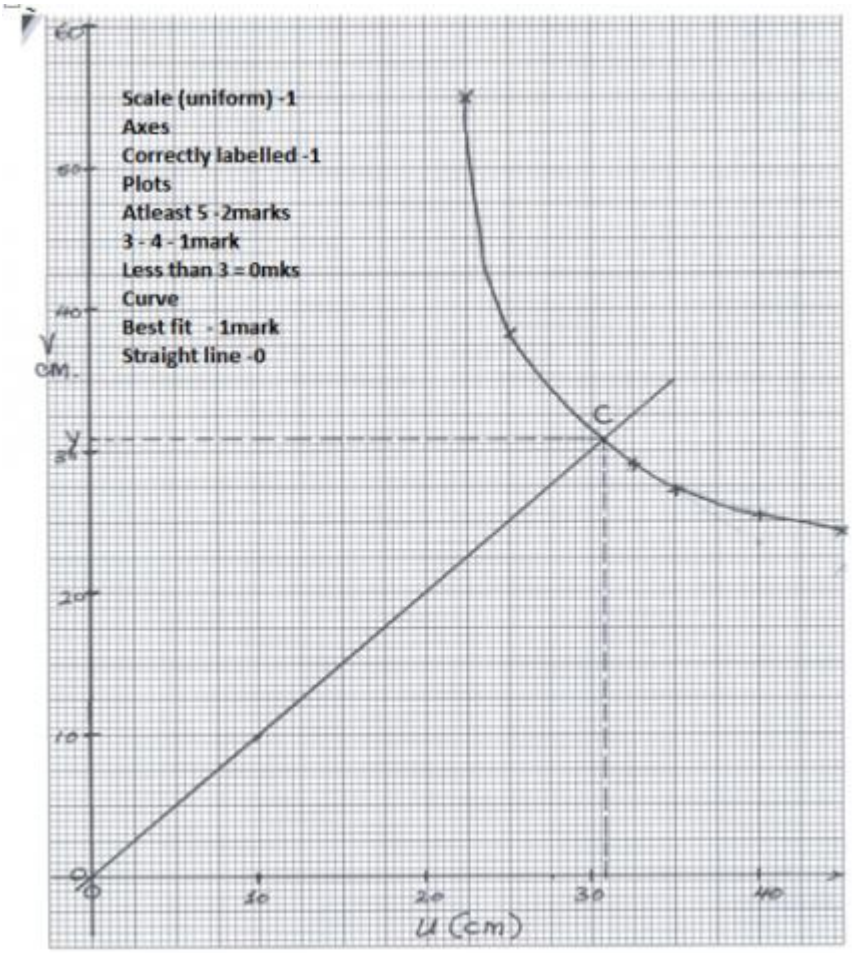
h) i) $d \approx 15.0 \pm 0.5\sqrt{1}$

ii) d represents the focal length of the lens.$\sqrt{1}$

iii) $f_{av} = \dfrac{15.0 + 15.0}{2}\sqrt{1}$

$\dfrac{30.0}{2}$ $\sqrt{1}$

$= 15.0 \pm 0.5$


Scale (uniform) -1
Axes
Correctly labelled -1
Plots
Atleast 5 - 2marks
3 - 4 - 1mark
Less than 3 = 0mks
Curve
Best fit - 1mark
Straight line -0
C
10
20
30
u (cm)

20 marks

2.

Length L(cm)	I(A)	Pd(V)	x1000 I(mA)	x1000pd(mV)	Log I	Log V
5	**0.02**	**0.05**	**20**	**50**	**1.3021**	**1.6990**
25	**0.06**	**0.25**	**60**	**250**	**1.8031**	**2.3979**
40	**0.12**	**0.75**	**120**	**750**	**2.0792**	**2.8751**
60	**0.14**	**1.0**	**140**	**1000**	**2.1461**	**3.000**
70	**0.16**	**1.30**	**160**	**1300**	**2.2041**	**3.1139**
90	**0.22**	**2.15**	**220**	**2150**	**2.3424**	**3.3324**
	(2 marks)	(2marks)	(1 mark)	(1 mark)	(1mark)	(1mark)

e) ii) Slope $= \frac{\Delta \log I}{\Delta \log V} = \frac{2.0-1.5}{2.8-2.0}$ √1 formula√1 correct substitution.

$= \frac{0.5}{0.8}$

$= 0.625$ √1 answer

f) $I = KV^n$

$\log I = \log KV^n$

$\log I = \log K + n \log V$ √1

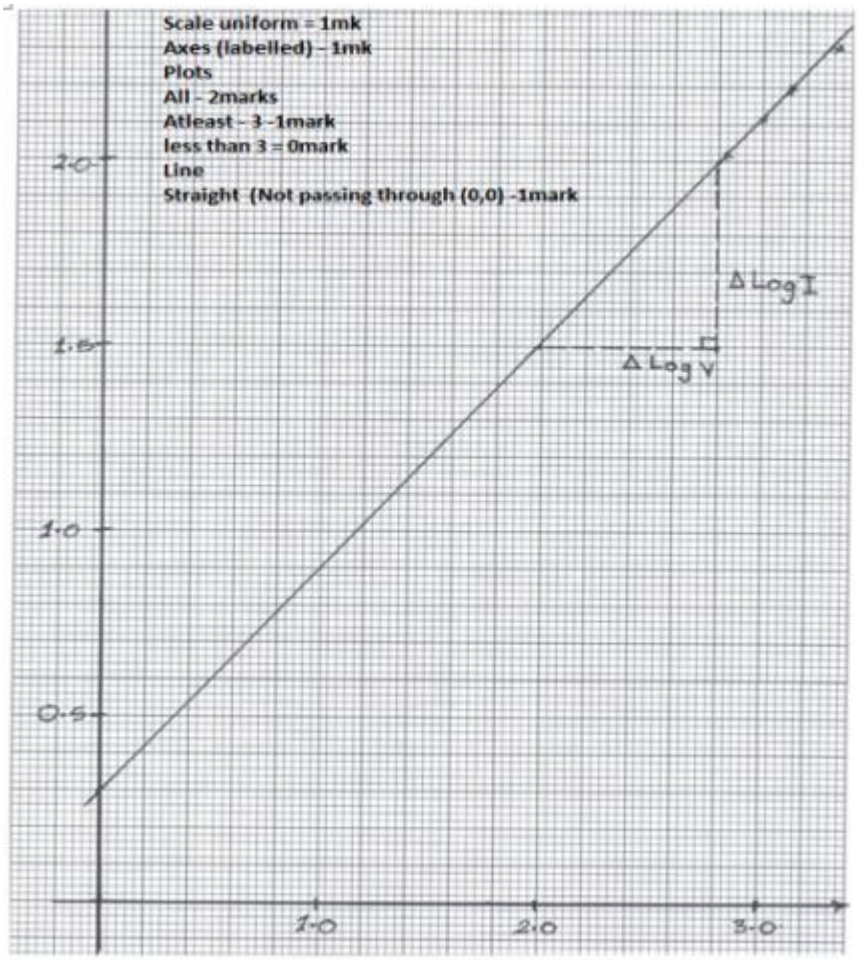
$\log I = n \log V + \log K$

n in the slope =0.625MV.√1

log K in the vertical intercept =0.29√1

log K=0.29

K=1.95 √1


Scale uniform = 1mk
Axes (labelled) – 1mk
Plots
All – 2marks
Atleast – 3 -1mark
less than 3 = 0mark
Line
Straight (Not passing through (0,0) -1mark
2·0
1·5
1·0
0·5
1·0
2·0
3·0
Δ Log I
Δ Log V

20 marks