NANYANG GIRLS' HIGH SCHOOL
2025 Sec 4 Physics Practical 6
Resistance of a light-dependent resistor (LDR)

Suggested Markscheme

(c) (i) V_B = 2.05 V

(ii) V_{XY} = 1.30 V

(d) $I = \frac{V_{XY}}{R}$ = 1.30 V/ 470 Ω = 0.00287 A

(e) $R_L = \frac{V_L}{I}$ = (2.05 -1.30) V / 0.00287 A = 261 Ω

(f) (i) V_{XY} = 0.60 V

(ii) I = 0.00105 A

R_L = 476 Ω

(g) Record of measurements and calculations

- headings with **units** with at least 8 sets of readings for d, V_{XY} V_L, I and R_L
- acceptable values and **correct d.p** for d and V_{XY}
- correctly calculated and **correct s.f.** for V_L, I and R_L
- wide range (at least 0.0 cm to 6.0 cm) and well-spaced values of length d and V_{XY}

sample

d / cm	V_{XY} / V	V_L / V	I / A	R_L / Ω
0.0	1.35	0.70	0.00287	243
0.2	1.00	1.05	0.00212	495
0.8	0.80	1.25	0.00170	735
1.0	0.60	1.45	0.00128	1133
1.8	0.55	1.50	0.00117	1282
2.0	0.50	1.55	0.00106	1462
4.0	0.40	1.65	0.000851	1939
5.0	0.20	1.85	0.000500	3700
6.0	0.20	1.85	0.000500	3700

(h) ***Graph*** [SPLA]

(i) (i) change in resistance = 620 Ω

(ii) average change in resistance per cm = 210 Ω / cm

(iii) The gradient of the graph, which is the rate of change in resistance per cm of the LDR, decreases as *d* increases.

(i) When *d* is large, the change in in resistance per cm of the LDR is small. Hence, the voltmeter with resolution of 0.1 V will not allow the reading to be accurately recorded.