

R13

Code No: 115AM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, March - 2024

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) 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

(25 Marks)

- 1.a) Define Fidelity. [2]
- b) Outline the precautions to be considered while using Ammeters and Voltmeters. [3]
- c) Compare the function of Oscillator and Signal Generator. [2]
- d) What is the working principle of sweep frequency generators? [3]
- e) Summarize the applications of CRO. [2]
- f) How to get Lissajous figures on CRO? And list applications of these patterns? [3]
- g) Classify the Transducers. [2]
- h) Explain the principle of operation of Hotwire Anemometers. And outline its application. [3]
- i) Compare Wheatstone bridge and Kelvin Bridge. [2]
- j) What is meant by Data Acquisition System? [3]

PART - B

(50 Marks)

- 2.a) The pointer of d' Arsonval meter movement gives full scale deflection of 20mA. The potential difference across the meter when carrying 20mA is 400mV. Determine i) the shunt resistance required to design 0- 200mA range ammeter. ii) the series resistance required to design 0- 1V range voltmeter.
- b) Inspect the principle of True RMS responding voltmeter and outline its applications. [5+5]

OR

- 3.a) Summarize the errors occurred in the measuring instruments.
- b) How can you extend the range of Ammeter? Elaborate with example. [5+5]
- 4.a) Explain the working of Pulse and Square wave generators with a neat sketch.
- b) Inspect the principle of Capacitance-Voltage Meter. [6+4]

OR

- 5.a) Conclude the need of Video signal generators.
- b) Explain the working of Spectrum Analyzer with a neat sketch. [4+6]

QA QA QA QA QA QA QA G

6.a) Conclude the need of Time Base Circuits in CRO.

b) Compare Dual Trace and Dual Beam CROs.

[4+6]

QA QA QA QA OR QA QA G

7.a) How can you measure frequency using Lissajous figures? Elaborate.

b) Explain the principle of working of sampling Oscilloscope with a neat sketch.

[4+6]

8.a) Compare bounded and unbounded strain gauges.

b) Explain the working of digital temperature sensing system and summarize its Limitation.

[4+6]

QA QA QA QA OR QA QA QA G

9.a) Conclude the need of Thermocouples.

b) Explain the working principle of Gyroscope and summarize its application.

[4+6]

10.a) How could you measure Velocity? Elaborate.

b) Construct the bridge circuit to measure inductance and develop relation for unknown Inductance.

[5+5]

QA QA QA QA OR QA QA QA G

11.a) How could you measure Humidity? Explain.

b) Develop a data Acquisition System for Measuring 2 parameters.

[5+5]

---ooOoo---

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G