

ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : MAY / JUNE 2010

REGULATIONS : 2007

FIFTH SEMESTER : EEE

070280033 - MEASUREMENTS AND INSTRUMENTATION

TIME : 3 Hours

Max.Marks : 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. What are the different types of Standards?
2. Write the two different designs of repulsion type instruments.
3. Why the PMMC instruments are not used for A.C measurements?
4. Mention the classification of Instruments Transformers.
5. Which torque is absent in energy meter? Why?
6. Write any two advantages of Instrument Transformers.
7. Define Turns ratio and Actual ratio.
8. A 11000 : 110 potential transformer is used along with a voltmeter reading 87.5 V. Estimate the of line voltage.
9. Give some applications of Wheatstone's bridge.
10. Write some examples of resistances for measurement of high resistance.
11. What are the various types of A.C bridges?
12. List out the properties of Transformer ratio bridge.
13. What are the classifications of Electrical Transducers?
14. Mention the types of strain gauge.
15. Write any two applications of Piezoelectric Transducer.
16. What are the desirable characteristics of Thermocouple?
17. Define the Resolution and Sensitivity of Digital Voltmeter.
18. List out some specifications of Digital Multimeter.
19. Give two types of delay lines used in oscilloscope?

20. What are the three types of Graphic recorders?

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. a) Write short notes on taut band instrument and temperature compensation in PMMC instrument. 8
- b) State the advantages and disadvantage of moving iron instrument. 4
22. a) The meter constant of 5 A, 220 V, A.C watt-hour meter is 3275 revolutions per KWh. Calculate the speed of the disc at full load. In a test run at half load, the meter takes 59.5 sec to complete 30 revolutions. Calculate the error of the meter. 4
- b) Explain the rotating field and alternating field MI power factor meter. 8
23. a) What are the advantages and disadvantages of Anderson's bridge? 4
- b) The four arm bridge ABCD, supplied with a sinusoid voltage, have the following values AB = 330 ohms resistance in parallel with 0.2  $\mu$ F capacitor, BC = 400 ohms resistance, CD = 800 ohms resistance, DA resistance R in series with a 1.5  $\mu$ F capacitor. Determine the i) Values of R and ii) Supply frequency at which the bridge will be balanced. 8
24. a) Compare the resistance thermometer and thermister. 6
- b) What are the advantages and disadvantages of LVDT? 6

25. a) What are the performance parameters of Digital Voltmeters? 6
- b) What are the applications of X-Y recorder? 6
26. a) What are the Characteristics of Transducers? 4
- b) Explain the liner and rotary encoders. 8
27. a) What are the advantages of Digital multimeters over analog multimeters? 4
- b) Compare the current transformers and potential transforms. 8
28. a) Compare PMMC, moving iron and electrodynamicometer type instruments based on suitability and the applications. 6
- b) Explain the calibration of an Energy meter 6

\*\*\*\*\*THE END\*\*\*\*\*