



Faculty:	FACULTY OF ELECTRICAL ENGINEERING		
Subject	: Specialized 3rd Year Laboratory	Review	: 4
Subject Code	: SKEE 3742	Release Date	: 2 Feb 2020
		Last Amendment	: 19 March 2023



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Faculty of
Electrical
Engineering

SKEE3742
ADVANCED POWER LABORATORY
PROBLEM
Open circuited Distribution System

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

Problem:

Your distribution company is supplying customers with a three-phase four-wire supply. On one occasion, a contractor accidentally disconnects one of the wires in the distribution system. Due to his action, your distribution company receives many reports of damages to household electrical appliances. As a distribution engineer, you are responsible for investigating what is happening. Justify your findings with an experiment.



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UNIVERSITI TEKNOLOGI MALAYSIA

SKEE3742 ADVANCED POWER LABORATORY

STUDENT PACK Open circuited Distribution System

<p>Prepared by:</p> <p>Name: Prof. Ir Dr. Mohd Wazir bin Mustafa PM Ir. Dr Pauzi bin Abdullah Dr. Ahmad Safawi bin Mokhtar Dr. Dalila binti Mat Said Dr. Jasrul Jamani bin Jamian Dr. Madihah binti Md Rasid Dr. Mohd Fadli bin Rahmat Dr. Mohd Hafiz bin Habibuddin Dr. Norzanah Bt Rosmin Dr. Rasyidah binti Mohamad Idris Dr. Siti Maherah binti Hussin Ir. Dr. Syed Norazizul bin Syed Nasir</p> <p>Signature & Stamp: </p> <p style="text-align: center;">Academic Laboratory Coordinator Advanced Power Laboratory School of Electrical Engineering Faculty of Engineering Universiti Teknologi Malaysia 81310 Johor Bahru, Johor</p> <p>Date: <u>22/3/2022</u></p>	<p>Approved by: Programme Director</p> <p>Name: Assoc. Prof. Ts. Dr. Shahrin bin Md. Ayob</p> <p>Signature & Stamp: </p> <p style="text-align: center;">PROF. Madya Ts. DR. SHAHRIN BIN MD AYOB Pegawai Jabatan Kejuruteraan Elektrik Kuasa Fakulti Kejuruteraan Elektrik Universiti Teknologi Malaysia 81310 Johor Bahru, Johor</p> <p>Date:</p>
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1.	<p>Problem / Project Guide:</p> <ul style="list-style-type: none"> - The students have to study three phase systems. - Understand balanced and unbalanced loads. <p>Questions That Can Help You Tackle the Problem</p> <ol style="list-style-type: none"> 1. What is three phase four wire feeder? 2. When this type of feeder is important and why? 3. Why a three phase load becomes unbalanced? <p>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.</p> <p>(a) Problem-solving Time-line</p> <table border="1" data-bbox="358 555 1187 875"> <thead> <tr> <th>Activities</th> <th>Week 1</th> <th>Week 2</th> <th>Week 3</th> </tr> </thead> <tbody> <tr> <td>1. Understand/Identify/Brainstorming (prepare group proposal, list material, allocate tasks).</td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> </tr> <tr> <td>2. Submit individual report/Experiments and collect data</td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> </tr> <tr> <td>3. Analyse and interpret data</td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> </tr> </tbody> </table> <p>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.</p> <p>Report Writing Other than the <i>general guide</i> specified by the Laboratory Coordinator, the report must include:</p> <ul style="list-style-type: none"> ▪ Experimental Procedures ▪ Experimental Data ▪ Photographs of the actual circuit construction ▪ Circuit diagram ▪ Photographs of your group members 	Activities	Week 1	Week 2	Week 3	1. Understand/Identify/Brainstorming (prepare group proposal, list material, allocate tasks).				2. Submit individual report/Experiments and collect data				3. Analyse and interpret data			
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1. Understand/Identify/Brainstorming (prepare group proposal, list material, allocate tasks).																	
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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																
	<ol style="list-style-type: none"> 1. Hadi Saadat, "Power System Analysis", 2nd edition, McGraw Hill, 2004. 2. John J. Grainger and William D. Stevenson, JR, "Power System Analysis", International editions, McGraw Hill, 1994. 3. J. Duncan Glover, Mulukutla S. Sarma and Thomas J. Overbye, "Power System Analysis and Design", 5th edition, Cengage Learning. 2012. 4. Hughes E, John Hiley, Keith Brown and Ian McKenzie, "Electrical and Electronic Technology", Pearson: Prentice Hall, 2012. 																