

Code: EC8T2C

**IV B.Tech - II Semester - Regular Examinations - March 2018**

**ELECTRONIC MEASUREMENTS &  
INSTRUMENTATION  
(ELECTRONICS AND COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

**PART – A**

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) List any five static characteristics of measuring instruments.
- b) List any two desirable and two undesirable dynamic characteristics of a measurement system.
- c) Draw the block diagram of a sweep generator.
- d) State the use of wave analyzer.
- e) Compare Dual trace CRO and Dual beam CRO.
- f) Draw the layout of 10:1 CRO probe.
- g) Define sensitivity of LVDT.
- h) List any two applications and two limitations of Wheatstone Bridge.
- i) The arms of a AC bridge are  $z_1 = 20 \angle 10^\circ$ ,  $z_2 = 15 \angle -45^\circ$ ,  $z_3 = 10 \angle 85^\circ$  find the value of  $z_4$
- j) Classify Transducers and list any two types of transducers in each group.

k) List any two advantages and disadvantages of Piezoelectric transducers.

## PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

- 2.a) Define accuracy, error, resolution, expected value, sensitivity and precision. 8 M
- b) A voltmeter, having sensitivity of 1500ohms/volt reads 80V on its 150-V range, when connected across an unknown resistor in series with a milliammeter. When milliammeter reads 15mA, calculate 8 M
- i) The apparent resistance of the unknown resistor;
  - ii) The actual resistance of the unknown resistor ;
  - iii) The error due to the loading effect of the voltmeter.
- 3.a) Explain the operation of basic Spectrum analyzer using swept receiver design. 8 M
- b) Draw the block diagram of a function generator and explain the function of each block. State the specifications and applications. 8 M
- 4.a) List the parts of Cathode Ray Tube and explain their functions briefly. 8 M

- b) Draw the block diagram of Sampling Oscilloscope and explain its operation. 8 M
- 5.a) Which Bridge is limited to measure the inductance of Q value from 1 to 10 only? Justify. 8 M
- b) Which bridge is used to measure capacitance draw that bridge and write the Analysis for unknown elements? 8 M
- 6.a) Explain the operation of capacitance Transducer based on the change of area and distance between the plates. List any advantages, disadvantages and uses of capacitance Transducers. 8 M
- b) Explain how a strain gauge is used as a transducer? Derive the expression for gauge factor of Strain Gauge. 8 M