

Hall Ticket No

--	--	--	--	--	--	--	--	--	--

Question Paper Code: BCC201



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

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

- (a) Define the following i) Clearance fit ii) Tolerance iii) Basic fit [7M]

(b) 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]
- (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

- (a) Discuss the steps involved in computational of rotational accuracy. [7M]

(b) Give a brief classification of datum system ? Explain two and three mutually perpendicular grouped datum planes [7M]
- (a) With neat sketch explain grouped datum system with spigot and recess. [7M]

(b) Write short notes on geometric analysis of spigot and recess pair. [7M]

### UNIT – III

- (a) Discuss the relation between tolerance grades and different machining process. [7M]

(b) Briefly discuss cumulative effect of tolerances sure fit law. Explain in detail about feature tolerances. [7M]
- (a) With suitable example explain geometric tolerance frame. [7M]

(b) Write short notes on surface finish and process capability. [7M]

#### UNIT – IV

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

#### UNIT – V

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