| Question Number | Answer | Mark |
|---|---|---|
| 4(a)(i) | The only correct answer is **C 20 m/s**<br><br>A is not correct because 0.2 m/s is too slow<br>B is not correct because 2 m/s is too slow<br>D is not correct because 200 m/s is too fast | (1) |

| Question Number | Answer | Additional guidance | Mark |
|---|---|---|---|
| 4(a)(ii) | recall (1)<br>(ΔGPE) = m × *g* × Δh<br>substitution (1)<br>(ΔGPE =) 75 x 10 x 20<br>evaluation (1)<br>15 000 (J) | NO PoT error<br>NO ecf from wrong equation<br>mgh or m x g x h<br>75 x 10 x 20 scores the first 2 marks<br>accept 14700 (J) from using g = 9.8 (N/kg)<br>award full marks for the correct answer without working | (3) |

| Question Number | Answer | Additional guidance | Mark |
|---|---|---|---|
| 4(b) | substitution (1)<br>$\frac{80^{(2)} (- 0^2)}{2 \times 4}$<br>evaluation (1)<br>800 (m) | allow 1 mark for seeing $\frac{80}{8}$<br>ignore any minus signs<br>award full marks for the correct answer without working | (2) |

| Question Number | Answer | Additional guidance | Mark |
|---|---|---|---|
| 4(c)(i) | (metre) rule(r) (1) | accept measuring tape/stick tape measure<br>light gate | (1) |

| Question Number | Answer | Additional guidance | Mark |
|---|---|---|---|
| 4(c)(ii) | A description that combines the following points to produce a logical method:<br>hang/attach/add/put/increase (masses / weights) (1)<br>on/to (the end of) the string (over the pulley wheel) (1)<br>OR<br>apply a force to the trolley /string (1)<br>(by a) pull / push / rubber band (1)<br>OR<br>putting trolley on a slope (1)<br>allow the trolley to run down (1) | accept on/at/from the pulley wheel<br>'pull the string'<br>OR<br>push the trolley scores 2 marks<br>slanting the bench<br>(let) gravity pull the trolley | (2) |

| Question Number | Answer | Additional guidance | Mark |
|---|---|---|---|
| 4(c)(iii) | Any one from:<br>speed (at the start/end of the run) (1)<br>time (between changes in speed) (1) | (different/additional) speed / velocity<br>appropriate ticker tape(s) | (1) |

**(Total for Question 4 = 10 marks)**