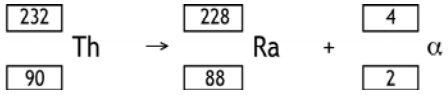
Question number	Answer	Notes	Marks
2 (a) (i)	B - 960 joules per second;		1
(ii)	power = current x voltage;	allow equation as correct symbols and/or rearrangement e.g. I = P ÷ V	1
(iii)	appropriate calculation (including substitution OR rearrangement); answer to at least 2 sf seen anywhere; e.g. 960 = I × 230 (I =) 4.2 (A)	using 4 (A) to calculate power (920 W) or voltage (240 V) scores 1 mark max. (4.17391) allow 4.1 (A)	2
(b) (i)	any 3 of: MP1. large **current** to earth / in earth wire; MP2. fuse blows / melts / breaks; MP3. idea that circuit is broken; MP4. idea that the risk of shock is reduced / prevented;	ignore references to electricity or charge allow 'current surge' for large current 'ground' for earth ignore references to fire	3
(ii)	D - 13 A;		1
(c)	MP1. a way of measuring current e.g. ammeter; MP2. a **method** to vary current in fuse; MP3. a **method** of identifying that the fuse has broken e.g. lamp goes out, idea that current falls to zero etc.;	accept any points seen in diagram allow data logger allow **variable** power supply, **variable** resistor	3

Total 11 marks

Question number	Answer	Notes	Marks
7 (a)	top line correct e.g. 228; bottom line correct e.g. 88 and 2; e.g. 		2
(b) (i)	idea that {alpha/beta} is {absorbed by / unable to penetrate} {aluminium / glass};	allow stops / blocks for absorbs ignore references to paper, air, lead ignore references to gamma, unqualified 'radiation'	1
(ii)	any 2 of: MP1. idea of radiation being ionising; MP2. (radiation) causes cancer / cell mutation / kills cells / blindness; MP3. {alpha / beta} will travel this short distance (between lens and eye); MP4. idea that astronomer is likely to suffer prolonged exposure;	ignore references to gamma allow (eye) within penetrating range of {alpha / beta}	2

Total 5 marks