Code No: **R41026** **R10** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February - 2019

INSTRUMENTATION

(Common to Electrical and Electronics Engineering, Electronics and Communication Engineering and Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) Define the following terms with respect to Measuring Instruments:
(i) Sensitivity (ii) Accuracy (iii) Precision (iv) Uncertainity [8]
b) Explain the significance of Statistical analysis of Test Data with an example. [7]

2 a) Explain the different types of signals and how they are classified. [8]
b) What is a modulated Signal and give its significance? [7]

3 a) List and explain the basic requirements of Transducers and also give its desired specifications. [7]
b) Explain the working of a Piezo electric device as a transducer and give its desirable properties. [8]

4 a) Explain the working of a Microprocessor based Ramp type Digital voltmeter with a neat block diagram. [8]
b) What is the resolution of a $4\frac{1}{2}$ digit display? How would 23.95 V be displayed on a 10 v range and 0.5213 V on a 1 V and 10 V ranges? [7]

5 a) Derive an expression for vertical deflection of an electron beam in a cathode ray tube. [8]
b) Explain the following (i) Transient recorder (ii) Lissajous patterns. [7]

6 a) Explain the working of a Resonant or Basic Wave analyzer with a neat circuit. [8]
b) What is a Spectrum Analyzer and what does the spectrum analysis of a Signal provides? [7]

7 a) Explain how two gauges in Half bridge are used for Strain measurement with a neat bridge circuit. [8]
b) Explain the working of a capacitive Pick up tachometer. [7]

8 a) Explain briefly the following types of Pressure elements:
(i) Bourdon tube (ii) Diaphragm (iii) Bellows [8]
b) Explain with a neat sketch the working of electromagnetic flow meter. [7]