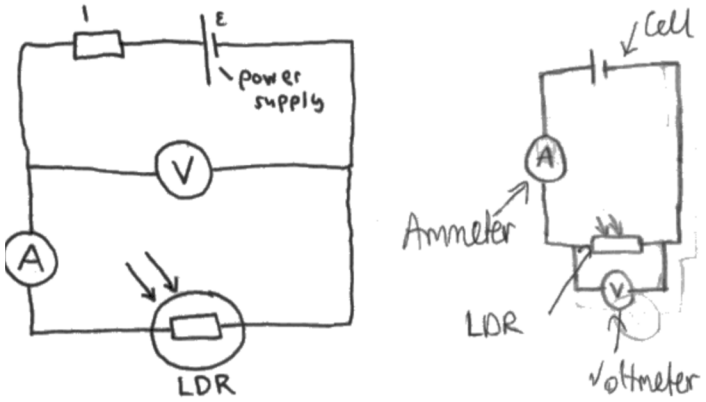
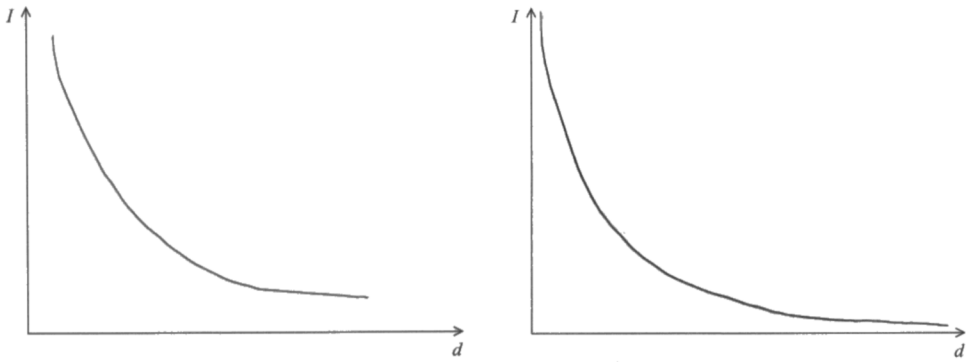
Question Number	Answer	Mark
3(a)	• Power supply (e.g., battery), ammeter and LDR connected in series (1) • Voltmeter connected in parallel with LDR (1) MP1 – accept incorrect symbol labelled as LDR **or** an LDR symbol without circle MP2 – we can accept a voltmeter in parallel with a single resistive component in the series circuit unless an LDR is given <u>Examples</u> 	**2**
3(b)	• Distance between bulb and LDR (d) measured with a metre rule (accept tape measure) (1) • Record current and potential difference and use $V = IR$ to calculate resistance **Or** use an ohmmeter or multimeter set to measure resistance (1) • Repeat for the same values of d and calculate the mean value of R **Or** use a set square/marker to reduce parallax when measuring d **Or** look down at ruler at eye-level to reduce parallax when measuring d (1)	**3**
3(c)	• Downwards curved line with decreasing gradient (1) • Line not touching/crossing either axis (1) MP2 dependent on MP1 <u>Examples</u> 	**2**
3(d)	• Use of $A = 4\pi r^2$ (1) • Use of $I = \frac{P}{A}$ (1) • I = 18 W m^{-2} (1) <u>Example Calculation</u> I = 9.0 W / (4 × π × (0.20 m)^2) = 17.9 W m^{-2}	**3**

Question Number	Answer	Mark
3(e)(i)	**Mark 3(e)(i) and (ii) holistically** • Suitable control variable (1) e.g., background light level, current in bulb, brightness/power of bulb, angle of light to LDR, temperature of the LDR	**1**
3(e)(ii)	• Suitable method of control for the control variable identified (1)	**1**
	Total for question 3	**12**