Reg. No. : | | | | | | | | | | | | |

B 2156

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2008.

Fourth Semester

Electronics and Communication Engineering

EC 245 – MEASUREMENTS AND INSTRUMENTATION

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term uncertainty interval.

2. Differentiate between primary and secondary transducers.

3. What is auto-ranging?

4. Define resolution of DVM.

5. Define duty cycle for a pulse wave.

6. What is inter-modulation distortion?

7. What is Lissajous pattern and for what purpose is it used?

8. What are the advantages of LCD over LED?

9. Why is automated testing of instruments superior to manual testing?

10. List the elements needed for a computer controlled instrumentation.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the significance of confidence interval and confidence level in statistical analysis of data. (8)

(ii) Describe the working and construction of resistance thermometer and the materials used for RTD with their properties. Sketch their typical characteristics. (8)

Or

(b) (i) Define dynamic response of a system and explain the characteristics of dynamic response. (6)

(ii) Describe the circuit of Kelvin's double bridge used for measurement of low resistance. Derive the conditions for balance. (10)

12. (a) (i) Describe with a neat block diagram the need and working of a Vector voltmeter. (8)

(ii) Write in detail about Automation in Voltmeters. (8)

Or

(b) (i) Explain the various guarding techniques. (8)

(ii) With a neat diagram explain the working of successive approximation type DVM. (8)

13. (a) (i) Describe a signal generator using feedback for amplitude modulation. (8)

(ii) What is frequency synthesizer and describe its types with circuits in detail. (8)

Or

(b) (i) Describe the working of a spectrum analyzer with its basic circuit. (8)

(ii) Discuss any one-wave analyzer in detail. (8)

14. (a) Explain the working of the following types of CRO:

(i) Dual trace Oscilloscope. (8)

(ii) Dual beam Oscilloscope. (8)

Or

(b) (i) Explain the functioning of a strip chart recorder and also the types of marking mechanisms. (8)

(ii) Explain the working of magnetic recorders and also explain how equalization technique is carried out in a magnetic recorder using direct recording. (8)

15. (a) Describe the testing of an audio amplifier and a radio receiver in detail with necessary block diagrams. (16)

Or

(b) (i) With relevant block diagram explain microprocessor-based instrumentation. (8)

(ii) What is the most popular bus used in computer controlled instrumentation and explain its working. (8)
