POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2024
Programme: BE | Full Marks:100
Course: Instrumentation | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Assume suitable data if necessary.

Attempt all the questions.

1.	a)	Mention role of the various equipment used in the block diagram of instrumentation system. Along with that demonstrate block diagram with any one instrumentation system.	7
	b)	Explain in detail about Hay's bridge and mention its application.	8
2.	a)	Which bridge circuit will you prefer for the measurement of small unknown resistance of a resistor? Explain with the help of circuit diagram.	7 8
	b)	An ac bridge has in arm AB a pure capacitance of 0.2μF; in arm BC, a pure resistance of 500Ω; in arm CD, a series combination of R=50Ω and L=0.1H. Arm DA consists of a capacitor C=0.4μF in series with variable resistor R_s. If the bridge is balanced at 1kHz, find the value of R_s to obtain bridge balance	
3.	a)	Explain the principle of operation of LVDT. List out its area of applications.	8
	b)	Define piezoelectric effect. Derive the expression for output voltage in a piezoelectric transducer when stress is applied.	7
4.	a)	Explain about strain gauge and show relation between Poission's ratio and G_f.	8
	b)	Explain the working principle of instrumentation amplifier.	7
5.	a)	What digital output you will find of 9.27 volts input from 5-bit SA ADC with reference voltage of 15V.	8
	b)	Define data transmission. Why is it necessary in measurement system? Explain the different modes of data transmission.	7
6.	a)	Explain the principle of operation of X-Y recorder. List out its area of application.	7
	b)	Briefly explain about the digital data acquisition system.	8

7. Write short notes on: (**Any two**) 2×5

a) Op-amp as a inverter

b) Static performance characteristics of measurement system

c) Strip-chart recorder