



III B.Tech I Sem Regular End Examination, December 2022

Electronic Measurements and Instrumentation

(ECE)

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)**

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|-------|---|----|-----|-----|
| 1. a) | Define the terms: Accuracy and Precision. | 2M | CO1 | BL1 |
| b) | List the different types of errors. | 2M | CO1 | BL1 |
| c) | Draw the basic diagram of a signal generator. | 2M | CO2 | BL1 |
| d) | List the applications of Spectrum analyzer. | 2M | CO2 | BL1 |
| e) | What are Lissajous patterns? | 2M | CO3 | BL1 |
| f) | Give the importance of storage CRO. | 2M | CO3 | BL2 |
| g) | What are the advantages of Thermocouple? | 2M | CO4 | BL1 |
| h) | Classify the various types of transducers. | 2M | CO4 | BL1 |
| i) | What are the limitations of Wheatstone's bridge? | 2M | CO5 | BL1 |
| j) | Draw the basic diagrams of the DC and AC bridges. | 2M | CO5 | BL1 |

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

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|------|---|----|-----|-----|
| 2 a) | Briefly explain about the performance characteristics of measurement systems. | 7M | CO1 | BL4 |
| b) | The expected value of the voltage across a resistor is 80V. However, the measurement gives a value of 79V. Calculate (i) % error (ii) % of accuracy | 3M | CO1 | BL3 |

OR

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|------|--|----|-----|-----|
| 3 a) | Explain the basic operation of a DC voltmeter with neat diagram. | 5M | CO1 | BL4 |
| b) | Draw the series type Ohmmeter and explain its operation. | 5M | CO1 | BL4 |
| 4 a) | Draw and explain the block diagram of a Function generator. | 7M | CO2 | BL4 |
| b) | Define duty cycle. List the requirements of a pulse. | 3M | CO2 | BL1 |

OR

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|------|--|----|-----|-----|
| 5 a) | Explain the working principle of a heterodyne wave analyzer. | 7M | CO2 | BL4 |
| b) | Differentiate between AF wave analyzer and HF wave analyzer. | 3M | CO2 | BL2 |

- 6 a) Draw and explain the block diagram of CRO. 7M C03 BL4
b) Classify the various types of CRO probes. 3M C03 BL1
- OR**
- 7 a) Draw the block diagram of digital storage oscilloscope and explain its operation. 8M C03 BL4
b) List the features of CRT. 2M C03 BL1
- 8 a) Derive the expression for the gauge factor in a strain gauge. 8M C04 BL6
b) Discuss about humidity and moisture 2M C04 BL2
- OR**
- 9 Explain in detail about construction and working of LVDT. 10M C04 BL4
- 10 a) Derive the expression for measuring resistance using Wheatstone bridge. 7M C05 BL6
b) Distinguish between AC and DC bridges. 3M C05 BL2
- OR**
- 11 a) Explain the measurement of inductance using Maxwell's bridge. 7M C05 BL4
b) Write a brief note on biomedical signals. 3M C05 BL1

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CO - Course Outcome

BL - Blooms Taxonomy Levels