

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

- (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

ortheir (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]**Q2.**

- (a) (i)
- gravitational potential
- (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
			[12]