Question number		Answer	Notes	Marks
13 (a))	A (chemical → electrical → kinetic)		1
(b)) (i)	$KE = \frac{1}{2} \times m \times v^2$;		1
	(ii)	substitution into correct equation; Calculation; e.g. ½ x 600 x 28 ² ; 240000 (J);	correct answer = 2 marks ACCEPT 235200 (J);	2
(c)) (i)	gpe = mass x g x height;	ACCEPT GPE = mgh ACCEPT gravitational field strength/acceleration due to gravity for g	1
	(ii)	substitution into correct equation; Calculation; e.g. 600 x 10 x 1000 6 000 000 (J) or 6000 k(J) or 6 M(J)	correct answer = 2 marks ALLOW 5 880 000 (from $g = 9.8$)	2
	(iii)	Calculation of energy supplied (by fuel cells) 24 kW x 180 s OR 4 320 000 (J); Comparison with energy required 4 320 000 < 6 000 000;	ALLOW ECF if 6 000 000 not seen	2
		OR <u>Calculation of power required</u> 6 000 000 J ÷ 180 s OR 33.3 kW; <u>Comparision with fuel cells</u> 33.3 kW > 24 kW;	ALLOW ECF if 6 000 000 not seen	