

**R16**

Code No: 135CD

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year I Semester Examinations, November/December - 2018**

**ELECTRONIC MEASUREMENTS AND INSTRUMENTATION**

(Common to EEE, ECE)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10-marks and may have a, b, c as sub-questions.

**PART - A**

(25 Marks)

- 1.a) Explain the concept of Gaussian Error in detail. [2]
- b) List out the different types of Errors presented in measuring instruments. [3]
- c) What is Signal Generator? [2]
- d) List out the few applications of AF oscillator. [3]
- e) List out the different applications of CRO. [2]
- f) Explain the procedure how to Measurement of Time period of any wave in CRO. [3]
- g) What is Piezo electric effect? [2]
- h) Explain the importance of Thermocouples with one example. [3]
- i) List out the different Limitations of Wheatstone's Bridge in detail. [2]
- j) List out different flow measurement method. [3]

**PART - B**

(50 Marks)

- 2.a) Draw the Ramp type Digital voltmeter and explain its operation in detail.
- b) A Voltmeter having a sensitivity of 60k/V reads 40V on a 100V scale, when connected across an unknown resistor. The current through the resistor is 4mA. Calculate the % of error due to loading effect. [5+5]

**OR**

- 3.a) Draw the Sketch and explain the principle and operation of True RMS measuring Thermocouple type Voltmeter.
- b) Define Fidelity? Explain the importance of Fidelity in measuring instruments in detail. [5+5]

- 4.a) Draw the circuit diagram of Spectrum Analyzers and explain its operation in detail.
- b) Draw the circuit diagram of Function Generator and explain its operation. [5+5]

**OR**

- 5.a) List out the different modes of operation of Harmonic Distortion Analyzers and explain any one mode in detail.
- b) What is Heterodyne and explain the operation of Heterodyne wave analyzer along with its circuit diagram. [5+5]

6.a) Draw the block diagram of Digital Readout oscilloscope and explain its operation in detail.

b) Draw the block diagram of storage oscilloscope and explain the operation of each block in detail. [5+5]

7.a) Explain the Vertical amplifier section of CRT along with Block diagram. **OR**

b) Draw the circuit diagram of Dual Trace oscilloscope and explain its operation in detail. [5+5]

8.a) What is the difference between photo-emissive, photo-conductive and photovoltaic transducers?

b) Explain the following terms in detail: [4+6]  
(i) Thermistors (ii) Sensistors

**OR**

9.a) Explain the Resistive position Transducer along with circuit diagram.

b) Draw the circuit diagram of LVDT and explain the operation of it in detail. [5+5]

10.a) Explain the principle and working of ultrasonic Level gauge along with circuit diagram.

b) Define Humidity and give a classification. Explain the procedure for the measurement of humidity. [5+5]

**OR**

11.a) Explain the operation of Capacitance Comparison Bridge and derive the condition for balance of a Bridge.

b) Describe the measurement of force with suitable example. [5+5]

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