

Current, charge and power

Mark scheme

1.	(i)	EITHER 30000 (2) joules/J (1) or 30 kilojoules/kJ	3	
		OR power × time = energy time = 120 (seconds)	1 1	
	(ii)	vibration (of the food processor / some part of the food processor / the food)	1	[4]
2.	(i)	charge = current × time accept $Q = I \times t$ accept coulombs = amps × time accept correct combination using two from units or symbols or quantity do not accept  unless subsequent working correct	1	
	(ii)	25 200 award 1 mark for converting 30 minutes to 1800 seconds coulombs accept C	2 1	
	(iii)	302 400 accept their (b)(ii) × 12 award 1 mark for correct substitution or rearranging equation	2	[6]
3.	(a)	7	1	
	(b)	(electrical) power = voltage × current accept $P = V \times I$ (correct standard symbol) accept watts = volts × amps accept a correct rearrangement accept  if subsequent use of  is correct	1	
	(c)	1610	2	
	or	their (a)(i) × 230 1.61 kW = 2 marks; do not accept 7 × 240 watts accept watt; accept W; accept .J/s		
	(d)	melts accept burns out accept blows accept breaks do not accept stops working do not accept burns current greater than 13(A)	2	

P2.4.2 Mark Scheme

- or current exceeds fuse rating
- or current 15(A)
do not accept too much current unless qualified
- (ii) (outer) case is made of insulator 2
accept outside is plastic
accept outside is not made of metal or conductor
cable is (also) insulated
accept wires for cable
do not accept it has two layers of insulation without explanation
do not credit answers in terms of heat

[10]