Answer on Question #73301-Physics-Other

The force of capillarity in plant is given by F=prgh/2 where r is the coefficient of surface tension.is the equation correct or not. Justify the answer

Solution

$$F = \frac{prgh}{2}$$

Dimensions of the force are:

$$\dim F = MLT^{-2}.$$

$$dimg = LT^{-2}$$

$$\dim h = L$$

$$\dim r = MT^{-2}.$$

$$\dim p = ML^{-1}T^{-2}.$$

Thus,

$$\dim\left(\frac{prgh}{2}\right) = LT^{-2}LMT^{-2}ML^{-1}T^{-2} = M^2LT^{-6} \neq MLT^{-2} = \dim F.$$

Therefore, the formula is not correct!