

Exam.Code:0941

Sub. Code: 7055

1078

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. 1 which is compulsory and selecting two questions from each Unit.

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) How is anemometer used for flow measurements?
- d) Discuss linearity and hysteresis with figures.
- e) Mention various types of errors encountered in a Bourdon pressure gauge. (5x2)

UNIT – I

- II. a) Explain the two methods to detect strain/change in resistance in a Wheatstone bridge.
- b) How do strain gauges measure bending and torsion strain? Give complete mathematical expressions. (5,5)
- III. a) What is the purpose of signal conditioning in any electro-mechanical measurement system?
- b) Differentiate between thermal conductivity and ionization gauge. (5,5)
- IV. a) How-are capacitive pickup, transducers different from resistance and inductance based transducers?
- 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 the construction and working of McLeod gauge. (5,5)

P.T.O.

Sub. Code: 7055

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- 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) Uses of dead weight pressure gauge tester
b) Systematic and random errors
c) Remedies to minimize human errors (5,5)

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