| Question Number | Answer | Additional guidance | Mark |
|--------------------|--|---------------------|------|
| 5(a) | B centripetal force | | (1) |
| | The only correct answer is B (correct term | | |
| | for circular motion) | | |
| | A is not correct – incorrect term | | |
| | C is not correct – incorrect term | | |
| | D is not correct – incorrect term | | |

| Question Number: | | Additional guidance | Mark |
|---------------------|---|---------------------|------|
| 5(b)(i) | single arrow towards centre of the circle applied to the object (1) | judge by eye | (1) |

| Question Number | Answer | Additional Guidance | Mark |
|--------------------|---|---|------|
| 5(b)(ii) | an explanation including velocity is a vector (1) (because) direction changes (1) | velocity has (magnitude and) direction / velocity is speed in a (certain) direction | (2) |

| Question Number | Answer | Additional guidance | Mark |
|--------------------|---|--|------|
| 5(c)(i) | substitution in $v^2 - u^2 = 2ax$ (1) $24^2 - 7.6^2 = 2 \times 3 \times x$ rearrangement (1) $(x =) \frac{24^2 - 7.6^2}{24^2 - 7.6^2}$ | accept rearrangement and substitution in either order | (3) |
| | 6 evaluation (1) 86 (m) | allow numbers that round to 86 (m) award full marks for the correct answer without working | |

| Question | Answer | Additional guidance | Mark |
|----------|---|------------------------------------|------|
| Number | Allower | Additional guidance | Mark |
| 5(c)(ii) | recall and substitution (1) | Allow alternative method: | (3) |
| 3(c)(II) | | | (3) |
| | (a = <u>v - u</u>) 3.0 = <u>24 - 7.6</u> | average speed = distance / | |
| | t t | time i.e 15.8 = 86(.37) / time | |
| | | | |
| | rearrangement (1) | (t =) 86(.37) / 15.8 | |
| | t= <u>v-u</u> | | |
| | a | | |
| | | | |
| | OR | | |
| | (t =) <u>24 - 7.6</u> | | |
| | 3.0 | | |
| | | | |
| | evaluation (1) | | |
| | 5.5 (s) | allow numbers that round to | |
| | | 5.5 (s) | |
| | | OR . | |
| | | numbers that round to 5.4 if | |
| | | using alternative method and | |
| | | distance = 86 | |
| | | distance – 86 | |
| | | award full marks for the | |
| | | correct answer without | |
| | | | |
| | | working | |
| | | no marks for | |
| | | t = d / (v-u) = 86(.37) / (24-7.6) | |
| | | giving 5.3 s as an answer | |
| | | giving 5.5 s as an answer | |
| | | | |

(Total for Question 5 = 10 marks)