



VINAYAKA MISSION'S RESEARCH FOUNDATION

AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY, PAIYANOOR

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING



STANDARD OPERATING PROCEDURE

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|---------------------------|---|
| Name of the Lab./facility | Control and Instrumentation Lab |
| Name of the equipment | ANDERSON'S BRIDGE |
| Purpose | To help the students to acquire knowledge about the use of ANDERSON'S BRIDGE for measuring the value of inductance |
| Scope | The value of unknown inductance can be measured by using the resistance parameters of different values in the bridge circuit close to $\pm 2\%$ |
| Responsibility | Faculty Incharge of the facility, HOD/EEE |

STANDARD OPERATING PROCEDURE

- The connections should be given as per the experiment to be performed referring to the lab manual
- Connections thus given shall be verified by the course instructor or lab in-charge.
- Switch on the trainer kit & connect the unknown inductance in the arm marked R_1 .
- Observe the sine wave at the secondary of the isolation transformer by using CRO.
- Vary the resistance R from minimum position in a clockwise direction.
- Connect the CRO between the ground & the output point and check for the balance condition.
- For further fine balance vary the resistance r_1 which will compensate for the resistive component of the inductor.
- Remove the wiring and measure the values of R and r_1 using DMM.
- The above steps are repeated for different values of unknown inductance.
- On completion of the experiment, kit should be switched off and the connections should be removed.

PRECAUTIONS TO BE FOLLOWED

- Care should be taken that the experiment is conducted under balance condition.

RECORD TO BE MAINTAINED

- Laboratory Manual containing the experiments that can be performed with the equipment
- Maintenance Record



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STANDARD OPERATING PROCEDURE

| | |
|---------------------------|---|
| Name of the Lab./facility | Control and Instrumentation Lab |
| Name of the equipment | SCHERING BRIDGE |
| Purpose | To help the students to acquire knowledge about the A.C use of SCHERING BRIDGE for measuring the value of unknown capacitance |
| Scope | The value of unknown capacitance can be measured by using the resistance of different values in the bridge circuit and hence the quality factor can be calculated |
| Responsibility | Faculty Incharge of the facility, HOD/EEE |

STANDARD OPERATING PROCEDURE

- The connections should be given as per the experiment to be performed referring to the lab manual
- Connections thus given shall be verified by the course instructor or lab in-charge.
- Set the value of given capacitance.
- Set the fixed resistance R_2 .
- Vary the resistance value or R_1 .
- Switch off the kit and remove the terminals from R_1 and measure R_1 .
- Calculate the value of capacitance and quality factor.
- The above steps are repeated for different values of unknown inductance.
- On completion of the experiment, kit should be switched off and the connections should be removed.

RECORD TO BE MAINTAINED

- Laboratory Manual containing the experiments that can be performed with the equipment
- Maintenance Record



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STANDARD OPERATING PROCEDURE

| | |
|---------------------------|--|
| Name of the Lab./facility | Control and Instrumentation Lab |
| Name of the equipment | WHEATSTONE BRIDGE |
| Purpose | To help the students to acquire knowledge about the use of DC WHEATSTONE BRIDGE for measuring the value of the resistance |
| Scope | To find the value of the resistance by suitable bridge connections and compare it with the value measured by the multimeter. |
| Responsibility | Faculty Incharge of the facility, HOD/EEE |

STANDARD OPERATING PROCEDURE

- The connections should be given as per the experiment to be performed referring to the lab manual
- Connections thus given shall be verified by the course instructor or lab in-charge.
- The unknown resistance R_x is connected.
- The variable resistance is varied to show the galvanometer zero to make the bridge under balanced condition.
- After getting null indication, switch off the supply and find the variable resistance value using multimeter.
- Repeat the same steps for various resistance values.
- On completion of the experiment, kit should be switched off and the connections should be removed.

PRECAUTIONS TO BE FOLLOWED

- Care should be taken that the experiment is conducted under balance condition i.e there should be no current flow through the galvanometer

RECORD TO BE MAINTAINED

- Laboratory Manual containing the experiments that can be performed with the equipment
- Maintenance Record



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STANDARD OPERATING PROCEDURE

| | |
|---------------------------|--|
| Name of the Lab./facility | Control and Instrumentation Lab |
| Name of the equipment | THERMO COUPLE |
| Purpose | To help the students to acquire knowledge about the THERMO COUPLE for measuring the value of temperature |
| Scope | THERMO COUPLE is used in measurement of temperature |
| Responsibility | Faculty Incharge of the facility, HOD/EEE |

STANDARD OPERATING PROCEDURE

- The connections should be given as per the experiment to be performed referring to the lab manual
- Connections thus given shall be verified by the course instructor or lab in-charge.
- Supply is switched on.
- The temperature is controlled for various values.
- Hence the temperature increases the voltages
- Equivalent values of temperature and voltage reading are noted.
- The graph is plotted between the voltage and temperature values
- On completion of the experiment, supply should be switched off and the connections should be removed.

PRECAUTIONS TO BE FOLLOWED

- Care should be taken that the experiment is conducted with gradual increase in voltage as the temperature is increased .

RECORD TO BE MAINTAINED

- Laboratory Manual containing the experiments that can be performed with the equipment
- Maintenance Record



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STANDARD OPERATING PROCEDURE

| | |
|---------------------------|---|
| Name of the Lab./facility | Control and Instrumentation Lab |
| Name of the equipment | LVDT (Linear variable differential transformer) |
| Purpose | To help the students to acquire knowledge about the operation of Linear Variable Differential Transformer |
| Scope | Linear variable differential transformer (LVDT) is a inductive transducer used to translate the linear motion into electrical signals |
| Responsibility | Faculty Incharge of the facility, HOD/EEE |

STANDARD OPERATING PROCEDURE

- The connections should be given as per the experiment to be performed referring to the lab manual
- Connections thus given shall be verified by the course instructor or lab in-charge.
- Supply is switched on.
- Adjust the micrometer to read 200m. This position is called as end of transducer position.
- Adjust the span adjustment pot to read 10mm.
- Now adjust the micrometer. This position is called negative end of transducer position.
- No need to adjust any further for this as the displacement automatically reads -10.
- Repeat above two steps repeatedly till we get the absolute value.

PRECAUTIONS TO BE FOLLOWED

- Care should be taken that the experiment is conducted under end of transducer position.

RECORD TO BE MAINTAINED

- Laboratory Manual containing the experiments that can be performed with the equipment
- Maintenance Record