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10MA82

Eighth Semester B.E. Degree Examination, Jan./Feb. 2021
Product Design and Manufacture

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO full questions from each part.***

PART – A

1 a. What are the essential factors of product design? **(10 Marks)**
b. Explain the seven phases of design. **(10 Marks)**

2 a. How to integrate basic form elements? **(10 Marks)**
b. What are "Renard Series"? Explain the uses with an example. **(10 Marks)**

3 a. Explain the four common types of design strategies outlined by chow. **(10 Marks)**
b. How to analyze the stresses during the bending of curved beam? **(10 Marks)**

4 a. With a neat sketch, explain plastic bush bearings. **(10 Marks)**
b. Explain the design recommendations for rubber parts. **(10 Marks)**

PART – B

5 a. Explain "Lagrange Multipliers" role m design optimization. **(10 Marks)**
b. A strut is subjected to tensile force of p 20kN. The value of $\sigma_1 = 100N/mm^2$, If the material cost is Rs.30/kg and the metal cutting cost per surface is Rs.10/mm^2, calculate the section dimensions for cost minimization. The strut length is 800mm. Assume density of material P = 8000 kg/m^3. **(10 Marks)**

6 a. List and explain ten aspects of manufacturing operations that will lower the cost of product. **(10 Marks)**
b. Explain the methods of increasing profits. **(10 Marks)**

7 a. What is anthropometry? How to use man as occupant of space? **(10 Marks)**
b. With a neat sketch, explain assemblies work place layout. **(10 Marks)**

8 a. Explain the steps involved in value analysis of job plan. **(10 Marks)**
b. Explain six creative techniques. **(10 Marks)**

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