



Mark Scheme (Results)

January 2021

Pearson Edexcel International GCSE
In Physics (4PH1) Paper 1PR and Science (Double
Award) (4SD0) Paper 1PR

Question number	Answer	Notes	Marks
3 (a)	planet;		1
(b)	comet;	accept planet	1
(c)	substitution into given formula; conversion of 35 days into seconds; evaluation; e.g. $v = 2 \times \pi \times 1.5 \times 10^{11} / (35 \times 24 \times 60 \times 60)$ $v = 310\,000 \text{ m/s}$	allow full credit for 2.6927937×10^{10} if unit changed to m/day. 311665.93(7)8 Answer for incorrect/no conversion of days→ seconds $2.69\text{etc} \times 10^{10}$ scores 2 -1 for POT error	3

(Total for Question 3 = 5 marks)

Question number	Answer	Notes	Marks
10 (a)	$236 - (97 + 135);$ $x = 4;$	answer of 4 scores 2	2
(b)	(fission) releases neutrons; neutrons can be captured by other uranium nuclei; (these nuclei) then undergo fission;		3
(c)	evidence of halving of 72 (kBq); evidence of four half-lives required; e.g. count rate after 4 half-lives is 4.5 (kBq) evidence that four half-lives is equivalent to 60 million years;		3
(d)	Any FIVE from: MP1 Idea of strong containers; MP2 idea that containers can't rust; MP3 idea that rust-proof containers expensive/difficult to manufacture; MP4 reference to security of waste site; MP5 reference to dilution in sea water; MP6 reference to leakage into water table;	accept idea of a location that prevents rust accept low earthquake risk	5

(Total for Question 10 = 13 marks)