

# CBCS SCHEME

15ME744

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Seventh Semester B.E. Degree Examination, July/August 2022

## Design for Manufacturing

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- a. With the help of block diagram, explain the major design phases. (08 Marks)  
b. What are the factors that should be considered in anticipating the behavior of material in the component design? (08 Marks)

OR

- a. Explain the relationship between attainable tolerance grades and different machining processes. (08 Marks)  
b. Explain how process capability helps to measure whether the process under study meets the requirements or not. (08 Marks)

### Module-2

- a. Explain the term selective assembly. (08 Marks)  
b. Discuss the concept of interchangeability. (08 Marks)

OR

- a. Mention the importance of tolerance. Explain unilateral tolerance and bilateral tolerance. (08 Marks)  
b. Define true position tolerance, virtual size concept, projected tolerance zone and hence explain the concept of zero true position tolerance. (08 Marks)

### Module-3

- a. Explain how functional datum is useful in manufacturing with examples. (08 Marks)  
b. Explain how amalgamation helps in reduction of machining areas. (08 Marks)

OR

- Illustrate the various design considerations for thread cutting (external), drilling, milling and tapping operations. (16 Marks)

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### Module-4

- a. What are the principles of casting design that must be observed to obtain sound castings? (08 Marks)  
b. Discuss the main considerations in the design of weldments (any three). (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.

OR

- 8 a. Explain with sketches, the different possible parting line for casting a hollow bush. What is most suitable parting line for bush? (08 Marks)
- b. Explain the influence of fabrication properties on design in the below mentioned processes :  
(i) Castability (ii) Weldability. (08 Marks)

**Module-5**

- 9 a. Explain the design rules that must be considered to make parts by powder metallurgy process. (08 Marks)
- b. What are the design requirements and rules for the design of components for forging. (08 Marks)

OR

- 10 a. Discuss number of features that the powder metallurgy processes have that are not found in other metal working processes. (08 Marks)
- b. What are design guidelines for designing injection moulding components? (08 Marks)

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