[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2125)

15230

B. Tech 6th Semester Examination

Measurement and Control (OS)

ME-6004

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E.

SECTION - A

1. Explain first and second order systems and derive the expressions for their response to step and ramp input signals. (20)

2. Classify instruments and measurement system. Also explain the various functional elements of measurement system with neat sketch. (20)

SECTION - B

3. Explain resistance strain gauges with schematic diagram. Also explain the application of strain gauges for direct, bending and torsional loads measurement. (20)

4. Explain various type of transducers. How can we use variable resistance transducer in displacement measurement? (20)

SECTION - C

5. Explain bourdon tube gauge and state the advantages of bourdon tube, diaphragm and bellows gauges. (20)

6. Explain ultrasonic flow meters, electromagnetic flux meters and hot wire anemometer. Also explain their merits and demerits. (20)

SECTION - D

7. Define transfer function and derive the equation for overall transfer function of a multi loop control system. Also differentiate between open and close system. (20)

8. Explain Routh and Harwith criteria of stability. What is Mason's rule for system stability? Explain Nyquist plot for stability study. (20)

SECTION - E

9. (i) Differentiate between accuracy and precision.

   (ii) Explain gauge factor.

   (iii) Explain zero order system.

   (iv) What is mechanical techometer?

   (v) Explain dead weight gauge tester.

   (vi) What are the advantages of thermistors?

   (vii) Explain bimetallic thermometers.

   (viii) Explain servo mechanism process control and regulator. (8×2½=20)