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Question Paper Code : 52455

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Sixth Semester

Electronics and Communication Engineering

EC 2351 – MEASUREMENTS AND INSTRUMENTATION

(Regulations 2008)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. What is the difference between accuracy and precision ?
2. What is meant by calibration ?
3. List any four applications of Q meter.
4. Define deflection sensitivity.
5. What is a sweep frequency generator ?
6. Define voltage droop.
7. Why Schmitt trigger is used in digital frequency meter ?
8. What is DVM ?
9. Mention the essential feature of a data acquisition system.
10. Why ATN line is used ?

PART – B

(5×16=80 Marks)

11. a) i) What are the different types of errors in measurement ? Explain. (8)
ii) Ten measurements of the resistance of a resistor gave 101.2 Ω , 101.7 Ω , 101.3 Ω , 101.0 Ω , 101.5 Ω , 101.3 Ω , 101.2 Ω , 101.4 Ω , 101.3 Ω and 101.1 Ω . Assume that only random errors are present. Calculate the arithmetic mean, standard deviation and probability error. (8)

(OR)



- b) i) Calculate the unknown inductance and resistance measured by Hay's bridge. The bridge elements at the balancing conditions are $C_1 = 1 \mu\text{F}$, $R_1 = 2\text{k}\Omega$, $R_2 = 10\text{k}\Omega$, $R_3 = 1\text{k}\Omega$. The supply angular frequency is 3000 rad/sec . (8)
- ii) How the unknown frequency is measured using Wein Bridge Method? (8)

12. a) With a neat block diagram explain the function of a general purpose oscilloscope. (16)

(OR)

- b) Write brief notes on :
- i) Storage Oscilloscopes. (8)
- ii) Sampling Oscilloscopes. (8)

13. a) i) Describe the working of function generator with the block diagram. (8)
- ii) With a neat diagram, explain the working of frequency divider type of signal generator with frequency modulation. (8)

(OR)

- b) Explain the working of frequency selective and heterodyne wave analyzer with neat block diagram. (16)

14. a) i) Draw the block diagram of a frequency counter and explain. (8)
- ii) Explain how to extend the frequency range of the counter. (8)

(OR)

- b) Explain with a neat block diagram, the operation of linear ramp and staircase ramp digital voltmeter. (16)

15. a) i) Explain the optical time domain reflectometer with a neat diagram. (8)
- ii) Explain the elements of a digital data acquisition system. (8)

(OR)

- b) Describe the multiplexing techniques in data acquisition system. (16)