MCL735
MINOR II

CAD & FEA
October 4, 2017

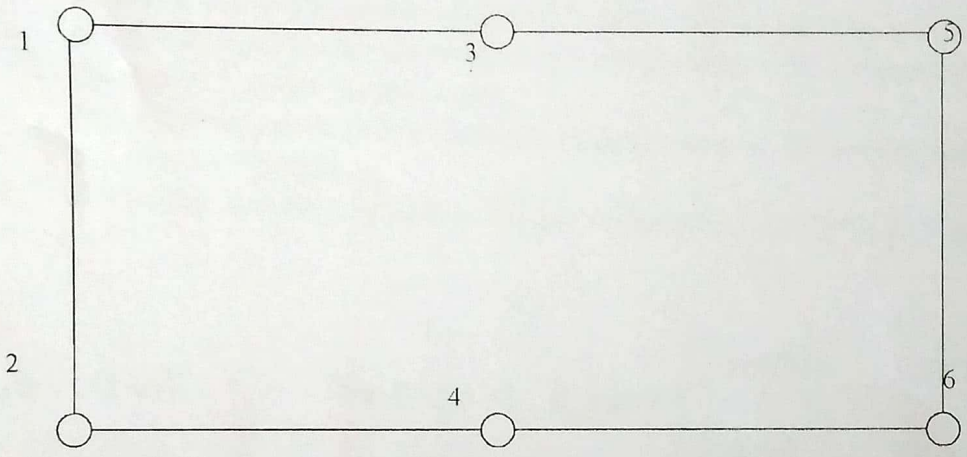
MAX MARKS: 60

MAX TIME: 60 MINS.

Note:

1. Answers should be **brief and to the point**.
2. **Marks shall be deducted for unnecessarily long answers**.

Q 1 Derive expressions for the shape functions for a 6 noded rectangular element as shown using Lagrange Polynomials. Derive the element strain displacement matrix. (15 marks)



Q 2 Define a 2 noded 4 DOF beam element.

i) Derive the stiffness matrix for the same.

ii) Find how a uniformly distributed load will contribute to the force terms. (20 marks)

Q 3 Derive from first principles, the transformation matrix required to align the vector (l m n) with X-axis such that the vector (a b c) lies in the XY plane. (25 marks)