CBCS SCHEME

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17EC32

# Third Semester B.E. Degree Examination, Jan./Feb. 2023
## Electronic Instrumentation

Time: 3 hrs. Max. Marks: 100

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



### Module-1

1 a. Define the following terms : i) Accuracy and precision ii) Gross error and systemic error. **(06 Marks)**

b. Draw the block diagram of a true RMS volt meter and explain its operation. **(07 Marks)**

c. A voltmeter is calibrated to read from100V to 200V. Its accuracy is specified within ± 2%. Find the max error. **(07 Marks)**

**OR**

2 a. State different types of thermocouple used for RF current measurement and explain each one of them in brief. **(10 Marks)**

b. Sketch and explain the operation of a multirange Ammeter and Aryton shunt. **(10 Marks)**

### Module-2

3 a. Describe with a diagram the operation of successive approximation type DVM. **(10 Marks)**

b. Explain with a diagram the working of digital pH meter and its applications. **(10 Marks)**

**OR**

4 a. Describe with the help of a diagram the operation of universal counter. **(10 Marks)**

b. With the block diagram, explain the digital frequency meter. **(10 Marks)**

### Module-3

5 a. Draw the basic block diagram of a oscilloscope and explain the function of each block. **(10 Marks)**

b. Sketch the block diagram and explain AF sine and square wave generator. **(10 Marks)**

**OR**

6 a. Explain with a block diagram of function generator in detail. **(10 Marks)**

b. Explain the operation of digital storage oscilloscope with a help of block diagram. **(10 Marks)**

### Module-4

7 a. Explain with a help of neat diagram. Construction and principle of operation of Megger. **(10 Marks)**

b. Draw the Maxwell's bridge to determine inductance in terms of known capacitance and define Q – factor and expression for inductance. **(10 Marks)**

**OR**

8 a. With neat diagram, explain the working of Wien's bridge. **(10 Marks)**

b. Explain susceptance method of Q-measurement. **(10 Marks)**

### Module-5

9 a. What is transducer? Explain working of resistive position transducer with a neat sketch. **(10 Marks)**

b. What are the different types of photoelectric transducer? Explain photo voltaic transducer. **(10 Marks)**

**OR**

10 a. With a neat sketch, explain construction and working of LVDT. **(10 Marks)**

b. What is gauge factor? Derive an expression for gauge factor and prove that $k = 1 + 2\mu$. **(10 Marks)**

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