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Question Paper Code : 42458

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
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 calibration ?
2. A 600V voltmeter is specified to be accurate within ± 2% at full scale. Calculate the limiting error when the instrument is used to measure a voltage of 250V.
3. Define deflection sensitivity.
4. What is sampling oscilloscope ?
5. What are the requirements of signal generator ?
6. What is the minimum detectable signal of a spectrum analyzer with a noise figure of 20 dB and using a 1KHz, 3-dB filter ?
7. Why period mode is preferred for measurement of very low frequency in a frequency counter ?
8. How trigger time error is reduced ?
9. What is IEEE 488 bus ?
10. Distinguish between analog and digital data acquisition systems.

PART – B (5×16=80 Marks)

11. a) i) What is Hay's bridge ? Derive its balance equation. When it is preferred over Maxwell bridge. (8)

ii) What are the different types of error in measurement ? Explain. (8)

(OR)

b) i) With a neat diagram, explain in detail the construction of a PMMC instrument. (10)

ii) What is standard and explain in detail about different types of standards ? (6)

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

(OR)

b) i) Explain the working of a basic Q meter with neat circuit diagram. List any four applications of Q meter. (8)

ii) Draw the block diagram of True RMS voltmeter and explain its operation. (8)

13. a) Explain the working of frequency selective and spectrum analyzer with neat block diagram. (16)

(OR)

b) i) Describe the working of a sweep frequency generator. (8)

ii) Explain the vector network analyzer and list its application. (8)

14. a) i) Describe a digital multimeter with a help of a block diagram explain its working. (8)

ii) What is virtual instrument ? List the advantages of virtual instrument over conventional instrument. (8)

(OR)

b) i) Explain with the help of a neat diagram the working of a digital frequency meter and also explain how to extend the frequency range of the counter. (12)

ii) A $4^1/_2$ digital voltmeter is used for voltage measurements. (4)

i) Find its resolution.

ii) How would 12.98V be displayed on a 10V range ?

iii) How would 0.6973 be displayed on 1V and 10V range ?

15. a) With a block diagram, explain the automatic test system to analyze an audio amplifier and radio receiver. (16)

(OR)

b) i) With a neat diagram, explain the working of auto-ranging power meter. (8)

ii) Explain the optical time domain reflectometer with a neat diagram. (8)