



**B.Tech V Semester Supplementary Examinations, July 2024**

**INSTRUMENTATION AND CONTROL SYSTEMS**  
*(Mechanical Engineering)*

**Maximum Marks: 70**

Date: 30.07.2024 Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A		CO	Bloom Tx
All the following questions carry equal marks (10X2M=20 Marks)			
1	What is meant by measurement?	1	L1
2	Give any three applications of measurement systems.	1	L2
3	Classify Pressuring measuring devices?	2	L3
4	Give the applications of pyrometer?	2	L2
5	What is the principle of Seismic instrument?	3	L2
6	Write about Non-contact type of tachometer.	3	L3
7	What are a Dynamometers.	4	L1
8	State the factors to be considered for the selection of material used in strain gauges.	4	L2
9	Give the examples of closed loop system?	5	L2
10	What is a servomechanism?	5	L1
Part-B			
Answer All the following questions. (5X10M=50Marks)			
11	Describe the functional elements of an instrument with its block diagram. [10]	1	L1
OR			
12	Explain about the performance characteristics of the instruments. [10]	1	L2
13	A. What is thermistor explain its working and principle. List out the advantages and disadvantages of thermistor. B. Write briefly about thermal conductivity gauge? Give its applications. [5+5]	2	L3
OR			
14	Discuss briefly about displacement measurement instruments with neat sketch. [10]	2	L3
15	A. Explain construction and the working principle of a Rotameter with a neat diagram. B. Write about Anemometers used for measuring flow meters? [5+5]	3	L3
		3	L2

	OR		
16	A. Discuss in detail about electrical tachometers. B. What are the mechanical methods to measure the vibrations explain with neat sketches. [5+5]	3	L4 L3
17	A. Define gauge factor. Explain the factors which affect the gauge factor. B. Explain the method for measuring the bending strain using the resistance strain gauge with a neat sketch. [5+5]	4	L2 L3
	OR		
18	A. List out various types of electrical hygrometers for measuring the relative humidity. Explain at least one in detail with a neat diagram. B. What are the load cells? Explain the working principle of strain gauge load cell with a neat diagram. [5+5]	4	L3 L3
19	A. State advantages and limitations of open-loop control system. B. Draw and explain block diagram for level control system. [5+5]	5	L2 L4
	OR		
20	A. Draw a block diagram of a typical closed loop system. B. Draw and explain block diagram for speed control system. [5+5]	5	L4 L4