

R07

Code: R7221006

B.Tech II Year II Semester (R07) Supplementary Examinations, April/May 2013

SENSORS & SIGNAL CONDITIONING

(Electronics & Instrumentation Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) Explain the static characteristics of measurement system.
(b) List the various methods of correction of measurement system.
2. (a) What are RTD's and on what basic principle do they work. Explain their construction.
(b) The resistance of a platinum resistance thermometer element at 20°C is required to be $75\ \Omega$. Determine the length of wire needed if the diameter of the wire is $0.35\ \text{mm}$. Assuming that temperature coefficient of resistance of the wire is constant; calculate the element resistances at 0°C and 100°C . Assume missing data.
3. Derive the expression for current in the meter connected across the output terminals of a Wheatstone bridge when slightly unbalanced.
4. Explain the basic principle of operation of a LVDT. Also discuss the performance characteristics of a LVDT.
5. (a) Explain the working of Maxwell's bridge and derive equation for the balanced condition.
(b) Discuss about variable oscillators and explain any one of them in detail.
6. (a) What are photo-voltaic cells and discuss any one of them.
(b) Give the applications of self generating sensors.
7. (a) Explain the effect of noise in amplifiers.
(b) Explain the operation and construction of the charge amplifiers.
8. (a) What is an encoder? Explain in detail the working of position encoders.
(b) Explain the operation of a charge coupled sensor. Also list its applications.
