

916116



COMP 4 – 4 (RC)

S.E. (Comp.) (Semester – IV) (RC) Examination, May/June 2016 ELECTRONIC MEASUREMENT

Duration : 3 Hours

Total Marks : 100

- Instructions :**
- 1) Attempt 5 questions by taking atleast **one** question from **each** Module.
 - 2) Assume suitable data **wherever** necessary.
 - 3) Draw **neat** labelled diagrams **where** necessary.

MODULE – I

1. a) What is the difference between accuracy and Precision ? Explain the characteristics conformity and number of significant figures with respect to precision. 6
- b) Explain how temperature compensation is achieved in a PMMC type meter. 7
- c) Explain the working of a practical Q-meter circuit. How is effective Q different from circuit Q ? 7
2. a) How do IEEE standard differ from those maintained by National Standard Laboratories ? 4
- b) Explain Balanced bridge dc amplifier with input attenuator and indicating meter. Explain how the range switch selects the desired voltage range. 8
- c) Differentiate between fundamental units and derived units. List the symbols for fundamental and derived units. 4
- d) The expected value of voltage across a resistor is 100 V. However the voltmeter reads a value of 99V. Calculate :
 - a) Absolute error
 - b) % error
 - c) Relative error
 - d) % Accuracy. 4



MODULE – II

3. a) How does the digital storage oscilloscope differ from the conventional storage oscilloscope. What are the advantages of each ? 6
- b) Explain the process of indirect frequency synthesis using phased locked loop. What are the disadvantages of this method of frequency synthesis ? 8
- c) What is the need delay line ? Explain distributed parameter delay line. 6
4. a) How is the electron beam focused to a fine spot on the face of the cathode ray tube ? 6
- b) With the help of a block diagram explain the working of a wide band sweep generator. How can maximum to minimum frequency ratio of 2 : 1 be achieved in a wideband sweep generator ? 8
- c) Define the following characteristics of a pulse with the help of a schematic. 6
- i) Rise time
 - ii) Fall time
 - iii) Droop
 - iv) Overshoot.

MODULE – III

5. a) With the help of a suitable block diagram explain the operation of frequency selective wave analyzer. 8
- b) Explain the circuit arrangement for making period measurement. 6
- c) What resolution, total frequency display and dynamic range would be available from an input signal that was sampled for 4s at a sampling rate of 20 KHz using a 10 bit conversion ? 6
6. a) With the help of a diagram explain precision computing counter using dual counters. 6
- b) Draw block diagram of the Heterodyning wave analyzer and explain its



MODULE – IV

7. a) Describe the principle of operation of
- i) Capacitive transducer
 - ii) Inductive transducer
- 8
- b) Explain in detail unbounded strain gauge.
- 4
- c) What is the working principle of a thermistor ? List the different types of thermistors. Also explain advantages and disadvantages of a thermistor.
- 8
8. a) Draw a neat diagram of an instrumentation amplifier and state some of its characteristics.
- 6
- b) Write a short note on spatial encoders.
- 6
- c) Write a short note on :
- 8
- i) Analog to Digital multiplexing
 - ii) Digital to analog multiplexing.
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