Total No. of Questions—**12**] [Total No. of Printed Pages—**4**

Seat No.	

[5057]-55

S.E. (Electrical) (First Semester) EXAMINATION, 2016

ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 100**

SECTION I

1. (*a*) Explain construction and working of Repulsion type moving iron instrument, comment on shape of scale. [10]

(*b*) Which three forces are required for satisfactory operation of an analog indicating instrument ? State the function of each force. [8]

Or

2. (*a*) Explain the extension of range of ammeters and voltmeters using shunts and multiplier. [10]

(*b*) Explain the terms—Accuracy, Linearity, Drift and Reproducibility. [8]

3. (*a*) Explain the working construction of Anderson's Bridge. Derive the expression to find the unknown inductance, draw vector diagram. [8]

P.T.O.

(*b*) Give classification of resistance. Give suitable method of measurement for each category. [8]

Or

4. (*a*) Write a short note on earth tester. [8]

(*b*) With a circuit diagram derive the equation for unknown capacitance measurement using Schearing bridge. [8]

5. (*a*) Explain one wattmeter and two-way switch method to measure active and reactive power measurement. Draw phasor diagram. [8]

(*b*) Write a short note on power factor meter. [8]

Or

6. (*a*) State and explain errors in dynamometer type wattmeter. Also state the compensation for each type of error. [8]

(*b*) Power supplied to a three phase load was measured by two wattmeters. The reading were 7.8 kW and –2.55 kW. The supply voltage being 400 Volts. Determine load PF, Total power supplied, and line current. [8]

SECTION II

7. (*a*) Explain with neat sketch, two elements, three phase induction type energy-meter. [10]

(*b*) State the purpose of Instrument Transformers in measurement of electrical quantity. [8]

Or

8. (*a*) A single phase energy meter has a constant of 1200 rev/kWh when a load of 200 W is connected. The disc rotates at 4.2 rpm. If the load is on for 10 hrs. How many units are recorded ? Also find the % error given by the energy-meter. [10]

(*b*) What is meant by creeping in an energy-meter and how is it prevented ? [8]

9. (*a*) Explain Pirani gauge with neat sketch for measurement of vacuum pressure. [8]

(*b*) What is a transducer ? Give the detailed classification of transducer. [8]

Or

10. (*a*) Explain measurement of voltage, current, phase angle, frequency using CRO. [8]

(*b*) What are the advantages of electric transducer ? [8]

11. (*a*) Explain construction and working of LVDT with neat diagram. [8]

(*b*) What are the different electrical methods used for measurement of level ? Explain any *one*. [8]

Or

12. (*a*) What is a strain gauge ? How is it classified ? Explain any *one* type of strain gauge in detail. [8]

(*b*) Draw and explain ultrasonic method for level measurement. [8]