

- 1 (a) Define gravitational field.

[1]

- (b) A spherical planet can be considered as a point mass at its centre.

- (i) On Fig. 1.1, draw gravitational field lines outside the planet to represent the gravitational field due to the planet.



Fig. 1.1

[2]

- (ii) A satellite is in a circular orbit around the planet.

Explain, with reference to your answer in (b)(i), why the path of the satellite is circular.

[2]

- (c) An object rests on the surface of the Earth at the Equator.
The radius of the Earth is 6.4×10^6 m.

(i) Determine the centripetal acceleration of the object.

centripetal acceleration = ms^{-2} [3]

- (ii) Describe how the two forces acting on the object give rise to this centripetal acceleration.
You may draw a diagram if you wish.

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..... [2]

[Total: 10]

- 1 (a) The point P in Fig. 1.1 represents a point mass.

On Fig. 1.1, draw lines to represent the gravitational field around P.

● P

Fig. 1.1

[2]

- (b) A moon is in circular orbit around a planet.

Explain why the path of the moon is circular.

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[2]

- (c) Many moons are in circular orbit about a planet.