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Question Paper Code: BCC201



**INSTITUTE OF AERONAUTICAL ENGINEERING**  
(Autonomous)

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

Regulation: IARE-R16

**PRECISION ENGINEERING**

(CAD/CAM)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

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

**UNIT – I**

1. (a) A steel shaft is made within limits on its diameter of 60.02mm and 59.96mm. State the upper and lower limits of the bore size of a bush to give a maximum clearance of 0.10mm and minimum clearance of 0.02mm. [7M]
- (b) Define the following [7M]
  - i. Clearance fit.
  - ii. Tolerance.
  - iii. Basic fit.
2. (a) Discuss different errors produced due to numerical interpolation displacement measuring system. [7M]
- (b) With neat sketch explain the construction of main spindle for machine tool. [7M]

**UNIT – II**

3. (a) Give a brief classification of datum system? Explain two and three mutually perpendicular grouped datum planes. [7M]
- (b) Discuss the steps involved in computation of rotational accuracy. [7M]
4. (a) With the help of a neat sketch explain grouped data system with spigot and recess. [7M]
- (b) Define the following terms [7M]
  - i. Datum triangle.
  - ii. Datum letter
  - iii. Datum feature

**UNIT – III**

5. (a) Discuss the relation between tolerance grades and machining process. [7M]
- (b) Briefly discuss cumulative effect of tolerance. [7M]
6. (a) With suitable example explain geometric tolerance frame. [7M]
- (b) Write short notes on [7M]
  - i. Surface finish
  - ii. Process capability

#### UNIT – IV

7. (a) Discuss the tolerance chart for manufacturing shaft and hole type component. [7M]  
(b) Explain manufacturing consideration in component design [7M]
8. (a) Write short notes on the following [7M]  
i. Tolerance work sheet  
ii. Datum features.
- (b) Briefly explain design features to facilitate machining. [7M]

#### UNIT – V

9. (a) Explain the working of Michelson interferometer. [7M]  
(b) What is CMM. Explain the working of coordinate measuring machine with a neat sketch. [7M]
10. (a) List out different types of optical and mechanical measuring system. [7M]  
(b) Discuss the application of laser optical measuring system [7M]