

Code No: D7603

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH II - SEMESTER EXAMINATIONS, APRIL/MAY 2012
COMPUTATIONAL APPROACHES TO AEROSPACE VEHICLE DESIGN
(AEROSPACE ENGINEERING)**

Time: 3hours**Max. Marks: 60**

**Answer any five questions
All questions carry equal marks**

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1. Discuss the combined approaches-Hybrid Searches and Meta Heuristics.
2. Discuss the following uncertainty modeling techniques
 - a) Six-sigma method and
 - b) Welch-Sacks method.
3. Compare different types of sensitivity analysis techniques and discuss about case studies involving aerodynamic and aerostructural analyses.
4. Explain in detail the collaborative optimization using a flow-chart and discuss its computational aspects and theoretical properties.
5. Discuss variable metric and conjugate gradient methods for a multi-variable optimizer.
6. Discuss the issues involved in the analysis and design of coupled systems. Explain through a schematic diagram the blackboard-based multi-disciplinary optimization process work flow.
7. Discuss basic steps involved in stagewise unconstrained optimization of computationally expensive functions using global surrogates; also explain surrogate assisted optimization using global models.
8. Explain the basic building blocks from which an adaptive mesh control scheme can be assembled. Discuss mesh generation quality and adaptation.
