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(REVISION — 2015)

Reg. No. ....

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THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL AND ELECTRONICS ENGINEERING — OCTOBER/NOVEMBER, 2016

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 reason for fluid friction damping is not much used in portable instruments.

2.   Enumerate the methods for providing damping torque in indicating instrument.

3.   Write the function of shading ring in the middle limb of voltage coil magnet.

4.   Give the required earthing resistance for generating station and major substation.

5.   State range of power factor.   (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1.   Compare between spring controlled and gravity controlled instruments.

2.   State the material used for making control spring in measuring instruments and its advantages.

3.   Draw and explain phantom loading method of energy meter for unity pf.

4.   Two lamps of 60w and one fan of 80w are working in an office for 10 hours every day. Calculate the energy consumption in a day. Calculate energy consumption for January month.

5.   Explain with neat sketch the measurement of medium resistance by volt meter ammeter method.

6.   List out the range of earth resistances of various electrical installations.

7.   Explain the working of rotating type phase sequence indicator.   (5×6 = 30)

[P.T.O.

Marks

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 controlling torque provided to indicating instruments. 8

(b) A moving coil ammeter has a fixed shunt of 0.05 ohm with a coil circuit resistance of 1200 ohm and needs a potential difference of 0.5 volt across it for FSD. (i) To what total current does this correspond ? (ii) Calculate the value of shunt to give FSD when the total current is 20A and 50 A. Show the circuit arrangements. 7

OR

IV (a) With neat sketch explain constructional details of MI attraction type instrument. 8

(b) Draw the circuit arrangements to use a MC instrument which gives FSD at 100mV potential difference and 10 mA current as (i) Ammeter 0-10A (ii) Volt meter 0-250V. 7

UNIT – II

V (a) Explain in detail the errors occurred and its remedies in dynamometer type watt meter. 8

(b) Construct a circuit diagram for measurement of % error in an energy meter by direct loading method. 7

OR

VI (a) Derive the expression for deflecting torque produced in dynamometer type wattmeter. 8

(b) Explain in detail the phase and speed error in an induction type energy meter. 7

UNIT – III

VII (a) With neat diagram, describe the working principle of Megger. 8

(b) Explain the general concept of AC bridges to measure unknown impedance. 7

OR

VIII (a) Distinguish between earth megger and insulation megger. 8

(b) Classify resistance on the basis of its ohmic values. List out the methods used for measurement of resistance. 7

UNIT – IV

IX Describe with block diagram digital storage CRO. 15

OR

X (a) Draw and explain the constructional details of indicating type frequency meter. 8

(b) Explain the working of static type phase sequence indicator. 7

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