

FORM FOUR CLUSTER KCSE MODEL9

PHYSICS PAPER 3 ANSWERS

1.

x	$y_1 (cm)$	$y_2 (cm)$	$d (cm) \pm 0.2$
85	15.5	30.5	15.0
80		29.4	13.9
75		28.3	12.8
70		27.2	11.7
65		26.0	10.5
60		24.8	9.3
55		23.5	8.0
50		22.5	7.0

1 mark each for correct value of y_2 up to 6 values = 6 marks

1 mark more for correct value of d = 1 mark

Total = 7 marks

(e) $D = 32.5 - 15.5 = 17.0cm \pm 0.2cm;$

(f) $X_1 = 75cm;$

(g) $t = 15.44s;$

$$T = \frac{t}{20} = 0.772s;$$

(h) (i) Axes ;

Scale;

Plotting 8 correct points (2 marks)

Plotting 6-7 correct points (1 mark)

Otherwise 0

Line passing through atleast 4 correctly plotted points;

(ii) ✓ Extraction of points from the graph;

✓ Evaluation :

$$S = 1 \pm 0.2;$$

(iii) $K = 0.003425S^2; \pm 0.001$

2. PART A

	$LWX(cm) \pm 0.1$	$LYZ(cm) \pm 0.1$
20	3.0	2.1
30	4.5	3.0
40	5.8	3.9
50	6.9	4.6
60	7.8	5.2
70	8.5	5.6

-Award a $\frac{1}{2}$ mark each for correct values of LWX upto a maximum of 5 values
= 2.5 marks

-Award $\frac{1}{2}$ mark each for correct value of LYZ upto a maximum of 5 values
= 2.5 marks

Total = 5 marks

- (g)(i) Labeling of axis + units;
Uniform scale;
Plotting: ALL correct 5 plotting ::
3-4 points;
Otherwise award zero.
- Line passing through at least 3 correctly plotted points;
- (g)(ii) P –slope;
= ; for correct extraction from the graph.
For correct value of P
 $P = 1.5 \pm 0.1$;

PART B

- (i) $V_1 = 3.0 \pm 0.2V$;
- (j) $V_2 = 2.9 \pm 0.1V$;
 $I_2 = 0.6mA \pm 0.1$;
- (k)(i) Electromotive force, $E = V_1 = \frac{3.0 \pm 0.2}{2}$
 $1.5 \pm 0.1V$;
- (ii) $E = I_2(r + R)$
 $3 = \frac{6}{10000}(r + 4700)$; correct substitution
 $r = 1.08\Omega$;
 $r \text{ for one cell} = \frac{1.08}{2}$
 $= 0.54\Omega \pm 0.1$;