

B. Tech 4th Semester Examination

Electronic Measurement and Measuring Instruments (NS)

EC-222

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of sections A, B, C & D. Section E is compulsory.

SECTION - A

1. (a) Classify different types of errors in measurement. How these errors can be minimized? (10)
(b) Define and explain (a) Sensitivity (b) Precision (c) Threshold (d) Linearity. (10)
2. (a) Discuss working of Wheatstone bridge for measurement of resistance. Derive the balance equation for bridge. List different factors that affect measurement of medium resistance with Wheatstone bridge. (10)
(b) Explain how the Wein Bridge can be used for experimental determination of frequency. Derive the expression for frequency in terms of bridge parameters. (10)

SECTION - B

3. Explain the construction and working of current transformers (CT). What will happen if the secondary circuit of CT is open circuited, while primary carries current? (20)

[P.T.O.]

4. (a) Discuss working of a wave analyzer using heterodyning principle, list applications of the wave analyzers. (8)
(b) Describe the basic circuit of a spectrum analyser. Explain, how the spectra of amplitude modulated signals, frequency modulated signals and phase modulated signals can be displayed. (12)

SECTION - C

5. (a) Describe the working principle of a CRT with the help of a neat diagram. (12)
(b) Discuss the working of photoconductive and photovoltaic cell. (8)
6. (a) Discuss the working of LED in detail. List its advantages and disadvantages. Compare LED with LCD. (10)
(b) What is piezoresistive effect? Explain working of a piezoresistive transducer. (10)

SECTION - D

7. (a) Discuss computer controlled test system in detail. (10)
(b) Describe details of data acquisition system. (10)
8. (a) What is Telemetry and discuss landline telemetry in detail (12)
(b) Compare FM, PAM and PCM telemetry systems. (8)

SECTION - E

9. (i) List different types of damping used in various instruments.
(ii) What are the advantages and disadvantages of microprocessor based systems and measurements?

- (iii) What are the important factors to be considered for selecting a transducer?
- (iv) Discuss various compensation networks required for thermocouples.
- (v) For which measurement Wein bridge is used and how, discuss.
- (vi) Explain working principle of magnetic tape recorders.
- (vii) What is a function generator? explain.
- (viii) What are multi range instruments?
- (ix) What is meant by drift? Discuss.
- (x) Discuss piezoelectric effect. (10×2=20)