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Question Paper Code: BCC201



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech I Semester End Examinations (Regular) - January, 2018

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) What are the main factors relevant to the accuracy of N.C machining. [7M]
(b) Describe about errors due to numerical interpolation [7M]
2. (a) Explain about errors due to velocity lags. [7M]
(b) Define [7M]
 - i. Datum features
 - ii. Datum features of size
 - iii. Datums

UNIT – II

3. (a) Explain about function, geometric analysis and location accuracy of grouped datum systems. [7M]
(b) Discuss about three-plane datum system. [7M]
4. (a) Explain about primary, secondary and tertiary datum planes. [7M]
(b) Explain geometric analysis and write its applications. [7M]

UNIT – III

5. (a) Explain : [7M]
 - i. Mean
 - ii. Variance
 - iii. Skewness
 - iv. Feature tolerance
- (b) Discuss the relation between tolerance grades and machining process. [7M]

6. (a) In the measurement of surface roughness heights of 20 successive peaks and valleys measured from a datum are as follows [7M]
 45,25,40,25,35,16,40,22,25,34,25,40,20,36,28,18,20,25,30,38
 If these measurements were made over a length of 20 mm, determine the C.L.A and R.M.S values of the surface.
- (b) What is meant by geometrical tolerance? And specify any three characteristics and its tolerance symbols of single features. [7M]

UNIT – IV

7. (a) What is the information given in a tolerance chart? [7M]
 (b) Discuss about tolerance chart. [7M]
8. (a) In a hole and shaft assembly of 30 mm nominal size, the tolerance for hole and shaft are specified below. [7M]
 Hole: $30_{+0.00}^{+0.02}mm$ shaft: $30_{-0.07}^{-0.04}mm$
 Determine
 i. Hole tolerance and shaft tolerance
 ii. Maximum metal limit or condition for hole and shaft
 iii. Allowance
 iv. Type of fit
- (b) What is meant by datum feature? How single and two datum features are indicated on drawing? [7M]

UNIT – V

9. (a) Describe with help of neat sketches the principle and construction of an auto-collimator. [7M]
 (b) Explain in process measurement of position of processing on machine measurement of dimensional feature. [7M]
10. (a) What is meant by an optical measuring system? Explain. [7M]
 (b) With the help of neat sketch explain the construction and working principle of a profile projector. [7M]