

[06 - 2111]

III/IV B.E. DEGREE EXAMINATION

First Semester

Electrical and Electronics Engineering

ELECTRICAL MEASUREMENTS

(Common with M.S. Electrical and Electronics  
Engineering)

(With effective from the admitted batch of 2006-2007)

Time : Three hours

Maximum : 70 marks

Answer First question and any other FOUR questions.

All questions carry equal marks.

1. (a) What are the advantages and disadvantages of Moving iron P.F meters?
- (b) Write a short note on synchronizing.
- (c) Describe the applications of measurement systems.
- (d) Explain the reproducibility and drift of static characteristics of measurement systems.
- (e) What are the main sources of errors in moving coil instruments?

- (f) Derive the general torque expressions for moving iron instruments.
- (g) Why electrostatic instruments are free from errors and also mention advantages and disadvantages?
2. (a) Explain the various types of errors that may occur while using M.I type instruments?
- (b) It is desired to measure the voltage across  $50\text{K}\Omega$  resistor in the circuit consisting of  $150\text{V}$  D.C supply across the series combination of  $100\text{K}\Omega$  and  $50\text{K}\Omega$  resistance. Two voltmeters are available for this purpose: voltmeter A with a sensitivity of  $1000\ \Omega/\text{V}$  and voltmeter B with a sensitivity of  $20000\ \Omega/\text{V}$ . Both meters have  $0-50\text{V}$  range. Calculate
- reading of each voltmeter
  - the error in each reading expressed as percentage of true value.
3. (a) Explain the construction and operation of thermal lagged maximum demand indicator?
- (b) Explain the construction and operation of Ferrodynamic type frequency meter.
4. (a) Explain the measurement of low resistance using Kelvin's Double bridge method.
- (b) Explain the working of Owen's Bridge.

5. (a) Explain the basic concepts of wagner's earthing device.
- (b) Explain the setup used to measure the flux density in ring specimen.
6. (a) Explain the procedure to plot the B-H curve by step by step method.
- (b) Explain the procedure used to plot the B-H curve using the method of Reversals.
7. (a) Explain the operation of basic potentiometer and its standardization.
- (b) Derive the equation for actual transformation-ratio of potential transformer.
8. (a) Explain the operation of polar type A.C potentiometer.
- (b) Explain the measurement of phase and frequency using Oscilloscope.
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