

College of Engineering, Pune
(Class)- S.Y.B.Tech. (Branch)- Electrical
(EE-206)- (Electrical Measurement and Instrumentation)

Date- 07/05/2012

Academic Year: 2011-2012

Timing: 3 hrs.

Max. Marks: 50

Instructions:

1. All questions are compulsory.
3. Figures to the right indicate full marks.
4. Assume suitable data wherever necessary.

Q.1 A: The inductance of a moving iron ammeter with a full scale deflection of 90 degree at 1.5 A. current is given by $180 + 40\theta - 4\theta^2 - \theta^3 \mu\text{H}$. where θ is deflection in radians from the zero position. Calculate (i) spring constant (ii) the angular deflection of the pointer for a current of 1 A. ----- (5)

Q.1 B: What is Thermistor? Describe with the help of neat sketches the various forms of construction. Give various applications of Thermistor. ----- (5)

[OR]

Q.1 B: Give construction and working of a thermocouple. Also give merits and demerits of a thermocouple. ----- (5)

Q2 A: A 10 A. electro-dynamometer is controlled by a spring having a torsion constant of $0.1 \times 10^{-6} \text{ Nm/degree}$. The full scale deflection is 110 degree. Determine the inductance of the instrument when measuring a current of 10 A. The mutual inductance at 0 degree deflection is $2 \mu\text{H}$ and change in mutual inductance is linear as the deflection. ----- (5)

Q.2 B: Describe with suitable sketches various schemes for measurement of pressure. Give applications of each scheme. ----- (5)

[OR]

Q.2 B: Write short notes on (i) photoelectric pick-up (ii) Magnetic pick-up. ----- (5)

Q.3 A: Define Gauge factor of a strain gauge and obtain its expression. Write applications of strain gauge. ----- (5)

Q.3 B: Define and give two examples of following transducers.

(i) Active transducers (ii) Passive transducers (iii) analog transducers
(iv) digital transducers (v) secondary transducers ----- (5)

[OR]

Q.3 B: Why selection of transducers is important? Give the factors to be considered in determining a transducer suitable for a specific application. ----- (5)

Q.4 A: Describe an inductive transducer with neat sketch for the measurement of linear displacement. ----- (5)

Q.4 B: What is Hall Effect? Describe the working principle, construction and applications of Hall effect transducers. ----- (5)

Q.5 A: What are various types of displays? Explain with neat sketch light emitting diode with seven segment display driver. ----- (5)

Q.5 B: Explain with neat sketch a digital instrument for measurement of frequency of any periodic waveform. -----

Best of Luck