

- 6 (a) Describe the structure of an atom of the nuclide $^{235}_{92}\text{U}$.

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..... [2]

- (b) The deflection of α -particles by a thin metal foil is investigated with the arrangement shown in Fig. 6.1. All the apparatus is enclosed in a vacuum.

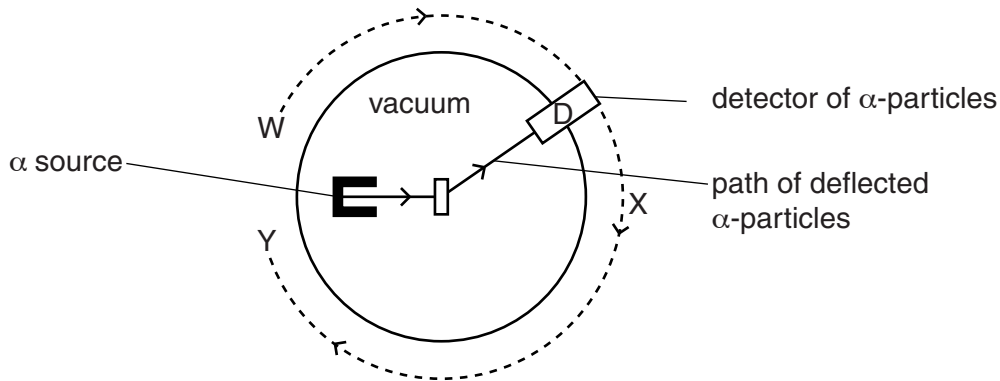


Fig. 6.1

The detector of α -particles, D, is moved around the path labelled WXY.

- (i) Explain why the apparatus is enclosed in a vacuum.

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..... [1]

- (ii) State and explain the readings detected by D when it is moved along WXY.

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..... [3]

Question 6 continues on page 16.

- (c) A beam of α -particles produces a current of 1.5 pA. Calculate the number of α -particles per second passing a point in the beam.

For
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Use

number = s^{-1} [3]

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