CODE NO | R | A | 3 | 1 | 0 | 1 | 0 | 1 | R | A |

2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS
STRUCTURAL ANALYSIS
(CIVIL ENGINEERING)

NOVEMBER/DECEMBER 2005

TIME – 3 HOUR
MARK - 80

Answer any FIVE Questions
All Questions carry equal marks

1. Find the fixed end moments for the fixed beam shown in figure 1. [16]

2. Determine the moments and reactions at the supports of the fixed-fixed beam which is loaded by a concentrated load of 10kN at a point 3 m from the left support. The span of the beam is 8 m. Use method of consistent deformations. EI is constant. [16]

3. The pin jointed truss shown in Figure2 is loaded with two point loads of 20kN and 10kN at the upper joints. Evaluate the forces in the members using the method of tension coefficients. [16]

4. Analyze the continuous beam shown in Figure3 by Clapeyron's theorem of three moments. Also sketch the BMD and SFD. [16]

5. Determine the vertical displacement of joint C of the truss. Cross sectional area of each member A= 300mm 2, E= 2x105N/mm 2. Solve using Castigliano's theorem shown in Figure4. [16]

6. A moving load of 50kN/m and, 4m long, crosses a girder of 16m span. Calculate the maximum B.M at a section 5m from the left hand support. [16]

7. Four equal loads of 60kN each, equally spaced at 2m apart followed by a uniformly distributed load of 40kN/m run at a distance of 2m from the last 60kN, cross a girder of 20m span from right to left. Using influence lines, calculate the S.F and B.M at a section 8m from the left support, when the leading 60kN load is 5m from this support. [16]

8. The resultant of two forces acting at a point is 75 kN. It is observed that one force is double than that of the other and if the direction of one of them is reversed the resultant becomes 35 kN. Find the magnitudes of forces and the angle between them graphically. [16]