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SUBJECT:- PHYSICS

CLASS:- IXTH

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SUBJECT TEACHER:- MR. NEEL NIRANJAN

CHAPTER 3. (GRAVITATION)

Question 38:

A piece of stone is thrown vertically upwards. It reaches the maximum height in 3 seconds. If the acceleration of the stone be 9.8 m/s^2 directed towards the ground, calculate the initial velocity of the stone with which it is thrown upwards

Solution :

Initial velocity of the stone, $u=?$

Final velocity of stone, $v=0$

Acceleration due to gravity, $g= -9.8\text{m/s}^2$

Time, $t=3 \text{ sec}$

Using relation, $v=u + gt$

$$0 = u - 9.8 \times 3$$

$$u = 29.4\text{m/s}$$

Question 39:

A stone falls from a building and reaches the ground 2.5 seconds later. How high is the building ? ($g = 9.8 \text{ m/s}^2$)

Solution :

Initial velocity,

$$u=0\text{m/s}$$

Acceleration due to gravity, $g=9.8\text{m/s}^2$

Time taken to reach the ground, $t=2.5 \text{ sec}$ Height, $h=?$

Using relation,

Initial velocity, $u=0\text{m/s}$

Acceleration due to gravity, $g=9.8\text{m/s}^2$

Time taken to reach the ground, $t=2.5 \text{ sec}$

Height, $h=?$

Using relation,

$$s = u t + \frac{1}{2} g t^2$$

$$s = 0 \times 2.5 + \frac{1}{2} \times 9.8 \times 2.5 \times 2.5$$

$$s = 0 + 4.9 \times 2.5 \times 2.5$$

$$s = 30.625 \text{ m}$$