DEPARTMENT OF CIVIL ENGINEERING: IIT DELHI
SEMESTER I :: SESSION 2006-07
CEL 431: ADVANCED STRUCTURAL ANALYSIS

MAJOR TEST

Maximum marks = 45 **Time allowed = 2 hours**

All questions are compulsory

1. Starting with an undamped two degree of freedom system, explain the dynamical behavior of a TUNED MASS DAMPER (TMD) 10 Marks

2. Obtain the expression for the strain tensor component ε_{22} for the Constant Strain Triangle (CST) in terms of nodal displacements 10 Marks

3. Starting ab initio, obtain the expression for the Coefficient K_{23} of the stiffness matrix of the Beam Finite Element. 15 Marks

4. Starting from the first principles, determine the Consistent Mass Matrix for the one-dimensional bar element. 10 Marks