Assignment No.1

UNIT -1 Transducers-I

Q.1 Define of the following
      (i) Transducer.
      (ii) Inverse transducer.
      (iii) Error.
      (iv) Input characteristics of transducer.

Q.2 Differentiate between the following transducers with suitable examples-
      (i) Transducer and inverse transducer.
      (ii) Active and passive transducer.
      (iii) Primary and secondary transducer.
      (iv) Analog and digital transducer.

Q.3 Explain working principle of thermistors with suitable diagram.

Q.4 Describe construction and working principle of LVDT with suitable diagram.

Q.5 Describe the constructional details of a resistance potentiometers and drive the expression for its output voltage when connected across a meter of infinite impedance.

Q.6 Explain working principle of resistance strain gauge with suitable diagram. Also obtain gauge factor equation.

Q.7 The output of an LVDT is connected to 5 V voltmeter through an amplifier whose amplification factor is 250. an output of 3 mV appears across the terminals of LVDT when the core moves through a distance of 0.5mm . Calculate the sensitivity of the LVDT and that of the whole set up . The milli-voltmeter scale has 100 divisions. the scale can be red to 115 of a division . Calculate the resolution of the instrument in mm.

Q.8 A platinum thermometer has a resistance of 100 ohm at 25^0C .
      (a) Find its resistance at 65^0C if the platinum has a resistance temperature co-efficient of $0.00392 / {}^0C$.
      (b) If the thermometer has a resistance of 150 ohm, calculate the temperature.

Q.9 A compressive force is applied to a structural member. The strain is 5 micro-strain. Two separate strain are attached to the structural member, one is a nickel wire strain gauge having a gauge factor of – 12.1 and the other is nichrome wire strain gauge having a gauge factor of 2. Calculate the value of resistance of the gauges after they are strained. The resistance of strain gauges before strained is 120 ohm.

Q.10 Describe the construction, theory and working of thermocouples.