Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 71461

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Sixth Semester

Electronics and Communication Engineering

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

(Regulation 2008/2010)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Compare static and dynamic characteristics of measurement system.

2. What are the base units in SI system?

3. Why are multimeters provided with sepatate scale for low a-c voltages?

4. What will happen when sweep signal is applied to horizontal plates of CRO?

5. How do we generate a triangular waveform?

6. What is intermodulation distortion?

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

8. What is virtual instrument? Give two examples.

9. What is the importance of sample and hold circuit in digital data acquisition system?

10. List any four factors which affect the propagation of light through optical sensors.

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) Derive an expression for the vertical deflection of an electron beam in a CRT. (8)

(ii) Explain how to measure the RF power with suitable diagrams. (8)

Or

(b) (i) Describe in details the construction and working of an analog type storage oscilloscope. (8)

(ii) How to measure the Q-factor and Bandwith using Q-meter. (8)

13. (a) (i) Describe the Barkhausen Criteria for production of oscillations. (8)

(ii) With a neat diagram explain the working vector network analyzer. (8)

Or

(b) (i) Draw the block diagram of an indirect type frequency synthesizer and explain. (8)

(ii) Describe the basic circuit of spectrum analyzer. How the spectrum of frequency modulated wave is displayed? (8)

14. (a) (i) Explain the working principle of computer controlled test systems. (8)

(ii) Explain how to measure the time interval of signals using digital instruments. (8)

Or

(b) (i) How automatic polarity indication, automatic ranging and automatic zeroing is achieved in automated digital instruments? (8)

(ii) Explain the working principle of digital multimeter. (8)

15. (a) (i) Describe the multiplexing techniques in data acquisition of systems. (8)

(ii) Explain the IEEE 488 bus with a neat diagram. (8)

Or

(b) (i) Explain the elements of a digital data acquisition system. (8)

(ii) How to measure the power and system loss using fiber optic techniques? (8)

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