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10MAR323

Third Semester M.Tech. Degree Examination, December 2011
DFM Techniques and Product Design

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. What is meant by economical production? What are the general principles of designing for economical production? Explain. **(12 Marks)**

b. What are the general design rules? **(08 Marks)**

2 Mention any four considerations in the design of parts produced by :

a. Shaping
b. Planing
c. Rolled burnishing
d. Screw machining
e. Grinding. **(20 Marks)**

3 Discuss the design recommendations for producing parts, with following materials :

a. Plastics
b. Rubber
c. Ceramics
d. Glass. **(20 Marks)**

4 a. What is selective assembly? Explain with an example. **(10 Marks)**

b. Describe five tips for ease of fastening in assembly. **(10 Marks)**

5 a. Illustrate essential factors of product design. **(06 Marks)**

b. Explain the production –consumption cycle. **(04 Marks)**

c. With the help of flow chart, briefly explain the seven phases of morphology of design. **(10 Marks)**

6 a. Briefly explain the producibility requirements in the design of machine components. **(08 Marks)**

b. What are the factors to be considered in the design of components, which comply following production techniques?

i) Forging
ii) Casting
iii) Power metallurgy
iv) Wire forms. **(12 Marks)**

7 a. Define optimization in design. Explain Siddal's classification of design approaches. **(06 Marks)**

b. Explain the optimization by differential calculus method. **(04 Marks)**

c. Write a note on man–machine information exchange, with necessary sketches. **(10 Marks)**

8 Explain the following :

a. Historical perspective of value engineering
b. Nature and measurement of value
c. Information phase in value analysis program of a product design
d. Creativity phase. **(20 Marks)**

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