

Code No: C8906

R09

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMISTER EXAMINATIONS, APRIL/MAY-2012
INSTRUMENTATION & CONTROL SYSTEMS
(ENGINEERING DESIGN)**

Time: 3 hours

Max.Marks:60

**Answer any Five questions
All questions carry equal marks**

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1. What are the different sources of errors found in measuring instruments? Suggest suitable methods to minimize errors.
2. a) Explain in detail all the static performance characteristics of measuring instruments.
b) What is transfer function? Explain its significance.
3. With the help of suitable diagrams explain the construction and working of LVDT. Discuss the concept of linearity.
4. Define gauge factor of a strain gauge. Derive an equation for the same.
5. Discuss about various viscosity measuring techniques. Give their relative characteristics.
6. List out various optical sensors. With the help of suitable diagrams explain their working.
7. Discuss about process control instrumentation used in food processing industries.
8. a) Explain phase margin and gain margin.
b) Sketch the entire Nyquist diagram and analyze the stability of the closed loop system whose loop transfer function is given as
 $GH(S) = \{(10)/(S^2(S+2))\}$
