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**B.Tech.**  
**(SEM IV) THEORY EXAMINATION 2018-19**  
**Electronic Measurements & Instrumentation**

**Time: 3 Hours****Total Marks: 70**

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.  
2. Any special paper specific instruction.

**SECTION A**

1. Attempt *all* questions in brief. 2 x 7 = 14
- a) Define random error and Gross error with suitable example.
  - b) What is the difference between analog and digital multimeter?
  - c) What is Quality factor and its importance in measurement?
  - d) How current is measured in the circuit using Ammeter?
  - e) What do you mean interpolation?
  - f) What is Instrument calibration?
  - g) What do you mean by Transducers and Inverse Transducers?

**SECTION B**

2. Attempt any *three* of the following: 7 x 3 = 21
- a) Explain the working of a source follower electronic voltmeter. Describe how the range of this voltmeter can be extended. Explain the use of zero adjustment and calibration resistors.
  - b) Design a multi range FET Voltmeter circuit and explain its working with diagram.
  - c) Explain how inductance is measured using bridges? Explain any one?
  - d) Explain how frequency and phase are measured by CRO.
  - e) Describe the different modes of operation of Piezo-electric transducers with suitable diagram.

**SECTION C**

3. Attempt any *one* part of the following: 7 x 1 = 7
- a) A batch of resistors each has a nominal resistance of  $330\Omega$  are to be tested and classified as  $\pm 5\%$  and  $\pm 10\%$  components are specified at  $25^\circ\text{C}$ , and their temperature coefficient is  $-300 \text{ ppm}/^\circ\text{C}$ . Calculate the maximum and minimum resistance for these components at  $100^\circ\text{C}$  and Calculate the maximum and minimum absolute resistance for each case.
  - b) Explain the construction of Series ohm meter and their application.
4. Attempt any *one* part of the following: 7 x 1 = 7
- a) Draw and explain the block diagram of digital frequency meter system.
  - b) Draw and explain the working of digital multimeter.
5. Attempt any *one* part of the following: 7 x 1 = 7
- a) How dielectric loss and unknown capacitance are measured by Schering Bridge?
  - b) Draw and explain the working of Wheatstone bridge.

6. Attempt any *one* part of the following:

7 x 1 = 7

- a) Why is delay line used in vertical section of an oscilloscope? Explain it in detail.
- b) Explain DSO and its Application.

7. Attempt any *one* part of the following:

7 x 1 = 7

- a) Explain the working procedure of X-Y Plotter with neat sketch.
- b) Explain the working of AC voltmeter calibration.

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