Question number	Answer	Notes	Marks
12 (a) (i)	neutron numbers correct; particle X numbers correct;  		2
(ii)	proton / p;	allow hydrogen, H, H^+ (ion)	1
(iii)	any two from: MP1. both have same number of protons (and electrons); MP2. C-12 has **fewer** {neutrons / nucleons} than C-14; MP3. C-12 is lighter than C-14;	both C atoms have 6 protons allow RA C-14 has 8 neutrons, C-12 has 6 neutrons allow RA	2
(iv)	mass number is constant; atomic number increases by one;	however expressed, including numerically	2
(b)	working seen / appropriate line(s) on graph seen; 5 500 (years)	e.g. line drawn across from 125 Bq allow 5000-6000 (years)	2
(c) (i)	(due to) background radiation;		1
(ii)	idea that activity depends on the mass;	allow 'fair test' idea ignore 'to have the same activity'	1