

**B. Tech Degree IV Semester Examination, May 2006****EE 403 ELECTRICAL MEASUREMENTS AND MEASURING INSTRUMENTS***(Common for 1999 & 2002 Admissions)*

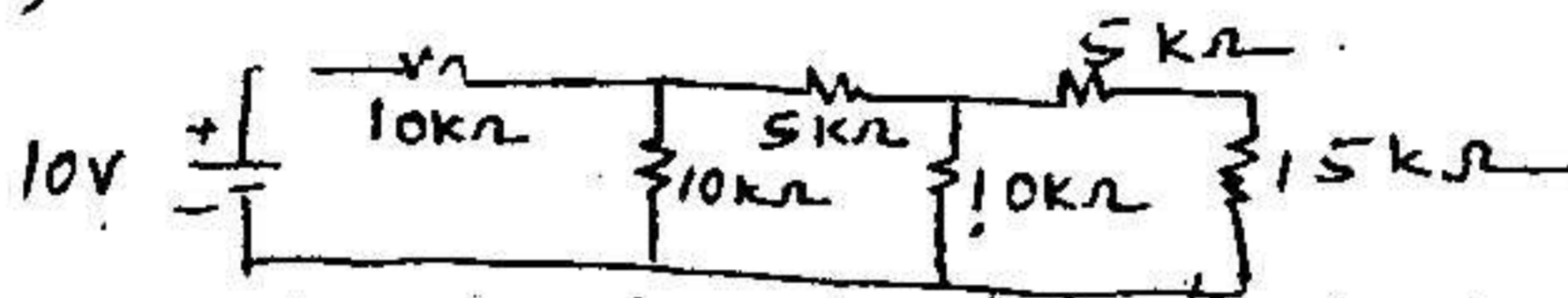
Time : 3 Hours

Maximum Marks : 100

- I. (a) Explain the terms : (i) static error (ii) static correction and (iii) precision. (9)  
 (b) Differentiate between the terms scale range and scale span giving suitable examples. (6)  
 (c) Explain the concept of loading effect. (5)

OR

- II. (a) Define the terms : (i) repeatability (ii) accuracy and (iii) sensitivity. (6)  
 (b) Explain the phenomenon of hysteresis in measurement systems. (5)  
 (c) What is the true value of current in the  $15\text{ K}\Omega$  resistor of the following circuit? If an ammeter of  $2\text{ K}\Omega$  resistance is used to measure the current in  $15\text{ K}\Omega$  resistor, what will it read? (9)



- III. (a) Draw the circuit of a Kelvin's double bridge. Derive the condition for balance. (10)  
 (b) Describe the Murray Loop test for localization of ground and short circuit faults in cables. (10)

OR

- IV. (a) Derive the equations of balance of an Anderson's bridge. Draw the phasor diagram for conditions under balance. What are the advantages of Anderson bridge? (10)  
 (b) Describe Varley Loop test for localization of ground and short circuit faults in cables. (10)

- V. (a) Describe the construction and working of a polar type potentiometer. How it is standardized? (10)  
 (b) Explain the construction and working of a dynamometer type ammeter. (10)

OR

- VI. (a) Describe the basic principle of a d.c. potentiometer. What is meant by standardization of a potentiometer? Describe the procedure of standardization. (10)  
 (b) Explain the construction and working of current transformer. Draw its phasor diagram. (10)

- VII. (a) Explain the construction and working of a dynamometer type wattmeter. Derive its torque equation when it is used on a.c. (10)  
 (b) Describe the construction and working of a frequency meter. (10)

OR

- VIII. (a) Describe the construction and working of a single phase induction type energy meter. Explain the sources of errors in single phase induction type energy meter. (12)  
 (b) Describe the construction and working of 3 phase power factor meter. (8)

- IX. (a) Describe the Lloyd Fisher square for measurement of iron losses. (8)  
 (b) Explain the step by step method for determination of B.H curve. (6)  
 (c) Explain the laws of illumination. (6)

OR

- X. (a) Explain the following photometric terms :  
 (i) Lumen (ii) Luminous intensity  
 (iii) Luminance (iv) Luminous excitance. (6)  
 (b) Explain the working of flicker photometer. (5)  
 (c) Describe the construction and working of a flux meter. (9)

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