Question Paper Code: R18A41ME02

R18

ANURAG Engineering College

(An Autonomous Institution)

IV B. Tech I Semester Regular/ Supplementary Examinations, Dec-2024

INSTRUMENTATION & CONTROL SYSTEMS

(MECHANICAL ENGINEERING)

Time: 3 Hours **Max. Marks: 75**

Section – A (Short Answer type questions) (25 Marks)

Answer All Questions		Course Outcome	B.T Level	Marks
1.	List the different sources of errors.	CO1	L1	2M
2.	What is calibration? Discuss the need for calibration.	CO1	L1	3M
3.	What is a thermistor?	CO2	L1	2M
4.	Give the classification of measurement of pressure.	CO2	L2	3M
5.	What is Rotameter?	CO3	L1	2M
6.	List out the advantages and applications of non-contact type stroboscope.	CO3	L2	3M
7.	Define Electrical strain gauge.	CO4	L1	2M
8.	Explain the principle of seismic instruments.	CO4	L1	3M
9.	Define absolute humidity.	CO5	L1	2M
10.	Explain about speed & position control systems.	CO5	L2	3M

Section B (Essay Questions)

Answer all questions, each question carries equal marks. **(5 X 10M = 50M)**

11. A)	Explain instrumental, environmental and observational errors by citing suitable examples. Explain the measures taken to minimize these errors.	CO1	L2	10M
	OR			
B)	Explain the principle and working of i) capacitive transducer ii) piezo electric transducer	CO1	L2	10M
12. A)	Explain with neat diagrams, the principle and working of McLeod gauge. State its applications.	CO2	L2	10M
	OR			
B)	Discuss in detail about the use of changes in chemical phase for assessing the temperature of a material	CO2	L3	10M
13. A)	Explain the working principle of laser doppler anemometer with a suitable diagram.	CO3	L2	10M
	OR			
B)	Explain the principle of operation of magnetic flow meter. Discuss its merits.	CO3	L2	10M
14. A)	Explain the method of usage of resistance strain gauges for bending, compressive and tensile strains.	CO4	L2	10M
	OR			
B)	Explain the various types of strain gauges for different applications.	CO4	L2	10M

15. A)	Explain the measurement of torque of a rotating shaft using strain gauge with a neat diagram.	CO5	L2	10M
	OR			
B)	What is transfer function of a measurement systems? Derive the transfer function of a second order mechanical system for unit step input with a typical example,	CO5	L3	10M