

TED (10)–3055

Reg. No.

(REVISION—2010)

Signature

THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL AND
ELECTRONICS ENGINEERING—MARCH, 2013
ELECTRICAL MEASUREMENT AND INSTRUMENTATION

[Time : 3 hours

(Maximum marks : 100)

Marks

PART—A

(Maximum marks : 10)

- I Answer *all* questions in one or two sentences. Each question carries 2 marks.
1. Classify the secondary instruments based on the function.
 2. Describe the method used in induction type energy meter to compensate creeping error.
 3. Write the principle of maximum demand indicator.
 4. State the working of a general transducer.
 5. Describe the term 'Shunt' in an instrument.

(5x2=10)

PART—B

(Maximum marks : 30)

- II Answer *any five* questions. Each question carries 6 marks.
1. Explain the different mechanism used for production of controlling torque.
 2. Draw a diagram and explain rectifier type voltmeter.
 3. Explain the theory of compensated wattmeter.
 4. Explain briefly Wheatstone's bridge used for measurement of medium resistance.
 5. Compare the differences between phantom loading and direct loading for the calibration of energy meter.
 6. Explain briefly the working principle of indicating type frequency meter.
 7. List the applications of CRO.

(5x6=30)

PART—C

(Answer *one* full question from each unit. Each question carries 15 marks.)

UNIT – I

- III (a) Draw a neat sketch and explain the constructional details of a Permanent magnet moving coil instrument. 8
- (b) Compare the advantages and disadvantages of moving coil and moving iron instruments. 7

OR

- | | Marks |
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| IV (a) Design a moving coil instrument to measure current and voltage using shunt and multiplier resistance. | 8 |
| (b) Explain the general sources of error in measuring instruments and suggest remedies to reduce them. | 7 |

UNIT – II

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| V (a) Make a neat sketch and describe the constructional details of a single phase induction type energy meter and explain its operation. | 8 |
| (b) List the errors in dynamometer type wattmeter. | 7 |

OR

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| VI (a) Make a suitable connection diagram and explain the calibration of energy meter by phantom loading. | 8 |
| (b) Propose a suitable connection diagram and explain CTs and PTs in association with Wattmeter for measuring power in High Tension (HT) line. | 7 |

UNIT – III

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| VII (a) Draw and explain the working of insulation megger. | 8 |
| (b) Explain briefly about digital voltmeter. | 7 |

OR

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| VIII (a) Explain with neat sketch the procedure for measurement of earth resistance by earth tester. | 8 |
| (b) Develop a circuit diagram and explain briefly for locating a fault by Murray loop method. | 7 |

UNIT – IV

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| IX (a) Construct a block diagram of CRO and explain each block. | 8 |
| (b) Draw and explain Burden tube. | 7 |

OR

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| X (a) Draw the construction of CRT and briefly explain its working. | 8 |
| (b) Describe the working of semiconductor strain gauge with suitable sketch. | 7 |