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Question Paper Code : 41002

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Fourth Semester

Electrical and Electronics Engineering

EE6404 – MEASUREMENTS AND INSTRUMENTATION

(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. A voltmeter reads 152 volts for a particular measurement. If the true value of the measurement is 154 volts, determine the percentage static relative error and static correction.

2. What is average deviation ? What does it indicate on a measuring instrument ?

3. Which type of frequency meter is used over a wide range of voltage ? Why ?

4. What makes the scale of MI instruments cramped at both the lower and upper ends ?

5. Calculate the reactance of a coil from the measurements made on an AC potentiometer. The impedance of the coil is found to be 25 ohms, the phase angle of the voltage across the coil and a standard resistance connected in series with the coil are 55° and 25° respectively.

6. How grounding is implemented in the case of a transformer whose windings on one side is connected in delta ?

7. State the reason for having complementary characteristic between the reproduce head and the amplifier connected to the reproduce head in a magnetic tape recorder ?

8. State the advantages of LED from the intensity of light and dynamic operation point of view.

9. In Capacitive transducer, which principle exhibits linear characteristic ? How ?

10. It is required to convert a range of 0 – 10V DC into digital output with a 10V reference volt. Determine the error caused when the converter used is i) 5 bit converter and ii) 10 bit converter.

14. a) i) What is a plotter ? Discuss the operation of a Drum type plotter. (7)

ii) Explain the theory of seven segment LED display. Draw the circuit diagram of a common anode display. (6)

(OR)

b) i) With the help of a functional block diagram explain the operation of a Cathode Ray Oscilloscope. (8)

ii) What is a Data logger ? What are its basic components ? What are the functions of data logger ? (5)

15. a) i) What are Rosettes type strain gauges ? Under which condition rosettes are used ? Draw any two types of rosettes. (7)

ii) Explain how a Hall effect Transducer is used to measure electric current with a schematic representation. (6)

(OR)

b) i) What are the different types of A/D converters ? Compare them with respect to speed, resolution, Noise immunity and cost. (7)

ii) Discuss Active and Passive Transducers with an example briefly for each type. (6)

PART – C (1×15=15 Marks)

16. a) Write in detail about the construction and working principle of LVDT. List the advantages and disadvantages of LVDT. (12+3)

(OR)

b) i) Describe the different modes of operation of Piezo-electric transducer. (5)

ii) Explain in detail the working principle of any two digital transducers. (10)

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