Answer **all** the questions in the spaces provided.

1 **(a) (i)** State what is meant by *gravitational potential* at a point.

....

....

....[2]

(ii) Suggest why, for small changes in height near the Earth's surface, gravitational potential is approximately constant.

....

....

....

....[2]

(b) The Moon may be considered to be a uniform sphere with a diameter of 3.5×10^3 km and a mass of 7.4×10^{22} kg.

A meteor strikes the Moon and, during the collision, a rock is sent off from the surface of the Moon with an initial speed *v*.

Assuming that the Moon is isolated in space, determine the minimum speed of the rock such that it does not return to the Moon's surface. Explain your working.

minimum speed = ... m s^{-1} [3]

[Total: 7]