AR6301 : Mechanics of Structures II
Unit 1 –Shear Force and Bending Moment
Lecture 2 – Cantilever beams

FAQs

1. What is the maximum shear force in a cantilever beam subjected to point load at the free end?

The maximum shear force will be equal to the applied load 'W'. It remains constant throughout the length of the beam.

2. Mention the value of maximum bending moment in a cantilever beam subjected to point load at the free end.
The maximum bending moment will occur at the fixed end of a cantilever beam. The value of maximum bending moment will be equal to the product of load 'W' and span 'L'. Hence, it will be WL

3. Why the bending moment diagram in a cantilever beam subjected to point load will be linear?

The bending moment equation at any section XX is given by
– Wx. This equation is a linear one. Hence, the bending moment diagram will be linear.

4. Express the values of maximum shear force and bending moment in case of a cantilever beam subjected to uniformly distributed load.

The value of maximum shear force is 'wL' which occurs at the fixed end and the value of maximum bending moment is '$wL^2/2$' which also occurs at the fixed end.

5. **Why the bending moment diagram in case of a cantilever beam subjected to uniformly distributed loading is parabolic?**

The equation for maximum bending moment at any section XX in case of a cantilever beam subjected to uniformly distributed loading is $-wx^2/2$. Hence the bending moment diagram will be a parabolic curve.