7 A space probe is due to be launched to one of the moons of Saturn. It is believed that the conditions on the moon are such that methane exists in liquid form and that lakes of methane may exist.

The probe is tested and it can be lowered to a depth of 64 m in a lake of water on Earth before the pressure is too high.

The following data regarding the Earth and the moon of Saturn are available:

atmospheric pressure on Earth = 100 kPa
density of water in lake on Earth = 1000 kg m^{-3}
atmospheric pressure on moon of Saturn = 35 kPa
density of liquid methane on moon of Saturn = 740 kg m^{-3}
gravitational field strength on moon of Saturn = 3.6 N kg^{-1}

What is the maximum depth the probe may be lowered to, in a lake of methane on the moon of Saturn?

A 220 m **B** 240 m

C 260 m **D** 270 m