

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

- | | | | |
|-----|-------|--|---|
| (a) | (i) | <u>gravitational potential</u> (energy) | 1 |
| | (ii) | <u>kinetic</u> (energy) | 1 |
| (b) | (i) | slope or gradient | 1 |
| | (ii) | <u>area</u> (under graph)
<i>do not accept region</i> | 1 |
| | (iii) | starts at same y-intercept | 1 |
| | | steeper slope than original and cuts time axis before original
<i>the entire line must be below the given line</i>
<i>allow curve</i> | 1 |
| (c) | (i) | 31
and
31

<i>correct answers to 2 significant figures gains 3 marks even if no working shown</i>
<i>both values to more than 2 significant figures gains 2 marks:</i>
<i>30.952.....</i>
<i>30.769....</i>
<i>65 / 2.1 and / or</i>
<i>80 / 2.6 gains 1 mark</i>
<i>if incorrect answers given but if both are to 2 significant figures allow 1 mark</i> | 3 |
| | (ii) | student 1 incorrect because $80 \neq 65$ | 1 |
| | | student 2 correct because average velocities similar
<i>ecf from (c)(i)</i> | 1 |
| | | student 3 incorrect because times are different | 1 |

Q2.

- (a) (produces) a force from water on the boat

1

in the forward direction

accept in the opposite direction

this must refer to the direction of the force not simply the boat moves forwards

an answer produces an (equal and) opposite force gains 1 mark

1

- (b) (i) 1.5

allow 1 mark for correct substitution, ie $\frac{16-4}{8}$ or $\frac{12}{8}$

provided no subsequent step shown

ignore sign

2

m/s²

1

- (ii) 102

or

their (b)(i) $\times 68$ correctly calculated

allow 1 mark for correct substitution, ie 1.5×68

or their (b)(i) $\times 68$

provided no subsequent step shown

2

- (iii) greater than

reason only scores if greater than chosen

1

need to overcome resistance forces

accept named resistance force

accept resistance forces act (on the water skier)

*do **not** accept gravity*

1

[9]