

**B.E. 6th Semester (Mech. Engg.) Examination,
December-2011**

MEASUREMENTS AND INSTRUMENTATION

Paper - ME-310 E

Time allowed : 3 hours]

[Maximum marks :100

Note : Attempt any five questions. All questions carry equal marks.

1. (a) What are the basic blocks of a generalized measurement system? Draw them and explain their functions. 10
- (b) Describe the merits of electronic instruments over mechanical and electrical instruments. 10
2. Derive the equations for time response of a first order system subjected to ramp input. Draw the response curve and find steady state error. Give some example. 20
3. List the different means normally used for torque measurement. Describe the procedure you would like to follow to mount four strain gauges on a mild steel circular shaft for torque measurement. 20

4. What is hot wire anemometer? Describe its construction and principle of working. 20
5. Describe the series and parallel connections of thermocouples and explain under what situations they should be used? 20
6. (a) Explain with example, the method of rejection of test data based upon confidence intervals. 10
(b) Prove that the algebraic sum of the deviations of a set of observations from their arithmetic mean is zero. 10
7. What do you mean by resistance strain gauge? Give a detailed discussion on the subject covering the basic principle, binding materials and method of application. 20
8. Explain
 - (i) D-A Converters and
 - (ii) Galvanometric Recorders. 20