1 **(a)** Define *gravitational field strength*.

.....

..... [1]

(b) An isolated planet is a uniform sphere of radius 3.39×10^6 m. Its mass of 6.42×10^{23} kg may be considered to be a point mass concentrated at its centre. The planet rotates about its axis with a period of 24.6 hours.

For an object resting on the surface of the planet at the equator, calculate, to three significant figures:

(i) the gravitational field strength

field strength = ... $N\,kg^{-1}$ [2]

(ii) the centripetal acceleration

acceleration = ... $m\,s^{-2}$ [2]

(iii) the force per unit mass exerted on the object by the surface of the planet.

force per unit mass = ... $N\,kg^{-1}$ [1]

[Total: 6]