USN | | | | | | | | | | | **10MAR323**

Third Semester M.Tech. Degree Examination, December 2012
DFM Techniques and Product Design

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a. Briefly explain the general principles for manufacturability.   **(10 Marks)**
    b. Explain the role of allowance, process capability and tolerance in detailed design and assembly.   **(10 Marks)**

2   a. Explain the design features for machining external screw threads.   **(10 Marks)**
    b. Briefly explain design for heat treatment and economic debarring.   **(10 Marks)**

3   a. Define product design. Discuss the essential factors for product design. **(10 Marks)**
    b. Briefly explain with a flow diagram the morphology of design.   **(10 Marks)**

4   a. Explain the productibility requirements in the design of machine components. **(10 Marks)**
    b. Explain with sketches the factors to be taken into account while considering press worked components design.   **(10 Marks)**

5   a. Briefly explain the design for production of
        i) Powder metallurgical parts
        ii) Expanded metals and wireforms   **(15 Marks)**
    b. Write a short on optimization in design.   **(05 Marks)**

6   a. Briefly explain the SIDDALS classification of design approaches.   **(06 Marks)**
    b. Explain the geometric programming method in engineering design, using nonlinear optimization.   **(10 Marks)**
    c. Depict a graph between u and x indicating maxima, minima, saddle, point and inflexion.
                                                                                 (04 Marks)

7   a. Explain the engineering considerations in human being as application of forces. **(10 Marks)**
    b. Explain the design of displays and various types of displays in human engineering. **(10 Marks)**

8   a. What is value? Explain the importance of value.   **(06 Marks)**
    b. Define a descriptive equation for value dealing with many variables of different magnitudes.
                                                                                 (04 Marks)
    c. Describe the steps involved in the value analysis of job plan.   **(10 Marks)**

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