

**R 121**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2005.

Fourth Semester

Electronics and Communication Engineering

EC 245 – MEASUREMENTS AND INSTRUMENTATION

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ( $10 \times 2 = 20$  marks)

1. Define the term 'Accuracy'.
2. Discuss any 4 basic requirements of a transducer.
3. What do you mean by hetrodyne principle?
4. Define total harmonic distortion.
5. What are the sources of error in D.C. voltage measurement?
6. What is the principle of ramp type digital voltmeter?
7. Discuss the advantages and disadvantages of PDM recording.
8. Define the deflection sensitivity of CRT.
9. Discuss the features of lock-in amplifier.
10. List any four important features of Instrumentation amplifier.

PART B — ( $5 \times 16 = 80$  marks)

11. (i) Explain any two applications of microprocessor based measurements. (6)
- (ii) Explain with block diagram the operation of computer interfaced spectrum analyser. (10)

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12. (a) Discuss the basic characteristics of measuring devices. (16)

Or

- (b) (i) Explain how the inductance is measured in terms of known capacitance using Maxwell Bridge. (8)  
(ii) Explain the method of measuring the insulating property of capacitor by relevant bridge circuit. (8)

13. (a) With a block diagram explain the elements of a function generator. (16)

Or

- (b) (i) Explain the need of wave analysis. (6)  
(ii) With neat block diagram explain the operation of a heterodyne wave analyser. (10)

14. (a) With block diagram explain the operation of vector voltmeter. (16)

Or

- (b) Explain any two types of Digital Voltmeters with neat diagram. (16)

15. (a) With neat block diagram explain the operation of digital storage oscilloscope. (16)

Or

- (b) Write short notes on the following : (8 + 8)  
(i) Digital tape recording.  
(ii) Magnetic recorder.

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