

Question number	Answer	Notes	Marks
9 (a) (i)	4; 2;		2
(ii)	removal of electron(s) (from an atom);	allow gaining electron(s)	1
(iii)	alpha particles are absorbed by/cannot penetrate/ stopped by a few cm in air; so alphas do not reach the workers;	allow do not penetrate casing (of deionser) condone 'do not penetrate skin/clothes'	2
(b) (i)	time taken; for (radio)activity/mass/number of (remaining) nuclei to half;	accept any synonym e.g. period/amount of time/	2
(ii)	evidence of halving of 70; 420 days means 3 half-lives; evaluation of 8.75 (kBq);	accept however presented i.e. 70→35→17.5→8.75 allow 9 (kBq)	3

Total for Question 9 = 10 marks