Brainbox learn easy

Chapter 10

GRAVITATION

EXAMPLE- 5:

The mass of the earth is 6×10^{24} kg and that of the moon is 7.4×10^{22} kg. If the distance the earth and moon is 3.84×10^{5} km, calculate the force exerted by the earth on the moon.(Take $G=6.7\times10^{-11}\ Nm^2/kg^2$)

Solution:

Given,

$M_{earth}=6\times10^{24}$ kg,

$m_{moon}=7.4\times10^{22}$ kg

$r=3.84\times10^{5}$ km $=3.84\times10^{8}$ m

$G=6.7\times10^{-11}\ Nm^2/kg^2$

$$F=\frac{GMm}{r^2}=\frac{6\times10^{24}\times7.4\times10^{22}\times6.7\times10^{-11}}{\left(3.84\times10^{8}\right)^2}$$

$F=2.018\times10^{20}$ N.