

CBCS SCHEME

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15ME744

Seventh Semester B.E. Degree Examination, July/August 2021 Design for Manufacturing

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

1.
 - a. Define design process, show the block diagram. (08 Marks)
 - b. Explain with sketch of factors that should be considered in component design. (04 Marks)
 - c. Briefly explain with sketch of factor that should be considered in anticipating the behaviour of material in the component. (04 Marks)

2.
 - a. Explain the following briefly: (i) Cost per unit property (ii) Weighted property index (08 Marks)
 - b. Explain the following: (i) Mean (\bar{X}) (ii) Median (iii) Range (R) (iv) Variance (σ^2) (08 Marks)

3.
 - a. Discuss the concept of interchangeability. (08 Marks)
 - b. Briefly explain benefits of Geometric Dimensioning and Tolerancing (GD & T). (04 Marks)
 - c. List out types of tolerances and show the symbols of toleranced characteristics. (04 Marks)

4.
 - a. Explain the following:
 - (i) Virtual size
 - (ii) Maximum Material Condition (MMC)
 - (iii) Low Material Condition (LMC)
 - b. Differentiate between true positional tolerance system and coordinate system. (07 Marks)

5.
 - a. Discuss briefly with respect to datum feature. (04 Marks)
 - b. Explain briefly datum for manufacture. (04 Marks)
 - c. For the component shown in Fig.Q5(c). Identify the functional and manufacturing datum and suggest suitable manufacturing dimensions.

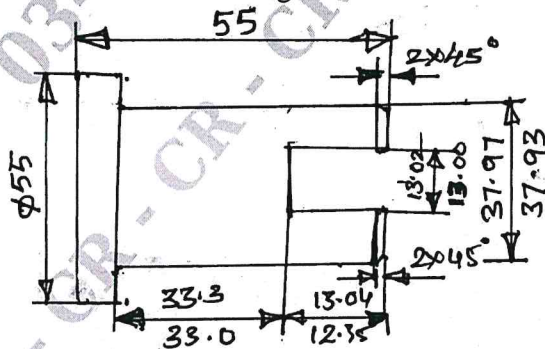
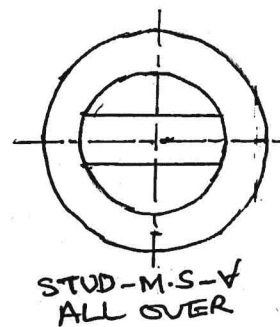


Fig.Q5(c)



(08 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.

- 6 a. Explain briefly Dowels and Dowelling procedure with a suitable sketch/example. (08 Marks)
b. List out guidelines for design for assembly and explain briefly (minimum 3). (08 Marks)
- 7 a. Discuss pattern. Explain with sketch of cast iron pulley. (06 Marks)
b. Explain with sketch cast holes and cored holes. With suitable sketch of cast iron bush. (06 Marks)
c. Discuss machined holes. (04 Marks)
- 8 a. With suitable example, explain how amalgamation helps in reducing machining. (08 Marks)
b. Explain simplification by separation with example of housing bush. (08 Marks)
- 9 a. Define powder metallurgy process. Explain rules for design of powder metallurgy components. (08 Marks)
b. Discuss closed die forging and explain the guidelines to be followed while designing component. (08 Marks)
- 10 a. Define injection molding and discuss the rules for design of injection molded components. (08 Marks)
b. Explain the following with suitable sketch:
(i) Bosses
(ii) Thickness transition
(iii) Ribs
(iv) Draft angle. (08 Marks)
