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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 amulti 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 330Ω are to be tested and classified as ± 5% and ±10 % components are specified at 25^0C, and their temperature coefficient is -300 ppm/^{0}C. Calculate the maximum and minimum resistance for these components at 100^0C 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 measuredby 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.