

**American International University- Bangladesh (AIUB) Faculty of Engineering (EEE)**

**CO4: Implement electrical circuit (including DC, AC source, load and measuring equipment) in a group from the given schematics circuits and adapt with electrical measuring devices considering standards for professional engineering. (**P.e.2.P4), K6-P1,P4,P5

**Marking Rubrics (to be filled by Faculty)**

**Objectives**

**Unsatisfactory (0-1)**

**Good (2-3)**

**Excellent (4-5)**

**Marks**

**Performance (10)**

**Setup of experiment, Take proper measurements**

Cannot setup experiment without support

Cannot take measurements

Can setup some of the portions of

experiment without support Can take measurements but inaccurately

Can setup the whole

experiment without support

Can take organized and

accurate measurements

**Identify experiment goals, Summarize findings and compare actual to expected results**

Cannot identify goals

Cannot summarize or compare findings

to expected results

Can identify some goals but unable to draw adequate hypothesis

Summarize finding in an

incomplete way

Can identify necessary and sufficient goals

Summarize finding in a complete way

**Report (10)**

**Observation 1**

Cannot answer any question related to the

experimental setup

Can answer some of the questions

Can answer most or all the

questions

**Observation 2**

Unexpected experimental outcome between calculated data

and experimented data

Somewhat unexpected experiment

outcome

Accurate data collected from the hardware

**Comments**

Assessed by (Name, Sign, and Date)

Total (out of 10):

**Group Members**

**ID**

**Name**

1.

2.

3.

4.

5.

**Student Name:**

**Student ID:**

**Task:**

Perform Open End Lab following given instructions.

**Experiment title:**

**Course Name:**

Introduction to Electrical Circuits (IEC) Lab

**Course Code:**

COE 2102

**Semester:**

Fall 2023-24

**Sec:**

All

**Faculty:**



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**American International University- Bangladesh**

**Department of Electrical and Electronic Engineering**

COE 2102: Introduction to Electrical Circuits (IEC) Laboratory

**Title:** Construct an R-L-C circuit with a series parallel combination and apply KCL and KVL in AC and analyze the behavior of the circuit through data obtained during Laboratory work.

**Objective**

Validate RLC circuit and verification of KCL and KVL in AC circuits. Justify AC analysis technique that should be applied in this experiment,

**Equipment**

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



**Tasks**

Use at least 4 resistors, 2 inductor, 1 capacitor and an AC source, Breadboard and Multimeter.

A PC or Laptop.

1. Design a RLC AC circuit. **Circuit must have at least two branches that are in parallel. Each inductor and capacitor should have at least one resistor in series with it.**
2. Apply an AC analysis theorem for extracting measuring data to validate KCL and KVL.
3. Compare experimental data and simulation data that can be obtained for any circuit simulation tool, e.g., Multisim, PSPICE.

**OEL Report**

Your OEL report should include the following sections:

* 1. ***Objective***

This is the main problem statement. It provides the overall direction for laboratory investigation and must be addressed in the conclusion.

***b)***

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

***Equipment***

A list of all laboratory equipment/tools used for the experiment.

A detailed and labeled diagram to illustrate the setup of the experiment, either drawn using some diagramming application or from the design software itself.

List of all the different components used.

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***c)***



**Procedure**

Brief description of the theory behind the conflicting performance requirements, limitations, and reasoning behind design choices.

Step-by-step procedure carefully explained in a numbered sequence.

Alternate design options should be explored through parameter sweeps and justification for the selection should be provided later in the results section.

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

Procedure should be detailed and contain the explanation of usual jargons to ensure that the readers can understand how the experiment should be performed and replicate the results by following the same process.

***d)***

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

**Results and Dataanalysis**

Show all the data obtained in the experiment in the tabular format. Analysis of data using appropriate graphs if needed.

***e)***

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

**Conclusions**

Comment on how much objective mentioned in the problem statement is achieved.

Identify any questionable data or limitation in results and explain the possible source of any errors.