14697

B. Tech 6th Semester Examination

Measurement and Control

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 :   Attempt five questions in all, selecting one question each from sections A, B, C, D. Section E is compulsory.

SECTION - A

1.   How does error differs from uncertainty. Differentiate between Random and systematic error. How can statistical analysis is used to estimate experimental uncertainity.   (20)

2.   What is the difference between bonded and unbonded gauges. Write down the applications of strain gauges for direct bending and torsional loads.   (20)

SECTION - B

3.   Explain following types of Temperature measurement devices with diagram Bimetallic thermometers, liquid in glass thermometer, thermistor and radiation pyrometer.   (20)

4.   Draw a block diagram and explain overall transfer function of multi loop control system. Explain Routh an Harwitz criteria of stability.   (20)

SECTION - C

5.   Explain the working of Mcleod Gauge.   (20)

6. What do you mean by flow visualization technique. Explain electromagnetic flux meters, ultra sonic flow meters and hot wire anemometer.   (20)

SECTION - E

7. Differentiate between open and closed loop system and explain servo mechanism process control and regulator.   (20)

8. Explain the concept of system stability. Mention the different methods available to check the stability of a given system.
                                                            (20)

SECTION - E

9. (i)   Define mechanical tachometer.

    (ii)   What is stroboscope?

    (iii) What do you mean by time and frequency domain Nyquist plot for stability study?

    (iv)   What do you mean by speed of response?

    (v)   Define zero order system.

    (vi)   How can one eliminate systematic errors?

    (vii) Define gauge factor?

    (viii) What do you mean by working standards?   (2.5×8=20)