Question number	Answer	Notes	Marks
3 (a)	D (2500 J); D is the only correct answer A is incorrect because this is the wasted output energy B is incorrect because this is the (useful – wasted) output energy C is incorrect because this is the useful output energy		1
(b)	any two from: MP1. there is a current in the coil / wire; MP2. coil / wire has resistance; MP3. electrical energy transferred to thermal energy;	 allow answer in terms of electron movement e.g. electrons move through coil allow electrons collide (with ions in the coil); condone electrical energy transferred to heat energy	2
(c) (i)	power = current × voltage;	allow in standard symbols and rearrangements e.g. P = I × V reject C, A for current reject W for power	1
(ii)	substitution OR rearrangement; evaluation to at least 3 s.f.; e.g. 2500 = I × 230 OR current = power / voltage (I =) 10.9 (A)	allow dimensionally correct substitution reject 10.8 (A) allow 10.86, 10.87, 10.869… (A)	2
(iii)	if current increases above 13A (for a sustained length of time); fuse (wire) melts / eq.; circuit is broken;	allow 'too large a current' condone 'fuse blows' allow current is cut off / eq.	3

Total for question 3 = 9 marks