Faculty:	FACULTY OF ELECTRICAL ENGINEERING		
Subject	: **Specialized 3rd Year Laboratory**	Review	: **4**
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UTM FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MALAYSIA

SKEE3742
ADVANCED POWER LABORATORY

PROBLEM
Topology of Electrical System

Prepared by:		Approved by:	**Programme Director**
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Date:	22/3/2023	Date:	

Problem:

A new residential area in Johor Bahru receives electricity from a single main power intake through a radial connection. Once the area was fully occupied, the power utility department received complaints from residents experiencing lamp dims and equipment malfunction. As an electrical distribution engineer, you are assigned by your superior to investigate the problem and propose a solution. Then, justify your findings and solutions by experiment and simulation.

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SKEE3742
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STUDENT PACK
Topology of Electrical System

Prepared by:		Approved by:	**Programme Director**
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1. Problem / Project Guide:

Students are expected to read and understand materials related to distribution system. Furthermore, students are also required to explore in the problem related to power supply to customers.

Questions That Can Help You Tackle the Problem

1. What are the different types of distribution network topologies?
2. Discuss the advantages and disadvantages of each topology.
3. What are the possible cause of light dimming and equipment malfunction?
4. What are the possible ways that can be taken by utilities to solve this problem?
5. What is the most practical way to solve the problem?

The students have to accomplish their task within three weeks' time. As guide, students may follow the problem solving time-line as given in table below.

(a) **Problem-solving Time-line**

Activities	Week 1	Week 2	Week 3
1. Understand/Identify/Brainstorming (Prepare group proposal, list materials, allocate tasks).			
2. Submit individual report/ Experiments and collect data.			
3. Analyse and interpret data/ Demonstration			

Assessment criteria are standardized for all laboratories and will generally be the same for all laboratories. For further understanding about the assessment criteria, please refer to PBL Third-year Laboratory Assessment document.

Report Writing

Other than the *general guide* specified by the Laboratory Coordinator, the report must include:

- Experimental Procedures
- Experimental Data
- Photographs of the actual circuit construction
- Circuit diagram
- Photographs of your group members

2. Equipments list:

The Distribution Trainer (NE9202); Load banks consisting of resistor, inductor and capacitor,

3. Component list:

Connector cables, multimeters

4. Software

5. Additional Resources

6. References

1. Hughes E.(2005), "Electrical and Electronic Technology", Pearson: Prentice Hall.
2. A.J. Pansini,(2005), "Guide to Electrical Power Distribution". CRC Press
3. John J. Grainger and William D. Stevenson, Jr. (1994). "Power System Analysis." Singapore: Mc Graw Hill International Editions.
4. Circuit Theory and Electrical Technology teaching modules, Fakulti Kejuruteraan Elektrik, UTM.