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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations March-2023
ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

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|----|--|-----|----|----|
| 1 | a Illustrate the construction and working of permanent magnet moving coil instruments. | CO1 | L3 | 8M |
| | b List the advantages and disadvantages of PMMC type instruments. | CO1 | L1 | 4M |
| OR | | | | |
| 2 | a Justify, how do you extend the range of an Ammeter? Explain Ayrton Shunt with diagram. | CO1 | L5 | 8M |
| | b A moving coil instrument gives a full -scale deflection of 10mA when the potential across its terminals is 100mV. Calculate shunt resistance for a full - scale deflection corresponding to 100 A. | CO1 | L5 | 4M |

UNIT-II

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|----|---|-----|----|-----|
| 3 | Correlate substitution method and potentiometer method for measuring medium resistances. | CO2 | L4 | 12M |
| OR | | | | |
| 4 | a Justify how the inductance is measured in terms of known capacitance using Maxwell's bridge | CO2 | L5 | 8M |
| | b List the advantages and disadvantages of Maxwell's Bridge. | CO2 | L1 | 4M |

UNIT-III

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|----|---|-----|----|-----|
| 5 | Derive the torque equation for single phase electro dynamometer type wattmeter. | CO3 | L3 | 12M |
| OR | | | | |
| 6 | a Correlate how the measurements are made using LPF and UPF wattmeters. | CO3 | L5 | 6M |
| | b Explain errors caused by vibration of moving system electro dynamometer type wattmeter. | CO3 | L2 | 6M |

UNIT-IV

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|---|--|-----|----|----|
| 7 | a Explain the construction of Current transformer. | CO4 | L2 | 8M |
| | b Why secondary of C.T should not be open? | CO4 | L4 | 4M |

OR

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|---|---|-----|----|-----|
| 8 | Describe the working principle of piezo electric transducers. | CO5 | L2 | 12M |
|---|---|-----|----|-----|

UNIT-V

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|---|--|-----|----|-----|
| 9 | Describe the construction and working of a moving coil ballistic galvanometer. | CO6 | L2 | 12M |
|---|--|-----|----|-----|

OR

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|----|--|-----|----|----|
| 10 | a Explain the functions of time base generator in a CRO. | CO6 | L2 | 6M |
| | b Analyze the Lissajous patterns. | CO6 | L4 | 6M |

*** END ***

INDIAN INSTITUTE OF ENGINEERING & TECHNOLOGY: PUTTAM

(AUTONOMOUS)

2 Year 1st Semester Regular Examination March-2023

ELCA TWO-SEMESTER EXAMINATION

(Electrical and Electronics Engineering)

99

Max. Marks: 60

Time: 1 hour

(Answer all five parts 2 x 12 = 60 Marks)

UNIT-I

- 1 a) Illustrate the construction and working of permanent magnet moving coil instrument.
b) List the advantages and disadvantages of PMDC type instruments.
- 2 a) Briefly, how do you extend the range of an Ammeter? Explain Aron's Shunt with diagram.
b) A moving coil instrument gives a full-scale deflection of 10mA when the potential across its terminals is 100mV. Calculate shunt resistance for a full-scale deflection corresponding to 100 A.

UNIT-II

- 3 Describe Robinson's method and potentiometer method for measuring medium resistance.
- 4 a) Explain how the resistance is measured in terms of known capacitance using Murray's bridge.
b) List the advantages and disadvantages of Maxwell's Bridge.

UNIT-III

- 5 Derive the torque equation for single phase electric synchronous type wattmeter.
- 6 a) Compare how the measurements are made using LFP and LPP wattmeter.
b) Explain errors caused by variation of moving system zero, dynamometer type wattmeter.

UNIT-IV

- 7 a) Explain the operation of current transformer.
b) Why secondary of CT should not be open?
- 8 Describe the working principle of two-wattmeter method.

UNIT-V

- 9 Describe the construction and working of a magnetic coil ballast power source.
- 10 a) Explain the function of time base generator in a CRO.
b) Analyse the distortion pattern.

Test 1 of 1