

Question number	Answer	Notes	Marks
8 (a) (i)	385 (J);		1
(ii)	substitution into $E=QV$; evaluation to at least 2 s.f.;	reverse calculation e.g. calculating a voltage or charge gains 1 mark max.	2
(iii)	e.g. ($E =$) $385 \times 180\,000$ ($E =$) $69\,000\,000$ (J) / 69 (MJ)	if no other mark given allow 1 mark for 10^6 or 1000000 seen in working allow ecf from 8(a)(i) value	2
	MP1. idea of <u>energy</u> wasted; MP2. appropriate mechanism;	allow not 100% efficient, <u>energy</u> lost e.g. heat in wires	2
8 (b) (i)	charge = current \times time;	allow abbreviations e.g. $Q = I \times t$ or rearrangements	1
(ii)	substitution; rearrangement; evaluation; e.g. $180\,000 = \text{current} \times (110 \times 60)$ (current =) $180\,000 / (110 \times 60)$ (current =) 27 (A)	ignore not converting time to seconds until evaluation allow 27.3, 27.27... 1600, 1640, 1636 etc. gain 2 marks if no other mark given allow 1 mark for 60 seen anywhere in working (attempt to convert to seconds)	3

Total 9 marks