313331

12425
3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

Marks

1. Attempt any FIVE of the following : **10**

(a) Define Transducer and give its any two example.

(b) Draw the pin diagram of IC741.

(c) State the difference between mechanical sensors and electromechanical sensors (any two points).

(d) Write the material used for following sensors :

(i) Thermistor

(ii) RTD

(e) State the examples of MEMS devices (any two).

(f) State the working principle of Hall Effect Sensors.

(g) Define :

(i) Range

(ii) Resolution

2. Attempt any THREE of the following : **12**

(a) Draw the basic block diagram of the measurement system and give the importance of signal conditioning circuit.

(b) Classify sensors and give any one example of each.

(c) Explain the working of C-shaped bourdon tube with neat labelled diagram.

(d) Describe any one semiconductor sensor with respect to material used and range of measurement of parameter.

3. Attempt any THREE of the following : **12**

(a) Explain the working of rotameter with neat labelled diagram.

(b) Describe the working of inverting amplifier with neat circuit diagram.

(c) Explain the working principle of the Ultrasonic sensor and give its example.

(d) Give the two advantages and two disadvantages of MEMS sensors.

4. Attempt any THREE of the following : **12**

(a) Compare sensors and actuator with respect to function, position in measurement system, type of output and examples.

(b) Explain the working principle of strain gauge sensor with a neat diagram.

(c) Describe the working of non-inverting amplifier with neat circuit diagram.

(d) Explain the different types of Orifice plate with neat diagram.

(e) Compare IR radiation sensors with Ultrasonic sensors with respect to working principle and examples.

5. Attempt any TWO of the following : **12**

(a) Describe the selection criteria of choosing a sensor for any of the application. (any six)

(b) Suggest any MEMS sensor for speed measurement and explain its working.

(c) Explain the internal block diagram of IC 555 with neat diagram and list its two application.

6. Attempt any TWO of the following : **12**

(a) Explain the working of Comparator using Op-Amp with neat circuit diagram and draw its waveform.

(b) Explain the construction and working of LVDT with a neat diagram. Also give any two applications.

(c) Describe the working of colour sensors with a neat diagram and give its two advantages and two disadvantages.
