

Exam.Code:0941
Sub. Code: 7055

1128
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) Differentiate between null type and deflection type instruments.
 - b) A liquid in glass thermometer is seen to dip by few degrees before rising when thrust into a hot fluid. Explain the cause of this effect.
 - c) Distinguish between steady state response and transient response.
 - d) Briefly describe the immersion effect in thermometers.
 - e) Briefly explain the principle of magnetic levitation for water conveyors. (5x2)

UNIT – I

- II. a) Describe the functional elements of generalized measurement system.
b) What are various sources of errors in measurements? Explain giving suitable examples. (5,5)
- III. a) Derive an expression for time response of first order system when subjected to unit ramp input.
b) Explain the terms dead time, dead zone, dynamic error, measuring lag with the help of neat sketch. (5,5)
- IV. a) On which principle photoelectric transducers work? Describe photo emissive cell and photo conductive cell with the help of neat sketches.
b) Write applications of strain gauges for direct, bending and torsional loads. (6,4)

UNIT – II

- V. a) Describe hydrogen bubble technique used for flow visualization.
b) Explain with a neat sketch the constructional features & working principle of ionization gauge.
c) List various flow meters and explain the working of Electromagnetic flow meter. (2,4,4)

P.T.O.

(2)

- VI. a) How a resistance thermometer is used to measure temperature? Write its advantages and limitations over thermocouples?
- b) Describe with sketches the principle of working of a stroboscope used for speed measurement. (5,5)
- VII. a) Describe working of proving ring with the help of neat sketch.
- b) Describe working principle of Micro-Motion-Positioning Systems taking suitable example. (5,5)

x-x-x