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Question Paper Code : 73459

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Sixth Semester

Electronics and Communication Engineering

EC 2351/EC 61/10144 EC 602 — MEASUREMENTS AND INSTRUMENTATION

(Regulations 2008/2010)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. A set of independent current measurements were recorded as 10.03, 10.10, 10.11 and 10.08 A. Calculate the range of an error.

2. How is the international standard of length defined?

3. Distinguish between analog and digital storage oscilloscope.

4. Draw the diagram of CRT.

5. What is harmonic distortion?

6. Give the application of sweep generator.

7. List the advantages of digital instruments over analog instrument.

8. What is virtual instrument? Give two examples.

9. State multiplexing.

10. Draw a block diagram representation of computer controlled instrumentation.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Distinguish between International, Primary, Secondary and working standards.   (8)

        (ii) How systematic errors are classified? Give suitable examples and explain the measures taken to minimize these errors.   (8)

                              Or

    (b) (i) Derive the general equation for deflection for a spring controlled repulsion type moving iron instrument.   (8)

        (ii) Describe the working of a low voltage schering bridge.   (8)

12. (a) (i) Discuss in detail about the construction of a sampling oscilloscope and explain the method of high frequency measurement using a sampling oscilloscope. (10)

(ii) Discuss about the blocks used and functions of digital storage oscilloscope. (6)

Or

(b) (i) What is a Q meter? Explain about its applications and discuss in detail about any one method of measurement using a Q meter. (10)

(ii) Explain the working of a vector voltmeter. (6)

13. (a) Explain the operations of RF signal and sweep generators. (16)

Or

(b) Explain with neat diagrams, the working of the following :

(i) Spectrum analyzer (8)

(ii) Frequency synthesizer. (8)

14. (a) (i) Draw the block diagram of a multiplexed display used in a Frequency counter and explain. (8)

(ii) Explain how to extend the frequency range of the counter. (8)

Or

(b) (i) How to make automatic polarity indication and automatic ranging in a digital instrument? (8)

(ii) Explain the need for virtual instrument with an example. (8)

15. (a) (i) Briefly explain the elements of digital data acquisition system. (8)

(ii) Write short notes on IEEE488 bus standard. (8)

Or

(b) (i) What is data logger? Explain the role of data loggers in data acquisition system. (8)

(ii) Write short notes on optical time domain reflectometer. (8)