**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

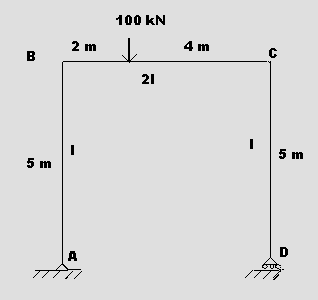
**Supplementary Examinations – June 2016**

**Subject Title: Structural Analysis Time : 3 hours**

**Subject Code: 14CE2010 Maximum Marks: 100**

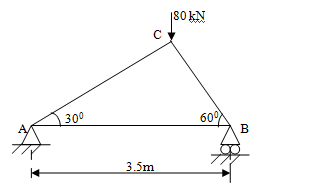
**Answer ALL questions (5 x 20 = 100 Marks)**

1. Analyse the frame shown in Figure by virtual work method and determine the horizontal displacement at support D. Take E= 200x106 kN/m2. I = 300x10-6 m4.

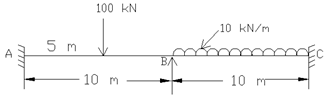


**(OR)**

2. Using the principle of virtual work, determine the vertical deflection of joint C of the pin jointed truss shown in figure, E = 200 x 106 KN/m2 and cross sectional area of each bar = 10 x 10-3 m2.

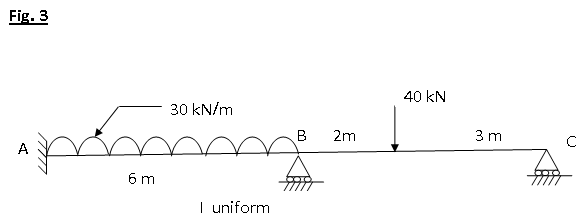


3. Determine the support moments for the continuous beam shown in figureby slope deflection method. Support B sinks by 10 mm. Take E = 200 GPa. I= 16 X 107 mm4.



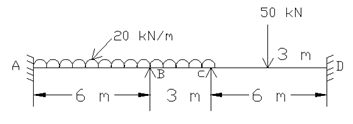
**(OR)**

4. Analyze the continuous beam shown in figure by slope deflection method. Also draw the bending moment diagram.



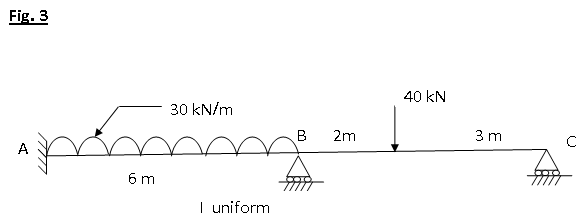
[P.T.O]

5. Determine the support moments for the continuous beam shown in figure by moment distribution method and draw the BMD.



**(OR)**

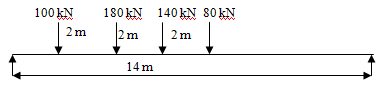
6. Analyze the continuous beam shown in figure by moment distribution method. Also draw the bending moment diagram.



7. A girder having a span of 14m is simply supported at the ends. It is traversed by a train of loads as shown in figure, the 80 kN load leading. Using ILD, calculate

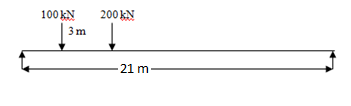
a. The maximum +ve and –ve S.F and B.M at mid span.

b. Abolute max. B.M in the span



**(OR)**

8. A girder having a span of 21m is simply supported at the ends. It is traversed by two point loads as shown in Figure, the 200 kN load leading. Find the maximum bending moment and shear force at a section 7m from left support, using influence line diagrams. Also determine the absolute maximum bending moment.



**Compulsory:**

9. Use portal method to perform an analysis of the frame given in figure.

