(REVISED COURSE)

(3 Hours)   [Total Marks 100

N.B. :— (1) Question No. 1 is **compulsory**.
       (2) Solve any **four** questions out of remaining **six** questions.
       (3) Assume suitable data, if **necessary.**

1. (a) Classify transducers with suitable examples.   8
     (b) Compare Accuracy and precision.   4
     (c) A meter reads 127.50 V and the true value of the voltage is 127.43 V. Determine— 4
        (i) the static error and
        (ii) the static correction for the instrument.
     (d) Explain the elements of the measurement system.   4

2. (a) Explain construction and working principle of LVDT with characteristics.   10
     (b) A platinum thermometer has a resistance of 110Ω at 20°C.   10
        (i) Find it's resistance at 55°C, if the platinum has a resistance temperature
            coefficient of 0.0039/°C.
       (ii) If the thermometer has a resistance of 100Ω, calculate the temperature.
      (iii) The resistance of RTD is measured with ohm meter has range 0.200Ω '1000'
           equal divisions. Calculate sensitivity and resolution.

3. (a) List different level measurement techniques. Explain any one of them.   10
     (b) Explain international practical temperature scale (IPTS).   10

4. (a) Explain the following :—   10
        (i) Seebeck effect
        (ii) Peltier effect
      (iii) Thomson effect.
     (b) A linear resistance potentiometer is 5 cm long and having a resistance of 10 KΩ. 10
        Under normal conditions, the slider is at the centre of the potentiometer. What will
        be the displacement, when the resistance, of the potentiometer as measured by
        the bridge circuit is—
        (i) 3.8 KΩ and 8.3 kΩ
       (ii) Comment on the direction of motion of slider.

5. (a) Explain with suitable diagram lead compensation in RTD.   10
     (b) Explain angular displacement using capacitive transducer.   10

6. (a) Compare RTD, Thermistor and Thermocouple.   10
     (b) Explain different types of errors in measurements with their minimization. 10

7. (a) What is metrology ? Explain types of Gauges.   10
     (b) Write a short notes on :   10
        (i) Calibration
       (ii) RVDT.