

Eiman Amjad

11^m(A)

Physics

Qno 2:-

Prove $v = 7.9 \text{ km/s}$

$$F_e = F_g$$
$$\frac{mv^2}{R} = mg$$

$$v^2 = Rg$$
$$v = \sqrt{Rg}$$

By putting values:-

$$g = 9.8 \text{ ms}^{-2}, R = 6.4 \times 10^6 \text{ m, we get}$$
$$v = \sqrt{6.4 \times 10^6 \times 9.8}$$
$$v = 7.9 \times 10^3 \text{ m/s}$$
$$v = 7.9 \text{ km/s}$$

Qno 3:-

Show that

$$T - w = F$$

According to Newton's second law

$$F = ma$$

$$T - w = ma$$

$$T = w + ma \quad \text{--- (2)}$$

Qno 5-

Find height

$$r = R + h$$

$$h = r - R$$

$$= 4.23 \times 10^4 - 6400 =$$

$$= 42300 - 6400$$

$$h = 35900 \text{ km}$$

or

$$h = 36000 \text{ km}$$

Qno 6-

Given Data-

$$\text{Diameter} = S = 2.50 \text{ m}$$

$$\text{Divergence angle} = \theta = ?$$

$$\text{Distance} = r = 3.8 \times 10^8 \text{ m}$$

To find-

$$\theta = ?$$

Solution-

$$S = r\theta$$

$$\theta = \frac{S}{R}$$

$$\theta = \frac{2.5}{3.8 \times 10^8} = 6.6 \times 10^{-9} \text{ rad}$$

Question no 71

Given Data:-

Radius of Moon = $R = 1.74 \times 10^6 \text{ m}$
Distance from Earth

$$r = 3.85 \times 10^8 \text{ m}$$

To find:-

$$\frac{L_s}{L_o} = ?$$

Solution:-

$$L_s = I \omega$$

$$L_s = \frac{2}{5} MR^2 \omega$$

$$\text{Now } L_o = Mvr$$

$$v = r\omega$$

Therefore

$$L_o = Mvr$$

$$= Mwr \cdot r$$

$$L_o = Mwr^2$$

$$\frac{L_s}{L_o} = \frac{\frac{2}{5} MR^2 \omega}{Mwr^2}$$

$$\frac{L_s}{L_o} = \frac{\frac{2}{5} R^2}{r^2}$$

Put values in right hand side

$$\frac{L_s}{L_o} = \frac{2}{5} \left(\frac{1.74 \times 10^6}{3.85 \times 10^8} \right)^2$$

$$= \frac{2}{5} (0.45 \times 10^{-2})^2$$

$$= \frac{2}{5} \times 0.2025 \times 10^{-4}$$

$$= 0.081 \times 10^{-4}$$

$$\frac{L_s}{L_o} = 8.1 \times 10^{-8}$$