

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2125)

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B. Tech 5th Semester Examination
Transducers and Signal Conditioning (NS)
EE-312

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. All questions carry equal marks.

SECTION - A

1. (a) Define a transducer. Describe any two methods for measuring force with the help of transducer. Also give comparison of the two methods. (10)
- (b) What is an electric transducer? What are its advantages over the mechanical transducer? (10)
2. List the various analog to digital converters. Draw the circuit and explain four bit successive approximation A/D converter. List its merits and demerits over other A/D converters. (20)

SECTION - B

3. (a) List the merits and demerits of digital over analog instruments. (10)
- (b) Explain the principle of operation of VTVM. (10)
4. Draw the circuit of a digital frequency meter and explain its operation. (20)

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SECTION - C

5. (a) What are the various quantities which can be measured with the help of CRO? How Lissajous patterns helps in measurement of a quantity-use example? (10)
- (b) Discuss the construction of a CRO. (10)
6. Write a note on spectrum analyzer. (20)

SECTION - D

7. What is a data acquisition system? Draw the block diagram of Data Acquisition System and explain the role played by each of its elements. (20)
8. Describe the working principle and the features of a self balancing type servo strip chart recorder. (20)

SECTION - E (Compulsory)

9. Answer the followings:
 - (a) Difference between transducer and a sensor.
 - (b) Role of sample and hold circuit. Draw the circuit of a simplest S/H circuit and explain its operation.
 - (c) Mention the advantages of semiconductor strain gauges.
 - (d) What are the characteristics of an instrument amplifier?
 - (e) What are the characteristic of a good voltmeter?
 - (f) How phase angle is measured by a CRO?
 - (g) Applications of capacitive transducer.
 - (h) Applications of Harmonic Distortion Analyzer.
 - (i) Difference between dual trace and dual beam oscilloscopes.
 - (j) What do you mean by telemetry? (2×10=20)