

THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL AND ELECTRONICS ENGINEERING — APRIL, 2017

ELECTRICAL MEASURING INSTRUMENTS

[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. State the functions of control spring in PMMC instruments.
2. Classify measuring instruments.
3. State the working principle of dynamometer type instrument.
4. Name any two methods to locate cable fault.
5. Enumerate the functions of CRO.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. List out the advantages and disadvantages of PMMC instruments.
2. Setup an arrangement for extending the range of a moving coil ammeter.
3. Explain in detail the reasons for the creeping error and its remedies.
4. Discuss about the special features incorporated with dynamometer type watt meter for LPF applications.
5. Explain with neat sketch the measurement of medium resistance by potentiometer method.
6. Describe with necessary sketches to measure capacitance.
7. Differentiate analog and digital meters.

(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) With neat diagram explain the different methods of deflecting torque provided to indicating Instruments. 8
- (b) What are the common errors occurs in an indicating type measuring instrument. 7

OR

- IV (a) Show the circuit arrangement to use a PMMC instrument which gives FSD at 10 mA current and 50 mV potential difference for measuring as
(i) Ammeter 0-5A (ii) Volt meter 0-100V 8
- (b) With neat sketch explain constructional details of MI repulsion type instrument. 7

UNIT — II

- V Draw and explain in detail the working principle of dynamometer type watt meter. 15

OR

- VI (a) Setup an arrangement for measurement of percentage error in a watt meter with minimum power consumption at upf. 8
- (b) Draw the connection diagram of three phase three element energy meter. 7

UNIT — III

- VII With neat sketch, explain the procedural steps of measurement of earth resistance by using earth megger. 15

OR

- VIII (a) Describe the Varley Loop method to find short circuit cable faults. 8
- (b) Explain with neat sketch the measurement of low resistance by volt meter ammeter method. 7

UNIT — IV

- IX Explain the working principle of CRO with the help of block diagram. 15

OR

- X (a) Explain with neat sketch indicating type frequency meter. 8
- (b) Draw the block diagram of ramp type DVM. 7