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

Roll No .....

MMPD-105

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

Examination, June 2016

Computer Aided Engineering and Optimization

Time : Three Hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks. Draw neat diagrams wherever required.

1. a) Compare analytical and experimental methods to solve engineering problem. Which one you will prefer and why?
   b) Discuss how computer is enabler tool in FEA? Discuss practical applications of FEA.

2. a) Define Discretization. Discuss the effect of shape and size on accuracy of results.
   b) Define Degree of Freedom for engineering system. How this can be calculated?

3. a) State basic steps to solve the problems using CFD concept.
   b) Discuss the advantages and disadvantages of FEM over conventional methods.

4. a) State the comparison between tria and quad elements.
   b) State brief about importance of meshing and boundary conditions in FEM.

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5. Write technical note on following (any two):
   a) Three dimensional meshing.
   b) Rayleigh method
   c) Shrink fit simulations

6. Two links, made up of aluminum and steel, are connected by a hinge joint and an axial load P = 900 N is applied at node 3 as shown in Figure 1. Determine the stresses developed in the two links using the finite element method.

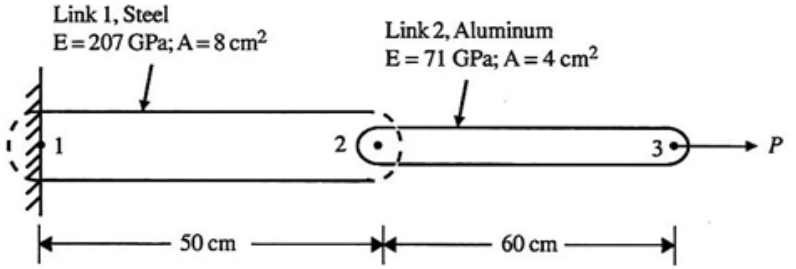

Figure 1

Two Links Subjected to an Axial Load.

7. a) Define Optimization. What do you mean by classical design for infinite life? Give suitable examples.
   b) What do you mean by Cost-cutting and Failure analysis? Discuss in brief.

8. Write short note on following: (any two)
   a) Design for warranty life
   b) Concurrent-collaborative design cycles.
   c) Floating and Fixed trias
   d) Node Numbering Scheme

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