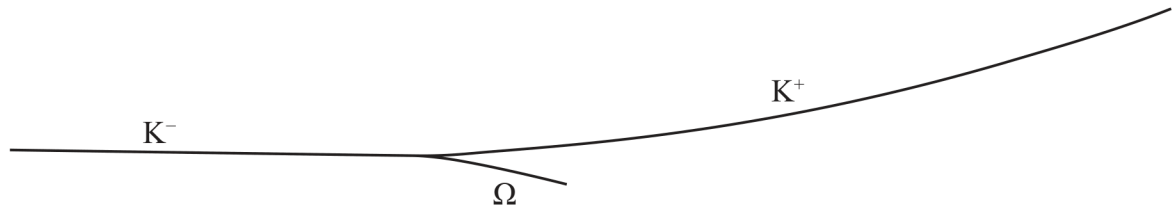
16 The diagram shows particle tracks in a detector. A negative K meson collided with a stationary proton. An omega baryon and a positive K meson were produced after the impact.



(a) Explain the process that enables a particle detector to detect charged particles.

(2)

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(b) (i) Describe the structure of a baryon and a meson.

(2)

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(ii) A magnetic field acts in the detector.

State the direction of the magnetic field.

(1)

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(iii) Deduce the charge and baryon number for the omega particle.

(3)

*(c) The rest mass of the omega baryon is significantly larger than the rest mass of the proton.

Discuss how energy and momentum are conserved during this collision.

(6)

(Total for Question 16 = 14 marks)