Specimen OCR Physics B (Gateway) Section D

Q18	Answer from markscheme	Guidance from markscheme	Examiners' report
(a)	any **three** from: - idea that before testing started concentration levels of carbon-14 between 1940 and 1955 relatively constant showing that no other factor affected the levels (1) - level increases (significantly/rapidly) between 1955 and 1963 which is during the testing of nuclear bombs (1) - after 1963, levels start to decrease when testing stopped (1) - makes link between more carbon-14 and increased background radiation level likely (1)	**allow** concentration of carbon-14 at 1 arbitrary unit between 1940 and 1955, which increases to 1.9 at its peak and then starts to decrease again after 1963 / AW (1)	
(b)	any **one** from concentration level of carbon-14 'fluctuates' at 1.22 units / there is more than one year on the graph at 1.22 units so cannot be certain which year 'value' to choose (1) **and** idea of repeating process using concentration levels of carbon-14 in other teeth to check for consistency in predictions (1)	**allow** graph indicates two different years one in 1960 and one in 1985 (1) **allow** repeating with other teeth where the value does not fluctuate (1)	

(c)	any **two** from - quite accurate / reliable / close to actual date in middle of graph (1) - older teeth are estimated as being too old (1) - younger teeth are estimated as being too young (1)	**allow** idea that not all the estimates are accurate (1) **allow** worse when the teeth are older or younger (1) **allow** not so accurate / not reliable on older teeth or younger teeth (1)	
(d)	no (no mark) because the carbon-14 will not have decayed much / AW (1)		
(e)	carbon 14 test ▯ ▯ ▯ teeth wear test ▯ ▯ ▯	six correct = (2) four or five correct = (1)	