

2 (a) (i) State what is represented by a gravitational field line.

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..... [2]

(ii) The Earth may be considered as a uniform sphere, as shown in Fig. 2.1.

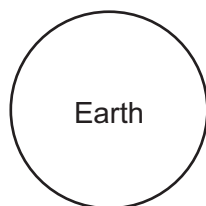


Fig. 2.1

On Fig. 2.1, draw field lines to represent the Earth's gravitational field outside the Earth. [2]

(b) The Earth's magnetic field may be considered as being due to the Earth acting as a long solenoid, as shown in Fig. 2.2.

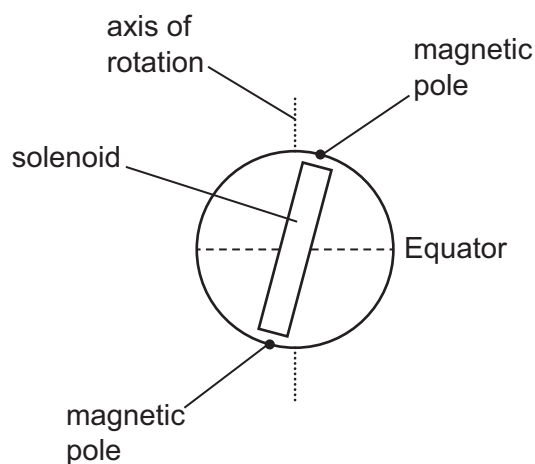


Fig. 2.2

The magnetic poles do not align with the geographic poles, which are on the axis of rotation.



Fig. 2.3 is a copy of Fig. 2.2 without the labels but with two magnetic field lines shown.

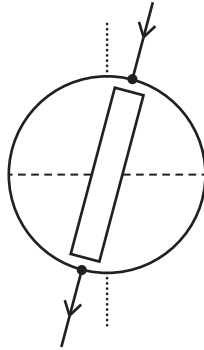


Fig. 2.3

- (i) On Fig. 2.3, label the magnetic poles with the letters N and S to indicate which one is the magnetic N pole and which one is the magnetic S pole. [1]
- (ii) On Fig. 2.3, draw field lines to represent the Earth's magnetic field outside the Earth. [2]
- (c) An observer moves around the surface of the Earth.
- (i) Use your answer in (a)(ii) to explain why the observed gravitational field of the Earth does not vary around the surface.

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..... [2]

- (ii) With reference to your answer in (b)(ii), describe how the observed magnetic field of the Earth varies around the surface.

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..... [3]