

Code No: H1501/R13

M. Tech. II Semester Supplementary Examinations, May-2017

**OPTIMIZATION AND RELIABILITY**

(Common to MD, MED and CAD/CAM)

**Time: 3 Hours**

**Max. Marks: 60**

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*Answer any FIVE Questions  
All Questions Carry Equal Marks*

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1. Minimize  $3x_1^2 + 4x_2^2 + 5x_3^2$  such that  $x_1 + x_2 + x_3 = 10$  using Langrange multiplier method.
2. a What is the reason for possible divergence of Newton's method?  
b What are the types of classical optimization techniques?
3. How do you perform
  - a. crossover and
  - b. Mutation in GA? Explain with examples.
4. Write the typical optimization model for a machining problem. Discuss the objective functions and the constraints involved.
5. a Explain Pareto's analysis.  
b What is Non-dominated sorted GA? Explain.
6. Explain the optimization model of a weight of a cantilever beam
7. a Write the differences between GA and GP.  
b Explain Nelder Mead's Simplex method
8. a Discuss the procedural steps involved in Non-dominated sorted GA.  
b What are the objectives of GA,

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