Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14CE2010** | **Duration :** | **3hrs** |
| **Sub. Name :** | **STRUCTURAL ANALYSIS** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Why is it necessary to compute deflection in structures? | CO1 | 2 |
| b. | Differentiate the statically determinate structures and statically indeterminate structures. | CO1 | 2 |
| c. | Determine the vertical and vertical displacement at the free end E in the frame shown in figure. Take EI = 20,000 kN-m2. | CO1 | 16 |
| **(OR)** | | | | |
| 2. |  | Find the vertical deflection at joint C of the pin-jointed frame shown in figure below. AE is constant for all members. | CO1 | 20 |
|  |  |  |  |  |
| 3. |  | Draw the influence line diagram for shear force and bending moment for a section at 5m form the left hand support of a simply supported beam 15m long. Hence, calculate the maximum shear force and bending moment at the section due to a uniformly distributed rolling load of length 6m and intensity 8kN/m run. | CO3 | 20 |
| **(OR)** | | | | |
| 4. |  | A girder having a span of 18m is simply supported at the ends. It is traversed by a train of loads as shown in figure given below, the 50kN leading. Find the maximum bending moment which can occur:   1. Under the 200kN load; 2. Under 50kN load using influence line diagram. | CO3 | 20 |
|  |  |  |  |  |
| 5. |  | Analyze the continuous beam loaded as shown in figure below by slope deflection method. Take E = 2 x 105 N/mm2 and I = 16 x 107 mm4. Sketch the bending moment diagram. EI constant. | CO2 | 20 |
| **(OR)** | | | | |
| 6. |  | Analyze the frame shown in figure given below by slope deflection method. | CO2 | 20 |
|  |  |  |  |  |
| 7. |  | Analyze the continuous beam loaded as shown in fig. 7.1 by moment distribution method. Sketch the bending moment and shear force diagrams. | CO2 | 20 |
| **(OR)** | | | | |
| 8. |  | Analyze the structure loaded as shown in figure shown below by moment distribution method and sketch the bending moment and shear force diagrams. | CO2 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Analyse the frame shown in fig given below and evaluate approximately the column end moments, beam end moments and reactions. | CO3 | 20 |