THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL AND ELECTRONICS ENGINEERING — MARCH, 2016

ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Which type of instrument can totalize events over a specified period of time ?

2. In an electrodynamometer type wattmeter, which coil is fixed ?

3. How the errors due to stray magnetic field in a wattmeter can be eliminated ?

4. In a wheatstone's bridge, what is P & Q ?

5. Draw the wave form of a calibration circuit used in a CRO.   (5×2=10)

PART — B

(Maximum marks : 30)

II   Answer *any five* questions from the following. Each question carries 6 marks.

1. Explain the working of a rectifier type voltmeter with a neat sketch.

2. Draw the connection diagram of a 3-phase 2 element energy meter.

3. Sketch the circuit arrangement of a clip-on meter.

4. Write down any six classifications of frequency meters.

5. Draw the circuit arrangement of a insulation megger.

6. Explain the working of a capacitive transducer with a neat sketch.

7. List out any six applications of sensors.   (5×6=30)

PART — C

(Maximum marks : 60)

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

UNIT—I

III (a) Explain the following terms :

     (i) Controlling torque

     (ii) Damping torque

     (iii) Deflecting torque

     (iv) Voltmeter multiplier   8

  (b) Draw and explain the working of a rectifier type ammeter.   7

OR

IV (a) A 10 mA d'Arsonval movement with an internal resistance of 120Ω is to be converted in to a 0-200 mA ammeter. Calculate the shunt resistance required, voltage across the shunt, equivalent resistance of shunt and meter in parallel.   8

  (b) Explain the working of an attraction type instrument with a neat sketch.   7

UNIT—II

V (a) Draw a connection for the measurement of power using CT & PT.   8

  (b) What is meant by creeping ? How it can be compensated .   7

OR

VI (a) Explain the procedure with circuit diagram of the calibration of energy meter using standard wattmeter and a stop watch.   10

  (b) Explain friction errors and its compensation in induction type energy meters.   5

UNIT—III

VII (a) With the help of a neat sketch, explain the method of locating ground fault using varley loop method.   10

  (b) Draw the connection diagram of a static phase sequence indicator.   5

OR

VIII (a) Explain the working of a Electrical resonance type frequency meter with a neat sketch.   8

  (b) Draw and explain murray loop method for locating ground fault.   7

UNIT—IV

IX (a) Explain the working of a strain gauge with a neat sketch.   8

  (b) List out any four applications of a CRO.   4

  (c) List out any three applications of transducer.   3

OR

X (a) Draw the block diagram of a CRO and identify each block.   12

  (b) What is meant by lissajous patterns ?   3