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Assignment BMT
Module 2nd.

Q^{I} Define strain and a cord has orignal length of 100 cm is pulled by a force. The change in length of the cord is 2mm. Determine the strain.

Ans

Strain :-

The ratio of change in a dimension that takes place with a material under stress.

strain is a measurement of stress.

$$e = \frac{\Delta L}{L} = \frac{l - L}{L}$$

As we know that

→ Cord orignal length = 100cm = L_o

→ The change in length = ΔL = 2mm

$$\frac{2mm}{1000} = 0.002m = 0.20cm$$

Checked By:..... Parents:..... Excellent ☐ Good ☐

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to find strain :-

Sol :- As

$$\text{Strain} = \epsilon = \frac{\Delta L}{L_0}$$

ΔL change in length

Now $\sigma_T = \frac{S}{120}$

$\sigma_T = 0.04\,N$

$(\sigma_T = 41.67\,KN)$

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Q# 3 b

17 a compressive load of 10N is applied on a rectangular bar as shown in the figure. where height of the bar is 8cm, breadth is 15 cm and length 30cm. Calculate the compressive stress in the bar.

Ans

Given Data

Compressive Load = P_b = 10N

height = 8 cm

breadth = 15 cm

length = 30 cm

to find

Compressive stress = ?

Sol: As compressive stress = $\sigma_c = \left[\frac{P_b}{A}\right]$

Area = L x W x h

Area = 8 x 15 x 30 = 3600

So compressive stress = $\frac{10}{3600}$ =

σ_c = 0.002

(σ_c = 2.7 KN).

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Q 3 a Briefly explain principal of momentum and momentum of sea saw?

Ans Momentum Conservation principle. one of the most powerful laws in physics is the law of momentum conservation For a collision occurring between object 1 and object 2 in an isolated system, the total momentum of the two object before the collision is equal to the total momentum of the two objects after the collision.

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Q 3 b Differentiate between stable and unstable Equilibrum and given proper examples you will observe in daily life.

Ans **Equilibrium :-**

A body is said to be in equilibrium if it is at rest or moving with uniform velocity. In other words if the linear and angular acceleration of a body are zero. the body is said to be in equilibrium.

Stable equilibrium :-

A body said to be in stable equilibrium if it comes back to its original position when it is slightly displaced.

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When a body which is in stable equilibrium is disturbed its centre of gravity is raised.

For example :-

A book lying on a table is in stable equilibrium.

Unstable equilibrium :-

A body is said to be in unstable equilibrium if it does not come back to its original position when it is slighty displaced. When a body which is in unstable equilibrium is disturbed its centre of gravity is lowered.

For Example :-

Pencil standing on its Point or a stick in vertically standing position.

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Q4 Define stress and following terms.

Ans **Tensile stress :·**

The magnitude F of the force applied along an elastic rod divided by the cross-sectional area A of the rod in a direction that is perpendicular to the applied force. Ultimate tensile stress. (UTS): it is defined as the maximum stress that a material can withstand when a force is applied.

Shearing Stress :·

Is a force that causes layers or parts to slide upon each other in opposite directions. An example of shearing stress is the force of two connecting rocks rubbing

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in opposite directions.

Compressive Stress :-

The stress that results from the shortening in one dimension of an elastic body due to oppositely directed collinear forces tending to crush it.

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