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10MA82

Eighth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Product Design and Manufacture

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.**PART - A**

- 1 a. List and explain the factors to be considered in product design. (10 Marks)
b. Explain the importance of allowance process capability and tolerance in design and assembly. (10 Marks)
- 2 a. List and explain different product strategies. (10 Marks)
b. List and explain the basic design considerations. (10 Marks)
- 3 a. Explain the importance of balanced design with suitable examples. (10 Marks)
b. List and explain casting design principles. (10 Marks)
- 4 a. List and explain the design and production aspects for rubber parts. (10 Marks)
b. Explain the different problems which may arise during manufacturing process of ceramic parts. (10 Marks)

PART - B

- 5 a. Explain Siddal's classification of design approaches. (10 Marks)
b. Two products x_1 and x_2 are to be produced each yielding a profit of Rs 5 per piece and Rs 3 per piece. The two products are processed in two machine having time as a scarce resource. Time per piece

	X_1	X_2	Hours
Machine 1	1	2	8
Machine 2	3	1	7

Determine the optimum values of x_1 and x_2 . Formulate this problem as a linear programming problem, assuming that the imaginary products x_3 and x_4 yield loss of Rs – 1 per piece and Rs 1 per piece respectively. Product x_3 requires to be processed exclusively on machine M_1 , whereas product x_4 requires to be processed exclusively on machine M_2 . Each of the imaginary products x_3 and x_4 takes 1 hour on machine 1 and 2 respectively.

(10 Marks)

- 6 a. List and explain the aspects of manufacturing operations that will lower the cost of products if they are considered at design stage. (10 Marks)
b. Explain Samuel Eilen Model for new product design. (10 Marks)
- 7 a. What is the importance of controls in a products? List and explain different controls. (10 Marks)
b. Explain Man / Machine information exchange. (10 Marks)
- 8 a. List and explain different creative techniques. (10 Marks)
b. List and explain benefits of value engineering. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.