EMI. 1

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THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL & ELECTRONICS ENGINEERING –MODEL

ELECTRICAL MEASURING INSTRUMENTS

(Time 3 Hrs)

(Maximum Marks: 100)

Marks

PART –A

(Maximum Marks 10)

1. Answer all questions in one or two sentences. Each question carries 2 marks

    1. List out two advantages of PMMC instruments over MI instruments

    2. Enumerate different methods adopted in measuring instruments to produce controlling torque

    3. Describe the method to find out multiplication factor of dynamometer type multi range watt meter

    4. Name any two methods to find out earth resistance experimentally.

    5. State any two applications of CRO   (5X2=10)

PART B

(Maximum marks 30)

II. Answer any five of the following. Each question carries 6 marks.

    1. Differentiate PMMC instrument with MI instrument.

    2. With neat diagram explain how damping torque produced in a PMMC instrument.

    3. Discuss the common errors occurs in measuring instruments.

    4. Draw neat sketch of compensated dynamometer type watt meter and explain the concept.

    5. Describe the method to find medium resistance by Wheatstone bridge.

    6. Describe the procedural steps of measuring earth resistance using earth megger.

    7. Explain the working of vibrating reed type frequency meter.

(Marks 5x6=30)

PART C

(Maximum marks 60)

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

UNIT- I

III (a) Demonstrate any three methods adopted for producing deflecting torque in a measuring instrument.

8

(b) A moving coil meter gives full scale deflection with a current of 5mA. If the coil of the instrument has a resistance of 10 ohm, show how it can be adopted to work (1) as ammeter 0-10A and (2) as volt meter 0-100V

7

OR

IV (a) Illustrate the methods to use a PMMC instrument to measure ac voltage and current.   8

b) Pointer of a MC instrument gives FSD of 20mA. The potential difference across the meter when carrying 20 mA is 200 volt. This instrument is intended to use (1) 200A (2) 1000 V for full scale readings. Calculate the value of shunt and series resistances connected to provide this. 7

UNIT II

V (a) Explain the sources of errors occurred in a dynamometer type watt meter.

8

(b) Draw the schematic diagram of three phase energy meter.

7

OR

VI (a) Demonstrate with circuit diagram for calibrating a dynamometer type watt meter with minimum power consumption.

8

(b) Draw the connection diagram for the measurement of three phase balanced power using two watt meters .

7

UNIT III

VII (a) Demonstrate with sketch how to find out the earth resistance by fall of potential method   8

(b) Describe Murray loop test to find out cable fault.   7

OR

VIII (a) Explain the working principle of Maxwell Bridge

8

(b) Describe the measurement of low resistance by potentiometer method   7

UNIT IV

IX (a) Draw the block diagram of CRO

(b) With the help of block diagram explain ramp type DVM

8

7

OR

X (a) With neat sketch explain the working principle of single phase power factor meter.   8

(b) Describe the working principle of indicating type frequency meter

7