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Code No: A5203

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations, October/November-2011
PRODUCT DESIGN AND DEVELOPMENT STRATEGIES
(DESIGN FOR MANUFACTURING)

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

Answer any five questions
All questions carry equal marks

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1. a) List the factors that are important in developing a new technology oriented product.
   b) Describe the procedural steps in product life cycle. [12]

2. a) Describe various types of models used in product design.
   b) Write short notes on i) Constructive solid geometry ii) Boundary representation. [12]

3 In an aerospace application, total cost of a component can be expressed by

$$Ct = Cf + Cm.W + P.W$$

where Cf = Cost of fabrication (Rs)
Cm.W= Material cost(Rs)
W=Weight of the component (kg)
P= Penalty factor by which performance is jeopardized (Rs/Kg).
Discuss the various strategies available to minimize Ct. [12]

4. a) What are the chief advantages and disadvantages of plastic gears.
   b) Discuss how material structure and processing are utilized to improve product performance. [12]
5. a) Explain various types of manufacturing systems with examples.
   b) Explain the role of aesthetic and ergonomic aspects in product design. [12]

6. a) Describe form design of die casting.
   b) Explain design consideration for welded fabrications. [12]

7. a) Explain the role of process capability and tolerance in design and assembly.
   b) Describe various inspection systems used in automated production. [12]

8 Write short notes on [12]

i) Design for assembly(DFA)
ii) Design for manufacturing(DFM)

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