

Code No:R1642042

R16

Set No. 1

IV B.Tech II Semester Regular Examinations, September - 2020
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) Define any two static characteristics. [2]
- b) Where are spectrum analyzers commonly used? [2]
- c) Why is a delay line important in a CRO? [2]
- d) What type of errors can occur while using bridges? [3]
- e) What are active and passive transducers? Give examples. [2]
- f) Mention any three objectives of a Data Acquisition System. [3]

PART-B(4x14 = 56 Marks)

2. Write notes on the following
a) Series type Ohmmeters. [7]
b) Shunt type Ohmmeters. [7]
3. a) What are fixed and variable signal generators? Discuss briefly. [7]
b) Explain the working of AF Sine and square wave generator with neat block diagram. [7]
4. a) Draw and explain the block diagram of vertical amplifier used in oscilloscopes. [7]
b) Describe in detail the Lissajous method of frequency measurement. [7]
5. a) Explain the measurement of Inductance using Maxwell's bridge. [10]
b) A Maxwell's bridge is used to measure an inductive impedance. The bridge constants at balance are $C1=0.01\mu F$, $R1=470K\Omega$, $R2=5.1K\Omega$ and $R3=100K\Omega$. Find the series equivalent of the unknown impedance. [4]
6. Discuss the principle of operation of
a) Thermistors. [7]
b) Sensistors. [7]
7. Explain in detail the measurement of
a) Proximity. [7]
b) Speed. [7]



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Set No. 2

IV B.Tech II Semester Regular Examinations, April - 2020
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) What is dynamic error? Plot it with respect to time delay. [3]
- b) What is the difference between a simple signal generator and a sweep generator? [2]
- c) What is the purpose of a trigger pulse in a CRO? [2]
- d) What are the disadvantages of a Wheatstone bridge? [2]
- e) Define Transducer? What are the various characteristics of a transducer? [3]
- f) Why is signal conditioning of inputs necessary in a DAS? [2]

PART-B(4x14 = 56 Marks)

2. a) Explain the working of a basic DC voltmeter. How can its range be extended? [10]
- b) Calculate the value of multiplier resistance on the 50V range of a dc voltmeter that uses a $200\mu\text{A}$ meter movement with an internal resistance of 100Ω . [4]
3. a) What is a Spectrum Analyzer? Discuss in detail its working principle with a neat block diagram. [10]
- b) What are the applications of Spectrum Analyzer? [4]
4. Write short notes on the following
a) Delay line. [4]
b) Sync Selector circuit. [5]
c) CRO probes. [5]
5. a) What are the various errors and precautions to be taken while using bridges? [7]
- b) Explain briefly the working of Schering bridge. [7]
6. a) Explain the working principle of Piezo electric transducer in detail. [7]
- b) Discuss briefly the working of Resistance thermometer. [7]
7. Explain the measurement procedure of the following parameters with suitable figures.
a) Pressure. [7]
b) Displacement. [7]



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Set No. 3

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ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) What is the difference between accuracy and precision? [2]
- b) What are the various requirements of a pulse? [3]
- c) List various features of a CRT. [2]
- d) What is a bridge circuit and what are its advantages? [2]
- e) What are the advantages and disadvantages of a semi-conductor Strain gauge? [3]
- f) Define humidity and moisture. [2]

PART-B(4x14 = 56 Marks)

2. a) What are the different types of errors in measurement? Explain briefly. [7]
- b) A 100Ω basic movement is to be used as an ohmmeter requiring a full scale deflection of 1mA and internal battery voltage of 3V. A half-scale deflection marking of 2K is desired. Calculate (i) Values of R1 and R2 (ii) maximum value of R2 to compensate for a 5% drop in battery voltage. [7]
3. Write notes on the following
a) Wave Analyzers [7]
b) Harmonic Distortion Analyzers [7]
4. Explain the working of the following in detail with neat block diagrams
a) Digital Storage Oscilloscope [7]
b) Dual Trace Oscilloscope [7]
5. Write notes on the following Bridges
a) Wien Bridge [7]
b) Anderson Bridge [7]
6. a) Explain the working of LVDT in detail. [8]
- b) An AC LVDT has the following data: Input=6.3V, output=5.2V, range ±0.5in. Determine (i) The output voltage vs core position for a core movement going from +0.45in to -0.30in (ii) The output voltage when the core is -0.25in from the centre. [6]
7. Explain in detail about Data Acquisition Systems. [14]



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Set No. 4

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Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) Define Fidelity and Lag. [2]
- b) What is meant by duty cycle? [2]
- c) List the standard specifications of a CRO. [3]
- d) What is a Q-meter? [2]
- e) Draw the stress-strain curve for typical metals. [2]
- f) Define the terms Proximity, displacement and pressure. [3]

PART-B(4x14 = 56 Marks)

2. Explain the measurement of the following parameters in a circuit using a multi-meter
a) Voltage [5]
b) Current [5]
c) Resistance [4]
3. Explain the operation of function generator with a neat block diagram. [14]
4. a) Draw the block diagram of a simple CRO and describe its parts. [8]
b) Explain the working of a CRO in detail. [6]
5. a) Draw and explain the working of a Wheatstone bridge in detail. [10]
b) What resistance range must resistor R3 have in order to measure unknown resistor in the range 1-100K Ω using a Wheatstone bridge. Given R1=1K and R2=10K. [4]
6. a) Explain the construction and working of Unbonded and Bonded resistance wire strain gauges in detail. [10]
b) Discuss the advantages and disadvantages of LVDT. [4]
7. Describe in detail the measurement of
i) Force [7]
ii) Velocity [7]

