

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
(i)	substitution (1) $371 = (64.5 + m) \times 3.5$ rearrangement (1) $m + 64.5 = 371 / 3.5$ evaluation of total mass (1) $m + 64.5 = 106 \text{ (kg)}$ evaluation of woman's mass (1) $m = 106 - 64.5$ $= 41.5 \text{ (kg)}$	 full marks will be awarded for correct numerical answer without working	(4)
Question number	Answer	Additional guidance	Mark
(ii)	substitution (1) $KE = \frac{1}{2} \times 64.5 \times 3.5^2$ evaluation (1) 395 (J)	 allow answers which round to 395 e.g. 395.0625 full marks will be awarded for correct numerical answer without working	(2)

Q2.

Question number	Answer	Additional guidance	Mark
	selection and substitution (1) $17^{(2)} = 2 \times 10 \times \text{distance}$ evaluation (1) 14(.45) (m)	use of either $v^2 - u^2 = 2ax$ or $v^2 = 2gh$ $17^{(2)} = 2 \times a \times \text{distance}$ allow 289 for 17^2 award full marks for the correct answer without working give full credit for use of $g=9.8$ or 9.81 m/s^2 gives 14.7 (m)	(2) AO2

Q3.

Question number	Answer	Additional guidance	Mark
	Substitution or rearrangement (1) $980 = 35 \times 10 \times h$	$(\Delta h =) \frac{\Delta GPE}{m \times g}$ or $(\Delta h =) \frac{980}{35 \times 10}$ allow use of 9.8 N/kg or 9.81 N/kg allow substitution into visible incorrectly rearranged algebraic expression	2 AO2.1
	evaluation (1) $(h =) 2.8 \text{ (m)}$	allow 2.85/2.86/2.9 for use of $g = 9.8 \text{ N/kg}$ or 9.81 N/kg ignore use of negative for decrease in GPE award full marks for the correct answer without working	

Q4.

Question number	Answer	Additional guidance	Mark
(i)	substitution (1) $11 = 0.42 \times 10 \times \Delta h$ rearrangement (1) $(\Delta h =) \frac{11}{0.42 \times 10}$ evaluation (1) 2.6 (m)	accept substitution and rearrangement in either order $(\Delta h =) \frac{\Delta GPE}{m \times g}$ accept any value which rounds to 2.6 (m) award 2 marks for 2.6 to any other power of 10 allow 1 mark for 0.38 allow 1 mark for 46(.2) award full marks for the correct answer with no working give full credit for use of $g=9.8$ or 9.81 N/kg (gives 2.7 (m))	(3) AO2
Question number	Answer	Additional guidance	Mark
(ii)	substitution(1) $(KE =) \frac{1}{2} \times 0.42 \times 12^2$ evaluation (1) 30 (J)	allow 30.2(4) (J) award 1 mark for 30 240 (J) award 1 mark for 2.52 (J) award 1 mark for 60.5 (J) award full marks for the correct answer with no working	(2) AO2

Question number	Answer	Additional guidance	Mark
(iii)	A description including: KE/kinetic (energy store) (1) (transfers to) and one of: elastic (potential energy store) (1) OR thermal (energy of ball/wall/surroundings) (1) OR <u>dissipates</u> (to surroundings) (1)	allow mechanically / mechanical transfer ignore reference to gravitational potential energy allow heat for thermal allow sound in this context ignore reference to the ground	(2) AO2