Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MMPD-105

M.E./M. Tech., I Semester

Examination, December 2016

Computer Aided Engineering and Optimization

Time : Three Hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks.

1. a) Define the degree of freedom. Explain a mechanic system with a mass damper and spring. Write the practical application of FEA in new design.
   b) Compare analytical and experimental methods to solve engineering problem. Which one you will prefer and why?

2. a) How to do meshing? Explain 1-2-3 d elements and length of elements with suitable application?
   b) Define CFD. Write its applications and basic steps to solve the problem using CFD concept.

3. a) Explain the effect of mesh density and biasing in critical region.
   b) Give a brief comparison of tria and quad elements.

4. a) Discuss in brief the algorithm for tria to tetra conversion. Also explain the quality checks for tetra meshing.
   b) How to model a weld bolt discuss in brief.

5. a) Discuss the use of morphing technique in FEA
   b) Why linear programming is important in several types of industries?

6. a) Define discretization. Discuss the effect of shape and size on accuracy of results.
   b) What is CAE? Explain various types of analysis in CAE.

7. Write a note on :
   a) Rayleigh-Ritz method
   b) Shrink fit simulations
   c) Galerkin approach

8. Write short notes on (any three) :
   a) Design for warranty life
   b) Design abuses
   c) Quality check
   d) Optimization

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