



# MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi &amp; Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade &amp; Recognized Under Section 2(f) &amp; 12(B) of the UGC act, 1956

## II B.Tech II Sem Supply End Examination, July 2022 Instrumentation and Control Systems (MECH)

Time: 3 Hours.

Max. Marks: 70

Note: 1. Question paper consists: Part-A and Part-B.

2. In Part - A, answer all questions which carries 20 marks.

3. In Part - B, answer any one question from each unit.

Each question carries 10 marks and may have a, b as sub questions.

**PART- A****(10\*2 Marks = 20 Marks)**

- |   |    |     |     |
|---|----|-----|-----|
| 1. a) What is Measurement system  | 2M | C01 | BL1 |
| b) Classify the sources of Errors   | 2M | C01 | BL2 |
| c) Define thermocouple  | 2M | C02 | BL1 |
| d) Identify the Principle is involved in the measurement of Temperature                           | 2M | C02 | BL3 |
| e) What are the electric transducers used for level measurements?                                 | 2M | C03 | BL1 |
| f) List the types of Flow meters  | 2M | C03 | BL4 |
| g) Determine the gauge factor   | 2M | C04 | BL6 |
| h) Discuss the terms i) Stress ii) Relative Humidity  | 2M | C04 | BL5 |
| i) What are the advantages of closed-loop control system comparing with open-loop control system? | 2M | C05 | BL1 |
| j) Define the transfer function   | 2M | C05 | BL1 |

**PART- B****(10\*5 Marks = 50 Marks)**

- |   |    |     |     |
|---|----|-----|-----|
| 2 a) Explain the elements of generalized measurement system with a block diagram. | 5M | C01 | BL2 |
| b) What are the Dynamic performance characteristics of an Instrument?             | 5M | C01 | BL1 |

**OR**

- |   |     |     |     |
|---|-----|-----|-----|
| 3 Explain the construction and working principle of LVDT.               | 10M | C01 | BL6 |
| 4 a) Summarize the construction and working principle of a thermocouple | 5M  | C02 | BL2 |
| b) List the applications of pyrometers.                                 | 5M  | C02 | BL1 |

**OR**

**Course Code: 1940318**

**Roll No:**

**MLRS-R19**

- 5 Outline the definition of Low pressure? How to measure low pressure using Thermal conductivity gauge 10M C02 BL2
- 6 a) Analyze the measurement of liquid level using capacitive transducer 5M C03 BL4  
b) Discuss the working principle of Hot wire Anemometer? 5M C03 BL5
- OR**
- 7 Discuss the types of accelerometers. Explain the working principle of a Potentiometric type of accelerometer 10M C03 BL5
- 8 a) Interpret the Construction and working of semiconductor type strain gauge with a neat sketch 5M C04 BL6  
b) Explain the working principle of strain gauge load cell. 5M C04 BL2
- OR**
- 9 What are the types of dynamometers? Explain each one briefly. 10M C04 BL1
- 10 a) Design the temperature control system with both open loop and closed loop systems. 5M C05 BL5  
b) What is the major advantage of Negative feedback? 5M C05 BL1
- OR**
- 11 Define control system. Explain the types of control systems with block diagram and discuss their advantages and disadvantages. 10M C05 BL2

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