



Interactive Example Candidate Responses

Paper 4 (May / June 2016), Question 10

Cambridge IGCSE™
Physics 0625



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10 (a) An iodine isotope $^{131}_{53}\text{I}$ decays by β -emission to an isotope of xenon (Xe).

(i) State the number of each type of particle in a neutral atom of $^{131}_{53}\text{I}$.

protons 53 neutrons 78 electrons 53 [2]

(ii) State the symbol, in nuclide notation, for the xenon nucleus.

$^{131}_{54}\text{Xe}$ [2]

(b) The background count rate of radioactivity in a laboratory is 30 counts/min.

A radioactive sample has a half-life of 50 minutes. The sample is placed at a fixed distance from a detector. The detector measures an initial count rate from the sample, including background, of 310 counts/min.

On Fig. 10.1, plot suitable points and draw a graph of the count rate from the sample, **corrected for background**, as it changes with time.

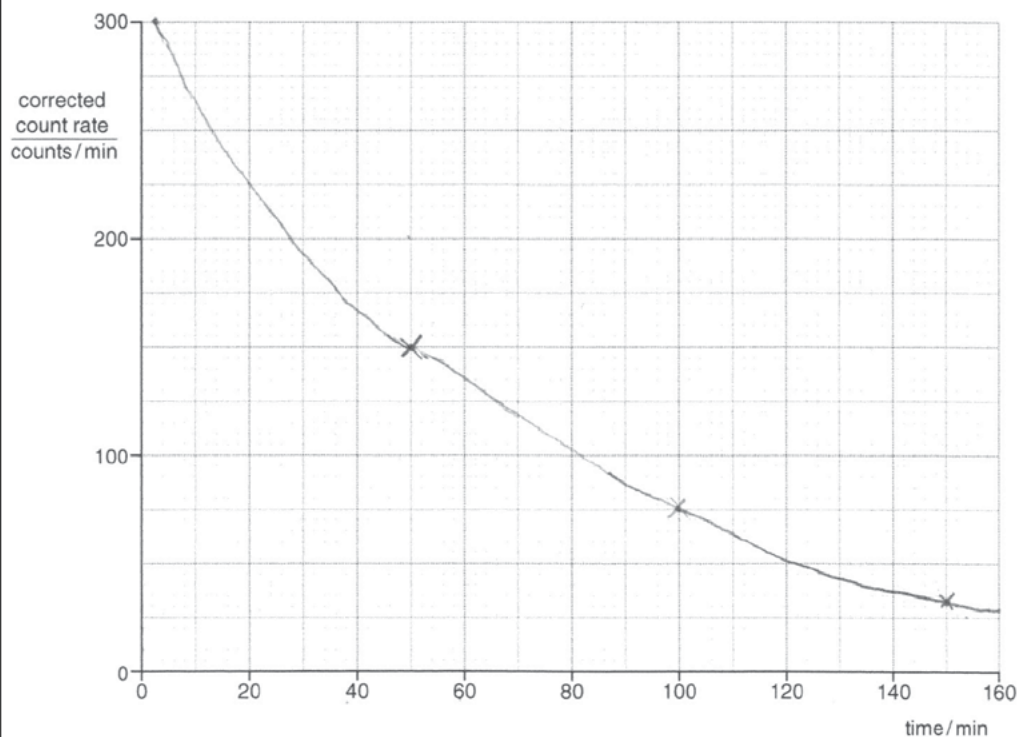


Fig. 10.1

[3]

[Total: 7]

Your Mark

10(a)(i)

10(a)(ii)

10(b)

Q10 Mark scheme

(a)(i)	Protons: 53 neutrons: 78 electrons: 53
(a)(ii)	$^{131}_{54}\text{Xe}$
(b)	<p>Points plotted at 3 of: 0 s, 50 s, 100 s, 150 s</p> <p>3 corrected counts/minute plotted at any from:</p> <ul style="list-style-type: none"> (0, 280) (50, 140) (100, 70) (150, 35) <p>Graph drawn as curve through correct points</p>

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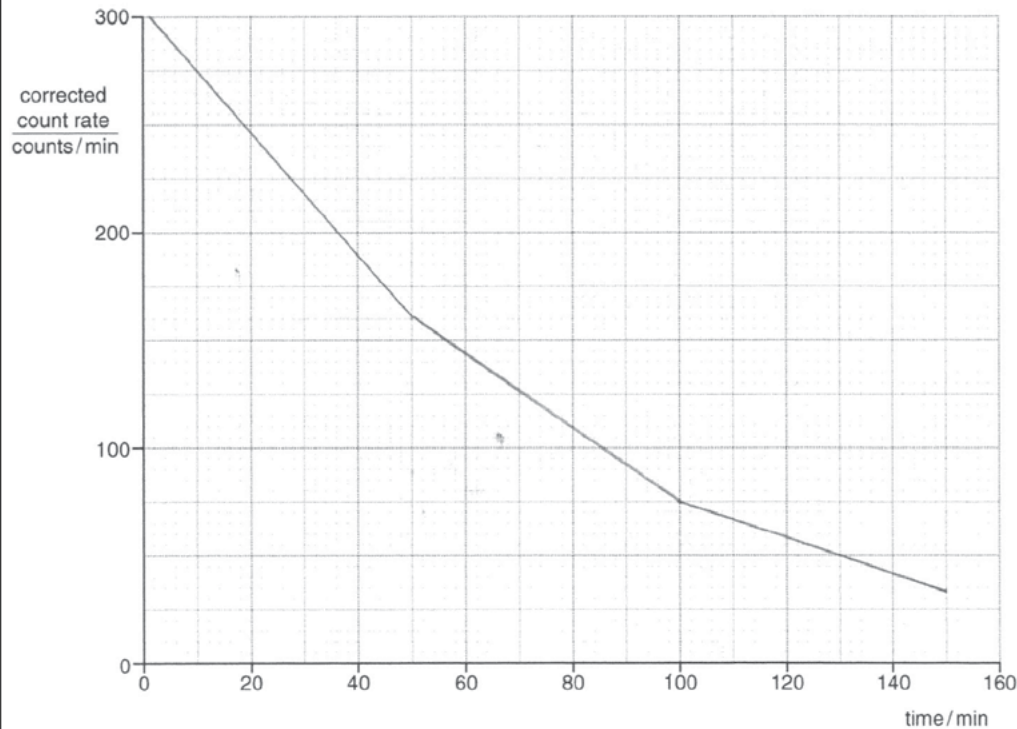


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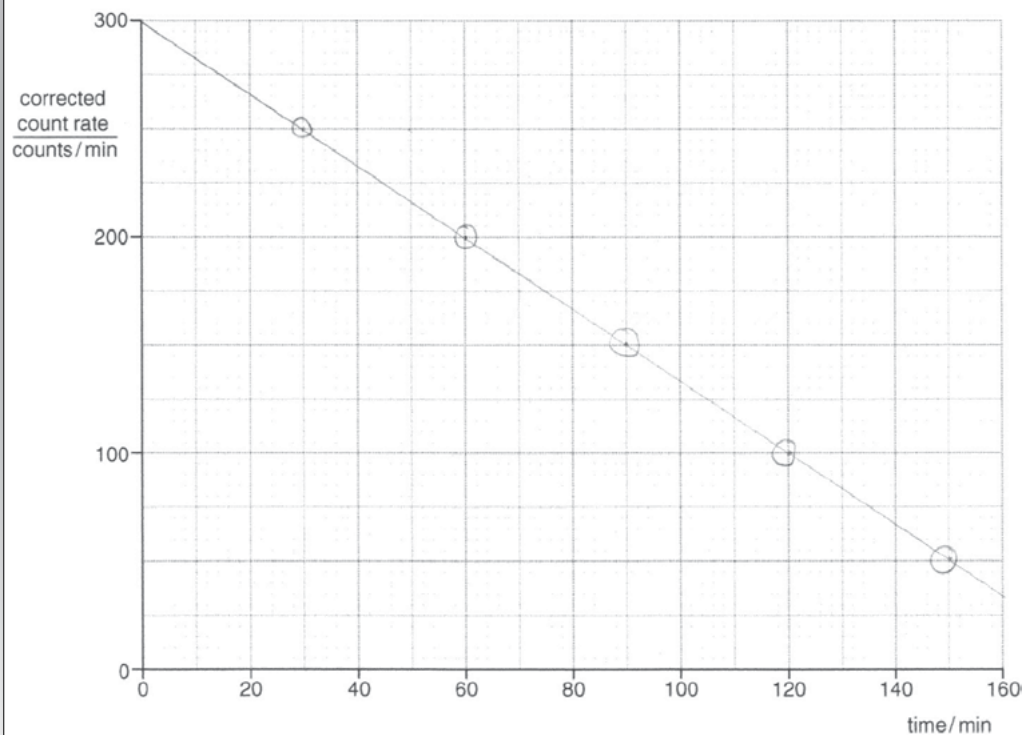


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