Question Number	Answer	Mark
3(a)(i)	• The uncertainty would be 0.05 cm **Or** resolution would be 0.1 cm **(1)** • The percentage uncertainty would be about 1% (which is small) **(1)** Allow MP1 for correct uncertainty as seen in a calculation. Accept uncertainty as full resolution (0.1 cm) giving percentage uncertainty of 2% for MP2	**2**
3(a)(ii)	**Max TWO from** • Attach a marker to the spring **Or** use a set square between ruler and spring **Or** ensure ruler is close to spring **(1)** • View the scale at right angles **(1)** • Ensure the ruler is at zero at the support **(1)** • Ensure the ruler is vertical using a set square **(1)**	**2**
3(b)(i)	• Number of decimal places varies (for both W and l) **(1)**	**1**
3(b)(ii)	• The student should check the value at $W = 0.39$ N, $l = 12$ cm **(1)** • As it is furthest from the line of best fit **(1)**	**2**
3(b)(iii)	• W in the range of 0.22 to 0.24 (N) **(1)**	**1**
3(c)(i)	• Use of density of modelling clay = density water × W_1 / (W_1 – W_2) **(1)** • Density of modelling clay = 1700 kg m^{-3} **(1)** <u>Example of calculation</u> Density of modelling clay = 1000 kg m^{-3} × 0.65 N / (0.65 N – 0.27 N) Density of modelling clay = 1710 kg m^{-3}	**2**
3(c)(ii)	• Calculation of relevant limit of density of modelling clay from (c)(i) **(1)** • Conclusion consistent with calculated limit/range **(1)** <u>Example of calculation</u> Limit of density = 1710 × 1.04 = 1778 kg m^{-3} As this is above value 1760 kg m^3 then it could be polymer clay **OR** • Calculation of percentage difference (from 1760 kg m^{-3}) **(1)** • Conclusion based on comparison of the percentage difference and 4 % **(1)** <u>Example of calculation</u> Percentage difference = (1760 kg m^{-3} – 1710 kg m^{-3}) / 1760 kg m^{-3} × 100% = 2.8 % As this is less than 4 % then it could be polymer clay Allow e.c.f. from 3(c)(i)	**2**
	Total for question 3	**12**