BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY
Question Bank (K-Scheme)

Name of subject: Theory of Structure Unit Test: I Subject code: 315313 Course: CE Semester: IV

Unit I (Slope & Deflection)

2 Marks

1. Give relationship between slope, deflection & radius of curvature.
2. Define slope & deflection of beam
3. A cantilever beam of span L carries a point load at free end. State the slope & deflection at free end in terms of EI.
4. Write the values of maximum slope & deflection in case of simply supported beam carrying UDL over the entire span in terms of EI.
5. A simply supported beam carries udl of 2KN/m over the enter span of 3 m. Find deflection at midspan in terms of EI.

4 Marks

1. A cantilever of span 3.5m carries a point load at free end, if the maximum slope at free end is 1 degree. Determine maximum deflection in mm.
2. **A simply supported beam of 6 m span carries a point load of 60 kN at 2m from left support. Calculate deflection below point load in terms of EI use Macaulay's method.**
3. A simply supported beam ABCD is supported at A and D.AB=BC=1m.CD=2m It is subjected to a point load of 5KN at B and a udl of 4 KN/M over CD.Using Macaulay's method find slope and deflection at point B in terms of El.
4. A simply supported beam of 6 m spam is carrying a udl of 25 KN/M over its entire span. Calculate its maximum slope and deflection considering I as 1*10^8 mm^4 and E as 210 GPa.
5. Cantilever of 2 m long carries audl of 10KN/M , over 1m portion from fixed end and a point load of 20 KN at free end. calculate the maximum slope and deflection of the cantilever in terms of EI by **Using Macaulay's method.**
6. A cantilever beam has cross section 120 mm wide and 200 mm deep. If load of 6 kN acting at the free end calculate the span of beam if slope at free end of the beam is 1.5*10^-3 radians. Take E=100KN/mm^2.

Unit II (Fixed Beam)

2 Marks

1. State any two advantage and disadvantage of fixed beam.
2. Define fixed beam with sketch.
3. Write the values of fixed end moments for simply supported beam carrying udl w kn/m over entire span.
4. Write the values of fixed end moments for simply supported beam carrying eccentric point load W.
5. Differnce between Fixed beam and Simply supported beam.

4 Marks

1. A fixed beam of span 6 m carries a point load of 80 KN at its centre.Calculate the fixed-end moments by using first principle. Find the net B.M. at the centre and draw BM diagrams
2. A fixed beam of 4 m spam is subjected to 2 point loads of 5 kn and 10 kn, at 1 m and 3 m from the left support. Calculate Fixed end moments.
3. A fixed beam of Spain 6 m carries and Udl of 30KN/m over the entire span and a central point load of 50 kn. calculate the support moments draw BMD.
4. Fixed beam of span 6 m carries 2 point loads of 22 kn and W kn at 2 m and 4 m from left support if fixed end moments at both supports are equal, calculate W.
5. A fixed beam of 6 m span carries a point load of 30 km at 2 m from the left support. Draw BMD.