LAB NO: 05

IMPLEMENTATION OF LADDER AND BRIDGE CIRCUITS

OBJECTIVE:

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THEORY:

LADDER NETWORK:

A ladder network is one where the circuit elements are progressively added in series and parallel from left to right, thus forming a chain-like series of loop. One possible technique for the solution of ladder networks is a series of cascading voltage dividers. Current dividers may also be used.

BRIDGE NETWORK:

Bridge networks typically make use of four elements arranged in dual series and parallel configuration. These are often used in measurement systems with the voltage of interest derived from the difference of two series sub-circuit voltages. As in the simpler series-parallel networks; KVL, KCL, the current divider rule and the voltage divider rule may be used in combination to analyze the sub-circuits.

SCHEMATIC DIAGRAM:

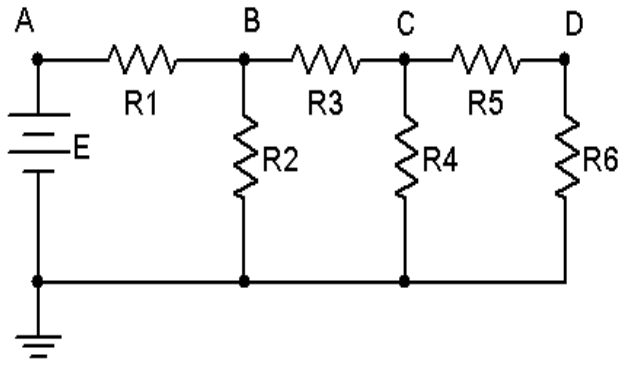

Figure 5.1: Ladder Network

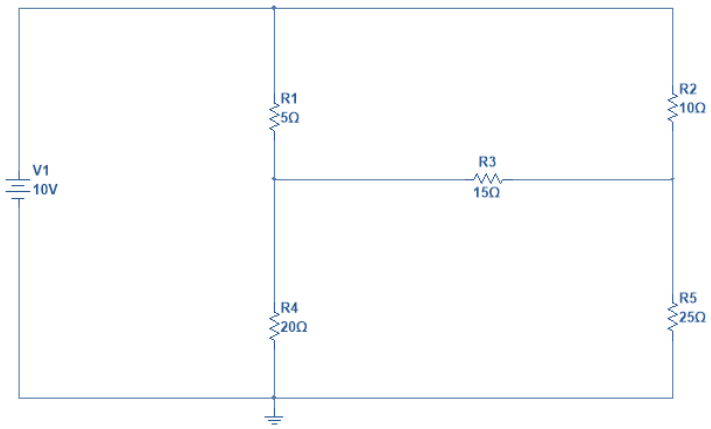

Figure 5.2: Bridge Network

APPARATUS:

- Digital multi-meter
- DC power supply
- Resistors

PROCEDURE:

CALCULATIONS:

For Ladder Network:

V(Theoretical)	**V_A**	**V_B**	**V_C**	**V_D**
V(Measured)				

Table 5.1

Current Through	**I(Theoretical)**	**I(Measured)**
R_1		
R_2		
R_3		
R_4		
R_5		
R_6		

Table 5.2

For Bridge Network:

V(Theoretical)	V_{R1}	V_{R2}	V_{R3}	V_{R4}	V_{R5}
V(Measured)					

Table 5.3

Current Through	I(Theoretical)	I(Measured)
R_1		
R_2		
R_3		
R_4		
R_5		

Table 5.4

CONCLUSION:

POST LAB QUESTIONS:

1. Briefly describe few important applications of bridge circuit?

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2. If DMM leads are reversed while measuring voltages in bridge network, what will happen to the measurements in table 5.3?

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_____

_____

3. Suppose if R_3 is removed in the figure 5.2, then what will be the equivalent resistance of the bridge network?

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Teacher Remarks:

Obtained Marks: _____ / 10