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BICE-016

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B. TECH. (CIVIL ENGINEERING) BTCLEVI

Term-End Examination

December, 2012

BICE-016 : STRUCTURAL ANALYSIS - III

Time : 3 hours

Maximum Marks : 70

Note: Attempt **any five** questions and assume any data if necessary.

- A beam AB of span 4 meters fixed at A and simply 14 supported at B carries two points loads 100 kN and 60 kN at distances of 2 m and 3 m from fixed end A. Find out support moments and draw Bending Moment diagram.
- 2. Find the support moments at A, B, C, D for the **14** continuous beam shown in the figure.

$$A \begin{array}{c|c} 60 \text{ kN/m} & 80 \text{ kN} & 45 \text{ kN} \\ \hline 60 \text{ kN/m} & 2 \text{ m} & 2 \text{ m} & 1 \text{ m} & 2 \text{ m} \\ \hline 4 \text{ m} & B & 4 \text{ m} & C \uparrow 3 \text{ m} \\ \hline I & I & 1.5 \text{ I} \end{array} D$$

A simply supported beam of length 'l' carries a 14 point load at centre. Find the length of the plastic hinge if the shape factor for the beam section is K_s.

- Compare force method and displacement method 14 with suitable examples.
- Two wheel loads 80 kN and 200 kN, spaced 2 m 14 apart move on a girder of span 16 m. Find the maximum positive and negative shear force at a section 4 meters from left end. Any wheel load can lead the other.
- 6. Analyse the portal frame using moment 14 distribution method shown in the figure below. Here $I_{AB} = I_{CD} = I$ $I_{BC} = 2I$

$$\begin{array}{c}
20 \text{ kN/m} \\
B \\
6 \text{ kN} \\
2 \text{ m} \\
2 \text{ m} \\
A \\
\end{array}$$

- 7. Write short notes on *any two*.
 - (a) Muller Breslau's principle
 - (b). Portal method
 - (c) Distribution factor and Relative stiffness.

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