DEPARTMENT OF CIVIL ENGINEERING

CE3502- STRUCTURAL ANALYSIS-1

UNIT-2- SLOPE DEFLECTION METHOD

2 MARKS QUESTIONS

S.No	QUESTIONS	CO'S
1.	**What are the assumptions made in slope-deflection method?** i) Between each pair of the supports the beam section is constant. **ii)** The joint in structure may rotate or deflect as a whole, but the angles between the members meeting at that joint remain the same.	**CO2**
2.	**What is the limitation of slope-deflection equations applied in structural analysis?** 1) It is not easy to account for varying member sections. 2)It becomes very cumbersome when the unknown displacements are large in number.	**CO2**
3.	**Mention the causes for sway in portal frames.** Because of sway, there will be rotations in the vertical members of a frame. This causes moments in the vertical members. To account for this, besides the equilibrium, one more equation namely shear equation connecting the joint-moments is used.	**CO2**
4.	**Explain the use of slope deflection method.** i) It can be used to analyze statically determinate and indeterminate beams and frames. ii) In this method it is assumed that all deformations are due to bending only. iii) In other words deformations due to axial forces are neglected. iv) The slope-deflection equations are not that lengthy in comparison.	**CO2**
5.	**Write down the slope deflection equation for a beam AB fixed at A and B subjected to a settlement δ at B.** $M_{AB} = M_{FAB} + \frac{2EI}{L}\left(2\theta_A + \theta_B + \frac{3\delta}{L}\right)$ $M_{BA} = M_{FBA} + \frac{2EI}{L}\left(\theta_A + 2\theta_B + \frac{3\delta}{L}\right)$	**CO2**

6.	**Mention two assumptions made in slope deflection method.** i) Between each pair of the supports of the beam is constant. ii) The joint in a structure may rotate or deflect as a whole, but the angles between the members meeting at that joint remain the same.	**CO2**
7.	**Mention any three reasons due to which sway may occur in portal frames.** Sway in portal frames may occur due to i) Unsymmetry in geometry of the frame ii) Unsymmetry in loading or iii) Settlement of one end of a frame.	**CO2**
8.	**What are the quantities in terms of which the unknown moments are expressed in slope deflection method?** In slope-deflection method, unknown moments are expressed in terms of (i) Slopes (and) Deflections.	**CO2**
9.	**What is the moment at a hinged end of a simple beam?** Moment at the hinged ends of a simple beam is zero.	**CO2**
10.	**The beam shown in figure is to be analyzed by slope deflection method. What are the unknowns and to determine them, what are the conditions used?** Unknowns are A,B,C Equilibrium equations used: (i) MAB = 0 (ii) MBA + MBC = 0 (iii) MCB = 0	**CO2**