Find :

(i) Finite element model with two elements

(ii) Global stiffness matrix

(iii) Global load vector

(iv) Displacement at nodel points

(v) Stresses in each element

(vi) Reaction at the support.

8. (a) Discuss the different steps used in finite elements analysis (FEA) in detail. Enlist some suitable applications of FEA in engineering.

(b) Explain 2-D and 3-D elements used in FEA. **7+8**

H-61

B. Tech. EXAMINATION, Dec. 2017

(Eighth Semester)

(B. Scheme) (Re-appear Only)

(ME)

ME-402-B

COMPUTER AIDED DESIGN

Time : 3 *Hours*]　　　　　　　[*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Define CAD CAM. Give a brief description of their applications in industries.

(b) Define Explicit, Implicit and parametric representation and list out their advantages. **7+8**

2. Explain the following types of transformation with examples :

(i) Translation

(ii) Scaling

(iii) Rotation. **15**

Unit II

3. What is a Bezier curve ? Discuss its importance properties. **15**

4. Explain various types of surface entities. Derive the parametric equations of the four analytical surface models. **15**
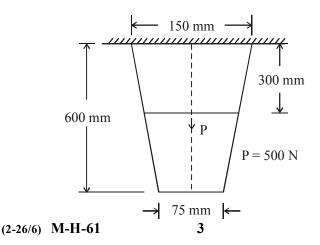
Unit III

5. What is constructive solid geometry (CSG) ? What is the role of primitives and boolean operations in CSG ? Explain with suitable examples. **15**

6. What do you understand by boundary representation (B-Rep) technique of solid modeling ? Explain briefly the data structure of B-Rep solid model. **15**

Unit IV

7. A thin plate as shown in fig. has a uniform thickness of 20 mm and a modulus of elasticity is 200×10^3 N/mm^2 and density of 7800 kg/m^3. In addition to its self weight the plate is subjected to a point load P of 500 N which is applied as shown in figure : **15**

150 mm

300 mm

600 mm

P

P = 500 N

75 mm