

# CBCS Scheme

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15EC35

## Third Semester B.E. Degree Examination, Dec.2016/Jan.2017 Electronic Instrumentation

Time: 3 hrs.

Max. Marks: 80

**Note: Answer FIVE full questions, choosing one full question from each module.**

### Module-1

- 1 a. Convert a basic D'Arsonval movement into a dc voltmeter and derive the resistance equation. (04 Marks)
- b. The expected value of the voltage across a resistor is 80 V. However the measurement gives a value of 79 V calculate (i) absolute error (ii) % error (iii) Relative accuracy (iv) % of accuracy. (04 Marks)
- c. State different types of thermocouples used for RF current measurement and explain each one of them in brief. (08 Marks)

OR

- 2 a. Explain with diagram the operation of true RMS voltmeter. (08 Marks)
- b. Explain with diagram the operation of a dc differential voltmeter. (08 Marks)

### Module-2

- 3 a. Describe with a diagram, the operation of a voltage to time conversion type DVM. (08 Marks)
- b. Explain with a diagram, the working of digital pH meter. (08 Marks)

OR

- 4 a. Describe with a diagram the operation of a successive approximation type DVM. (08 Marks)
- b. Describe with the help of a diagram the operation of universal counter-timer. (08 Marks)

### Module-3

- 5 a. Draw the basic block diagram of an oscilloscope and explain the function of each block. (08 Marks)
- b. Describe with the help of neat block diagram the operation of modern laboratory signal generator. Explain the technique used to improve stability. (08 Marks)

OR

- 6 a. Sketch the block diagram and explain the AF sine and square wave generator. List the various controls on the front panel of AF sine and square wave generation. (08 Marks)
- b. Discuss the important features of cathode ray tube (CRT). (08 Marks)

### Module-4

- 7 a. Derive the balance equation for wheat stone bridge and mention the limitation. (06 Marks)
- b. Determine the value of unknown resistance  $R_x$  in a wheat stone bridge if  $R_1 = 10 \text{ k}\Omega$ ,  $R_2 = 20 \text{ k}\Omega$  and  $R_3 = 40 \text{ k}\Omega$ . (02 Marks)
- c. What is Meggar? Explain basic Meggar circuit. (08 Marks)

OR

- 8 a. Draw the circuit diagram and obtain balance condition for Maxwell's bridge, if bridge constants are  $C_1 = 0.5 \mu\text{F}$ ,  $R_1 = 1200 \Omega$ ,  $R_2 = 700 \Omega$ ,  $R_3 = 300 \Omega$ , find resistance and inductance of the coil. (08 Marks)
- b. Explain with a diagram the operation of stroboscope. (08 Marks)

**Module-5**

- 9 a. What is a thermistor? Explain different types of thermistors. (08 Marks)
- b. List the factors to be considered while selecting transducers. (08 Marks)

**OR**

- 10 a. Explain with a diagram the operation of resistive pressure transducer. (08 Marks)
- b. Explain construction, principle and working of LVDT. (08 Marks)

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