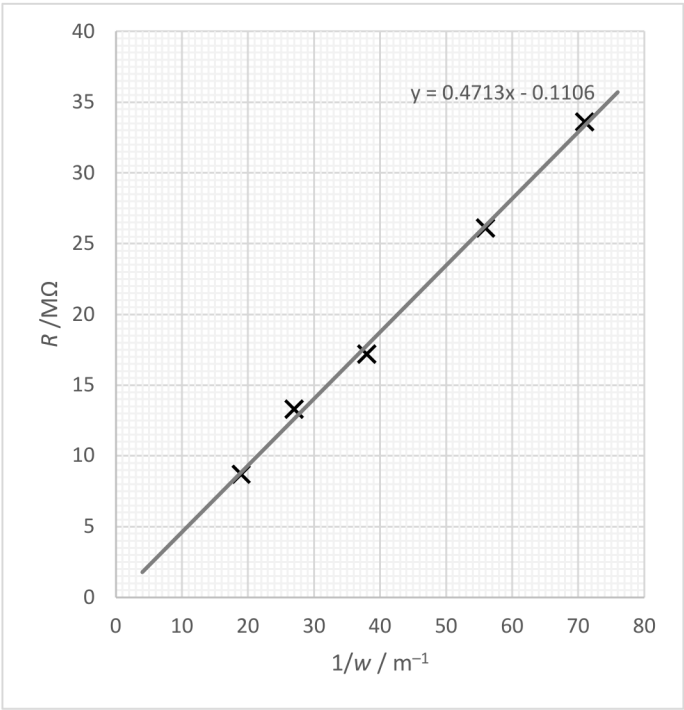
Question Number	Answer	Mark
4(a)(i)	• Correct 1/*w* values rounded to 2 s.f. (1) • Labels axes with quantities and units (1) • Sensible scales (1) • Plotting (2) • Line of best fit (1) | ***w*** **/ mm** | ***R*** **/ MΩ** | **1/*w*** **/ m^{-1}** | |---|---|---| | 14 | 33.6 | 71 | | 18 | 26.1 | 56 | | 26 | 17.2 | 38 | | 37 | 13.3 | 27 | | 53 | 8.7 | 19 | 	**6**
4(a)(ii)	• Calculates gradient using large triangle (1) • Use of gradient = ρ*l*/*t* (1) • *t* value between 0.81 mm – 0.87 mm (1) <u>Example Calculation</u> gradient = 28.5×10^6 Ω / 60 m^{-1} = 4.75×10^5 Ω m *t* = (4.0 x 10^3 Ω m × 0.1 m) / 4.75×10^5 Ω m = 8.42×10^{-4} m	**3**
4(b)(i)	• Micrometer has high resolution so low uncertainty **Or** Micrometer has a resolution of 0.01 mm so low uncertainty (1) • <u>Percentage</u> uncertainty is reduced by measuring several thicknesses together **Or** The uncertainty of the measurement is divided by the number of slices, so <u>percentage</u> uncertainty is reduced (1)	**2**
4(b)(ii)	• Calculates upper limit of 2% uncertainty for stated value of *t* (1) • *t* determined from graph is above upper limit, so results not consistent (1) Allow ecf for *t* from (a)(ii), Accept calculation and comparison with the lower limit (0.78) if *t* < 0.80 mm <u>Example Calculation</u> Upper limit = 0.80 ×1.02 = 0.82 mm 0.85 mm > 0.82 mm	**2**
	Total for question 4	**13**