

Question number	Answer	Notes	Marks
5 (a)	fission is the splitting of a <u>nucleus</u> ; fusion is the joining of (two) <u>nuclei</u> ;	allow “breaking down”, “dividing” for splitting allow “fusing”, “combining” for joining reject “atom” for “nucleus”	2
(b) (i)	mass number = 1; atomic number = 0;		2
(ii)	any THREE from: MP1. idea that reactants are not (as) hazardous for fusion; MP2. idea that products of fusion are not radioactive; MP3. (so) no {mutations/damage to cells/tissue/cancer} ; MP4. (so) no long-term storage problems; MP5. idea that no shielding is required; MP6. idea of lower or no risk of meltdown for fusion; MP7. idea that there is no runaway chain reaction for fusion;	accept RA allow reference to no gamma radiation from fusion	3
(c)	evidence of activity halved; evidence of activity halved four times only; correct evaluation; correct answer: 7.5 (kBq) e.g. $120 \div 2 = 60$ $60 \div 2 = 30$ $30 \div 2 = 15$ $15 \div 2 = 7.5$	allow reference to 4 half lives, including showing that $48/12 = 4$	3

Total for Question 5 = 10 marks