Q	Marking Instructions	AO	Mark	Typical Solution
15 (a)(i)	Uses model with t=0 to find correct value of h *AWRT 5.9*	AO3.4	B1	5.88metres
15 (a)(ii)	Uses v=0 to set up quadratic equation for t	AO3.4	M1	$0 = 4 - (\frac{2t}{3} - 2)^2$
	Obtains t = 6 PI correct answer	AO1.1b	A1	t = 6 8 am
	Interprets their lowest positive solution correctly NMS can score 3	AO3.2a	A1F	
15 (a)(iii)	Obtains correct h for their positive t provided h < 5.88 Accept 0.12 If given to more decimal places AWFW 0.115 to 0.116 FT their t allow negative h	AO3.4	B1F	0.12m
15(b)	Identifies t=3 (for maximum velocity)	AO3.1b	B1	t = 3
	Substitutes their t into model for h PI their answer	3.4	M1	$h = 3 - 2\sqrt[3]{3-3}$ h = 3 metres
	Finds correct height **with units**	3.2a	A1	
15(c)	Explains that the validity of the model is limited by time.	3.5b	B1	The model breaks down after one cycle of the tide.
	Explains that the height continues to decrease after 6 hours (or after the first cycle or first low tide). Or explains there are no other times when v=0	3.5a	B1	After 6 hours the model shows the height continues to decrease.
	Total		**10**	