

between  $30^{\circ}\text{C}$  and  $100^{\circ}\text{C}$ .

### SECTION A

- Q1:- Attempt any **four** of the following :-
1. What is use of dummy gauge? Explain that how they effect the output of a strain gauge bridge. A Strain gauge has a resistance of 120 ohm unstrained and the gauge factor is 2. Why springs are used in measuring instruments?
  2. Why shunt resistance are used in an ammeter? How much its value should be?
  3. If a voltmeter uses a meter with  $I_{Fs} = 2 \text{ mA}$ . Obtain its sensitivity.
  4. In how many ways transducers can be classified?

### SECTION E

- Q5:- Attempt any **two** of the following :-
1. List the advantages and disadvantages of piezoelectric transducers? Also discuss their sensitivity and range of measurement.
  2. Write in brief on display system. What are Numeric and Alpha number display using LED and LED?

### SECTION F

- Q2:- Attempt any **two** of the following :-
1. Differentiate between advantages and disadvantages of a moving-iron instrument.
  2. Draw the block diagram of digital frequency meter. Explain its principle of operation.
  3. (i) Dual-slope integrating method used in A/D converter and Difference between (ii) Electronic analog ohmmeter and multimeter.  
(i) Reproductivity and Drift  
(ii) Dead Zone and Hysteresis

### SECTION C

- Q3:- Attempt any **two** of the following :
1. Draw neat sketches showing position of electric resistance strain gauges, the bridge connection for max, output and full temperature compensation. What are the gauge factor and circuit sensitivity?
  2. Explain the working of Ohmmeter. Why shunts are used in series ohmmeter?
  3. Compare and contrast the performance of successive approximation type ADC with that of counter type ADC.

### SECTION D

- Q4:- Attempt any **two** of the following :
1. Name four types of electrical pressure transducers and describe one application of each type.
  2. For high temperature measurement, which technique is preferred and in what range? The resistance of a thermometer is 800 ohm at  $50^{\circ}\text{C}$  and 4k ohm at the ice point. Calculate the characteristics constant (a,b) for the thermister and variation in resistance