

Question number	Answer	Notes	Marks
10 (a) (i)	GPE = mass x g x height	ACCEPT equivalent rearrangement ACCEPT suitable abbreviations e.g. GPE = mgh ACCEPT 'gravity' or 'gravitational field strength' or 'acceleration due to gravity' for g	1
(ii)	78 x 10 x 5; 3900 (J);		2
(iii)	3900; J / joule;	Accept 4000 J REJECT 'Nm' for 'J' ALLOW kJ only if it matches the value (i.e. 3.9)	2
(b) (i)	efficiency = useful energy output / total energy input	ALLOW 'power' for 'energy'	1
(ii)	in one second – useful energy out = (30 x 3900) / 60; efficiency = 1950 / 7500; 0.26 / 26%	Allow useful energy out = (30 x 4000) / 60; efficiency = 2000 / 7500; 0.27 / 27% CQ on a(ii)	3
(c)	right general shape reasonably correct proportions / 3kW and 12 kW seen correctly labelled	 ACCEPT "input / waste / useful" or "electrical / kinetic or GPE / waste heat or sound"	3