

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

15145

B. Tech 5th Semester Examination

Electronic Measurements and Measuring Instruments (OS)

EE-5002

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 : Attempt five questions in all, selecting one question each from section A, B, C & D. Section-E is compulsory.

SECTION - A

1. (a) Give the classification of transducers in detail. (12)
- (b) Two electrical strain gauges are bonded to a Duralumin cantilever and connected to a bridge circuit. Each gauge has a resistance of 100Ω and a gauge factor of 2.1. The input voltage is 4V. The stress is 200M/N^2 , calculate
 - (i) the change in value of resistance R_4 to restore balance,
 - (ii) the output voltage if detector has a resistance of $10\text{K}\Omega$,
 - (iii) the current through detector if resistance is 400Ω ,
 - (iv) the current through the strain gauges.

The modulus of elasticity for Duralumin is 70GN/m^2 .
(8)

[P.T.O.]

2

15145

2. (a) Draw and explain the basic characteristics of instrumentation amplifier. (8)
- (b) Define piezo electric crystal and derive the expression for voltage sensitivity of the crystal. (12)

SECTION - B

3. (a) Give a comparison between digital and analog instruments. (10)
- (b) Explain the working and construction of digital frequency meter. (10)
4. Explain in detail the working of electronic voltmeter and also draw its block diagram. (20)

SECTION - C

5. Draw the internal structure of CRO and explain in detail electrostatic focusing. (20)
6. (a) Draw the block diagram of dual beam oscilloscope. (10)
- (b) What is harmonic distortion analyser, explain with the block diagram. (10)

SECTION - D

7. (a) Give the details of time multiplexing and frequency multiplexing. (12)
- (b) Give the basic constructional features of strip chart recorder. (9)
8. Draw and explain the generalized data acquisition system with the help of a block diagram. (20)

SECTION - E

9. (a) Time base circuit is connected to which deflecting plates of CRO.
- (b) What is standing wave ratio?
- (c) What is aquadag in CRO?
- (d) Define loading effect.
- (e) Differentiate between digital and analog instruments.
- (f) Give the importance of shunts and multipliers in measuring instruments.
- (g) What are lissajous patterns?
- (h) What is astigmatism?
- (i) What is harmonic distortion analyser?
- (j) Define magnetic tape recorders. (2×10=20)