

Code No: R164102D

**R16**

**Set No. 1**

IV B.Tech I Semester Supplementary Examinations, July/Aug - 2021

**INSTRUMENTATION**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A (14 Marks)**

1. a) Distinguish between Static error and Dynamic error. [3]
- b) List the different types of Strain gauges. [2]
- c) What are the advantages and disadvantages of resistance thermometers? [3]
- d) List the applications of Digital voltmeters. [2]
- e) Explain the significance of Delay line in CRO. [2]
- f) List the various applications of Wave Analyzers. [2]

**PART-B (4x14 = 56 Marks)**

2. a) Explain the process of Static calibration in detail. [7]
- b) Explain in detail about the Gross Errors, Systematic Errors and Random Errors. [7]
3. a) Explain the working principle of a transducer. Discuss in briefly the types of errors encountered in a transducer. [7]
- b) A piezoelectric material measuring 5 mm x 5 mm x 1.5 mm is used to measure a force. Its voltage sensitivity is 0.055 Vm/N. Calculate the force if voltage developed is 110V [7]
4. a) Explain with a neat diagram the construction and working of a thermoelectric Pyrometer. [7]
- b) Explain the working of Ultrasonic Flow meter for measurement of flow with neat illustration. [7]
5. a) List and explain the different characteristics of Digital meters. [7]
- b) Explain the working of Digital phase angle meter with a neat block diagram. [7]
6. a) Derive the relation for Electrostatic deflection sensitivity in CRO. [7]
- b) Explain the basic controls of CRO. [7]
7. Write short notes on the Following:
  - i) RMS Voltmeter
  - ii) Resonant or basic Wave analyzer. [14]