UE209071

Exam.Code:0941
Sub. Code: 6724

2122
B.E. (Mechanical Engineering)
Fifth Semester
MEC-504: Mechanical Measurement

Time allowed: 3 Hours | Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit. Use of probability tables is permitted.*

x-x-x

I. Attempt the following:-

a) What is the significance of gauge factor in strain gauges?

b) Differentiate between repeatability and reproducibility.

c) What is precision index?

d) What are applications of Magnetic Levitation systems?

e) Mention various types of errors encountered in a Bourdon pressure gauge. (5x2)

UNIT - I

II. a) Mean weight of 1000 bearings is 500grams. Standard deviation is 50. How many bearings are expected to weigh between 400grams and 575grams?

b) How do strain gauges measure bending and torsion strain? Give complete mathematical expressions. (5,5)

III. a) How is the effect of temperature, compensated while measuring strain in gauges?

b) Differentiate between thermal conductivity and ionization gauge. (5,5)

IV. a) A first order instrument with time constant 0.25 seconds, has been subjected to a sinusoidal input as 0.25sin20t. Find expression for output.

b) What is test data? Discuss the Gaussian distribution curve. (5,5)

UNIT - II

V. a) How is stroboscope used in measuring speed? Mention any 2 characteristics essential in choosing a dynamometer.

b) Explain construction and working of a vibration reed tachometer with diagrams. (5,5)

P.T.O.

VI. a) What is the significance of ice point and steam point?

b) Discuss significance and necessity of flow visualization techniques with examples. (5,5)

VII. Write short notes on any two of the following: -

a) Scanning Probe Microscopy

b) Seebeck effect in thermocouples

c) Remedies to minimize human errors (5,5)

x-x-x