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Question Paper Code: BCCB05



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech I Semester End Examinations (Regular) - January, 2019

Regulation: IARE-R18

## DESIGN FOR MANUFACTURING AND ASSEMBLY

Time: 3 Hours

(CAD/CAM)

Max Marks: 70

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Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

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### UNIT – I

1. (a) Explain the various steps involved in systematic design process of a product with suitable example. [7M]  
(b) Discuss various design guidelines for selection of materials with suitable examples [7M]
2. (a) What is manufacturability? Discuss general rules for Manufacturability. [7M]  
(b) What are process selection charts? Explain uses of process selection charts. [7M]

### UNIT – II

3. (a) Discuss the general design recommendations for machined parts. [7M]  
(b) Explain the appraisal of various casting processes. [7M]
4. (a) Describe the need of pre welding and post welding operation and its impact on the performance of welded component. [7M]  
(b) What are the differences between punching and blanking? Explain with neat sketches. [7M]

### UNIT – III

5. (a) Explain keeler Goodman forming line diagram. [7M]  
(b) Explain the design recommendations of the following [7M]  
i) Design for closed die forging                      ii) drop forging die
6. (a) How assembly methods are classified ? Explain. [7M]  
(b) Explain the criterion for choice of assembly method. [7M]

#### UNIT – IV

7. (a) How assembly methods are classified ? Explain. [7M]  
(b) What are the applications of brake caliper and what is the use of brake caliper? Explain the criterion for choice of assembly method. [7M]
8. (a) Explain the assembly and exploded parts of Footstep bearing with 3D sketches. [7M]  
(b) Explain in detail indexing mechanism in automated part transfer. [7M]

#### UNIT – V

9. (a) Explain about manual assembly data base and design data sheets. What is importance of design data sheets for increasing the quality of DFMA? [7M]  
(b) Explain the process of avoiding jamming during assembly [7M]
10. (a) What is effect of part symmetry, part thickness and size on handling time? Explain with suitable examples. [7M]  
(b) What is the effect of chamfer design on handling time. [7M]

