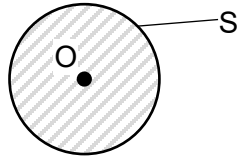**12** An astronomical gas cloud has mass M and radius R. The gravitational potential on its surface S is $-\dfrac{GM}{R}$ and at its centre O it is $-\dfrac{5GM}{2R}$.

A unit mass is moved slowly by means of an external force from the surface S to the centre O. What is the work done on the mass by the external force?

A $-\dfrac{7GM}{2R}$ **B** $-\dfrac{3GM}{2R}$ **C** $\dfrac{3GM}{2R}$ **D** $\dfrac{7GM}{2R}$