

Register
Number

--	--	--	--	--	--	--	--

III Semester Diploma Examination, November 2011

E & C BOARD

ELECTRONIC MEASUREMENTS & INSTRUMENTATION

Time : 3 Hours]

[Max. Marks : 100

- Instructions :** (1) Question from Section – I is compulsory.
(2) Answer any two full questions from each of the remaining sections.

SECTION – I

1. (a) Fill in the blanks : 5
- (i) Error due to human mistake is called _____.
- (ii) Maxwell's bridge is used to measure _____.
- (iii) Phosphor coating is used to collect _____ in CRT.
- (iv) Photo voltaic cells are the example of _____ Transducer.
- (v) _____ movement is used for an ammeter.
- (b) Define the terms 5
- (i) Accuracy
- (ii) Resolution

SECTION – II

2. (a) Write the types of errors in measurements and explain. 10
- (b) List the various standards for volume, time and currents. 5
3. (a) The expected value of the voltage across a resistor is 80V. However the measurement gives a value of 79V. 6
- Calculate (i) Absolute error
- (ii) % error
- (iii) % Accuracy

EC-032



[Turn over

- (b) Explain the use of wheatstone bridge in resistance measurement, derive the equation for unknown resistance. 9

4. (a) What are the different types of Indicating instruments? 7
 (b) Explain the basic principles of PMMC meter. 8

SECTION – III

5. (a) With the help of a block diagram, explain the working of CRT. 10
 (b) Explain the measurement of phase difference using Lissajous patterns. 5
6. (a) Explain the working of spectrum analysers. 5
 (b) Write the applications of digital storage oscilloscope. 5
 (c) List the different types of CRO probes. 5
7. (a) Define transducer and classify. 5
 (b) Explain the principle of operation of capacitive transducer's. 5
 (c) Explain briefly the different types of strain gauges. 5

SECTION – IV

8. (a) Explain the working of FET difference amplifier type voltmeter. 5
 (b) Write note on calibration of shunt type DC voltmeter. 5
 (c) Explain the principle & working of Rx meter. 5
9. (a) Explain the principle of operation of digital LCR Meter with a neat diagram. 7
 (b) With a block diagram, explain the working principle of digital frequency meter. 8
10. (a) What are the important steps in trouble shooting of measuring instruments? 8
 (b) Write note on grounding and shielding. 7

III Semester Diploma Examination, May 2011

ELECTRONICS & COMMUNICATION ENGG. BOARD

ELECTRONIC MEASUREMENTS & INSTRUMENTATION

Time : 3 Hours]

[Max. Marks :- 100

- Note : (1) Section – I is compulsory.
(2) Answer any two full questions from each of the remaining Sections – II, III & IV.

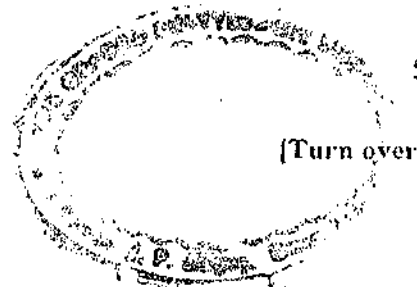
SECTION – I

1. (a) Fill in the blanks with appropriate word/words : 5 × 1 = 5
- (i) Technique of placing electronic system in a metal coping is called _____.
 - (ii) _____ temperature scale is known as an absolute scale.
 - (iii) Dual trace CRO uses _____ electron guns.
 - (iv) Piezo electric sensors are normally used as _____ sensors.
 - (v) _____ meters work on the principle of Quantization.
- (b) Write a note on 'necessity' of electronic measurements. 5

SECTION – II

2. (a) Seven readings of a resistor by an Ohm-meter are 47.0 Ω, 47.1 Ω, 47.5 Ω, 47.6 Ω, 47.8 Ω, 47.7 Ω and 47.9 Ω, calculate : 10
- (i) Arithmetic mean
 - (ii) Average deviation
 - (iii) Deviation from mean
 - (iv) Standard Deviation
 - (v) Probable error
- (b) Briefly explain the different types of standards. 5

EC-031



3. (a) Derive an expression for measurement of resistance and inductance using Maxwell bridge. List the limitations of Maxwell bridge. 7
 (b) List and explain the different types of electromechanical indicating instruments. 8
4. (a) Sketch and explain the working of electro-dynamometer type ammeter, voltmeter and wattmeter. 9
 (b) Explain the working of multi-range ammeter and voltmeter. 6

SECTION - III

5. (a) Explain the block-diagram of dual trace CRO. 6
 (b) Explain the different types of oscilloscope probes. 9
6. (a) Sketch and explain the block-diagram of sweep frequency generator. 8
 (b) Sketch and explain the block-diagram of spectrum analyzer. 7
7. (a) List the advantages of electrical transducers. 5
 (b) Explain the working of strain-gauge load cell. 5
 (c) Explain the working principle of piezo electric transducer. 5

SECTION - IV

8. (a) Explain the block diagram of chopper amplifier type voltmeter. 6
 (b) Explain the working of R_X meter. 6
 (c) List the advantages of electronic voltmeters. 3
9. (a) Sketch and explain the block diagram of Ramp type DVM. 8
 (b) Explain the automatic ranging system in digital meters. 7
10. (a) Explain the block-diagram of time-interval measurement. 6
 (b) List the different potential sources of interference in instruments. 5
 (c) Summarise the generalised trouble shooting in instruments.

Register
Number

--	--	--	--	--	--	--	--

III Semester Diploma Examination, November 2010

E & C BOARD

**ELECTRONIC MEASUREMENTS &
INSTRUMENTATION**

Time : 3 Hours]

[Max. Marks : 100

- Instructions :** (1) Question no. 1 is compulsory. (Section – I)
(2) Answer any two full questions from each of the remaining sections.

SECTION – I

1. (a) Fill in the blanks : 5
(i) Time defined in terms of rotation of the earth is called _____.
(ii) _____ is also called as frequency selective voltmeter.
(iii) _____ cannot be directly measured using CRO.
(iv) The thermo-electric effect used in thermo-couple is called _____.
(v) The measurement of Q-factor is based on _____ principle.
- (b) List and explain the types of measurements. 5

SECTION – II

2. (a) Sketch and explain the block-diagram of Measurement System. 5
(b) List and explain the different types of errors in measurements. 5
(c) Explain the types of Instruments based on their functions. 5
3. (a) Define w.r.t. measurements : 3
(i) Accuracy
(ii) Precision
(iii) Resolution
- (b) Derive an expression for measurement of frequency using Wien's bridge. 8
- (c) Sketch and explain PMMC meter. 4

[Turn over

- | | | | |
|----|-----|--|---|
| 4. | (a) | Write a note on Thermo-Couple instruments. | 4 |
| | (b) | Explain the working of energy meter. | 6 |
| | (c) | Explain the working principle of power factor meter. | 5 |

SECTION – III

- | | | | |
|----|-----|--|---|
| 5. | (a) | Explain the block-diagram of Horizontal deflection amplifier in CRO. | 6 |
| | (b) | Sketch and explain the Digital Storage Oscilloscope and list its applications. | 9 |
| 6. | (a) | Explain the function generator working using IC 8038. | 6 |
| | (b) | Sketch and explain the block-diagram of heterodyne wave analyzer. | 5 |
| | (c) | Explain the criteria for selecting a transducer. | 4 |
| 7. | (a) | Explain the working principle of LVDT. | 7 |
| | (b) | Sketch and explain the different Laws of thermo-couple. | 8 |

SECTION – IV

- | | | | |
|-----|-------|---|----|
| 8. | (a) | Explain the working of FET differential amplifier type voltmeter. | 6 |
| | (b) | Sketch and explain the working of Q-meter circuit. | 5 |
| | (c) | Explain the working of true-RMS voltmeter using thermo-couple. | 4 |
| 9. | (a) | List the advantages of Electronic Voltmeter. | 3 |
| | (b) | Explain the use of Decade-counter as | |
| | (i) | Totalizing | |
| | (ii) | Frequency | |
| | (iii) | Period | |
| | (iv) | Time-interval | |
| | | measurements | 12 |
| 10. | (a) | Sketch and explain the block-diagram of microprocessor based instruments. | 6 |
| | (b) | Discuss the precautions to prevent damage to measuring instruments. | 5 |
| | (c) | Describe the aspects of grounding and shielding in instruments. | 4 |