

FACULTY OF ENGINEERING

B.E. 2/4 (EE/Inst.) I – Semester (Main) Examination, Nov./Dec. 2012

Subject: Electrical Measurements and Instruments

Time: 3 Hours

Max. Marks: 75

Note: Answer all questions from Part A. Answer any five questions from Part B.**PART – A (25 Marks)**

1. Define 'Accuracy' and 'Precision'? (2)
2. List four sources of possible errors in instruments? (2)
3. Define driving torque. (2)
4. A energy meter whose constant is 600 revolutions per KWh makes 5 revolutions in 20 seconds. Calculate the load in KW? (3)
5. Discuss the merits of Kelvin's double bridge compared with Wheatstone bridge. (2)
6. Derive the general condition for balance of an A.C. bridge. (3)
7. Explain the effect of opening the secondary circuit of a current transformer when the primary winding is energized. (3)
8. Write the advantages of Instrument Transformers. (2)
9. Draw the B-H curve and hysteresis loop with all specifications. (3)
10. Distinguish between a ballistic galvanometer and flux meter. (3)

PART – B (50 Marks)

11. Explain the construction and principle of operation of electrostatic voltmeter. (10)
12. A 230 v, 50 Hz, 1- ϕ energy meter has a constant of 120 rev/KWh. Determine the speed of the disc in rpm for current of 10A at a power factor of 0.8 lagging. (10)
13. Describe Schering Bridge for the measurement of capacitance and 'loss angle' of unknown capacitors. Draw the phasor diagram and derive the necessary equations of the bridge under balance conditions. (10)
14. With the help of neat diagram, explain the working principle and calibration of Hibbert's magnetic standard flux meter. (10)
15. Draw the circuit diagram of a Crompton's potentiometer and explain its working principle and steps to measure unknown resistance. (10)
16. Describe the design and constructional features used in potential transformers for reduction of ratio and phase angle errors. (10)
17. Write short notes on: (10)
 - (i) Meggar
 - (ii) Calibration of voltmeter
 - (iii) Dual trace oscilloscope
 - (iv) CRO.
