DMT 112/3
CIRCUIT THEORY I

PN WAN AZLIANAWATI WAN AZIZ
09-00-D1,
Makmal Elektronik Asas (MMBE),
PPK Mikroelektronik, Kampus Pauh Putra
E-mail: wanazlianawati@unimap.edu.my
H/Phone: 013-4338992
Class

• **Lecture**
  Monday, BKQ2, 11\(^{\text{am}}\) – 1\(^{\text{pm}}\)
  Wednesday, BKQ1, 8\(^{\text{am}}\) – 9\(^{\text{am}}\)

• **Lab**
  Tuesday, MMDP
  1(a) : 3\(^{\text{pm}}\) – 5\(^{\text{pm}}\)
  1(b) : 5\(^{\text{pm}}\) – 7\(^{\text{pm}}\)
Evaluation

- **Final examination** 50%
- **Course Work** 50%

  - Mid Semester Test 10%
  - End Semester Test 10%
  - Lab Report 10%
  - Lab Test 10%
  - Assignment/Quiz 10%
Course Outcomes

CO1
Ability to identify the basic circuit elements, calculate and solve a circuit using Ohm’s Law.
Course Outcomes

**CO2**

Ability to identify, calculate and solve a circuit using method of circuit analysis and network theorem in DC electric circuit.
Course Outcomes

**CO3**

Ability to identify, define and calculate the capacitance, inductance, initial and steady state condition in RL and RC circuit
Syllabus

Chapter 1 : Basic Circuit Theory

• Overview of circuit analysis
• SI units, voltage and currents, power, energy.
• Resistance and colour coding, elements on the circuit (passive and active) voltage and current source.
• Ohm’s Law and power calculation with passive sign calculation.
• Nodes, Branches and Loops
Syllabus

Chapter 2 : Resistive Circuit

- Series /Parallel circuits
- Kirchhoff`s voltage law (KVL) and voltage divider rule.
- Kirchoff`s current law (KCL) and current divider rule.
- Delta to Wye Conversion, Wye to Delta Conversion
Chapter 3: Methods of Circuit Analysis

- Nodal analysis, Nodal analysis with dependence sources and voltage sources.
- Mesh analysis, Mesh analysis with dependence sources and with current sources.
Syllabus

Chapter 4 : Network Theorem

• Superposition theorem
• Sources Transformation
• Thevenin’s theorem, Norton theorem, and Maximum power transfer
Chapter 5: Capacitor and Inductor

- Capacitors, relationships between voltage, current and energy for capacitor, Series and parallel capacitance.
- Inductor, relationships between voltage, current and energy for inductor, series and parallel inductance.
Chapter 6: First Order Circuit

- Natural Response of RL circuit and RC circuit.
- Step Response of RL circuit and RC circuit.
Lab sessions

1) Lab Module 0: Introduction to basic laboratory equipment.
2) Lab Module 1: Series/Parallel resistor and verification of Kirchhoff`s Laws.
3) Lab Module 2: Nodal Analysis
4) Lab Module 3: Mesh Analysis
5) Lab Module 4: Thevenin`s Theorem and Maximum Power Transfer
References

TEXT BOOK :
References


RULES

• Attendance ;
• > 90%
• Warning letter will be given if absence for 3 times. 2 warning letters -> bar from examination
• Excuses only if with Surat Pengecualian/MC
• Assignment/Lab Submission MUST BE ON TIME.
### Dates to be AWARE!!!

<table>
<thead>
<tr>
<th>Activities</th>
<th>Week</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid semester examination</td>
<td>7</td>
<td>25/07/2012</td>
</tr>
<tr>
<td>Laboratory Test</td>
<td>10</td>
<td>14/08/2012</td>
</tr>
<tr>
<td>End semester examination</td>
<td>13</td>
<td>12/09/2012</td>
</tr>
</tbody>
</table>
On the DMT theory. J. A. Greenwood*. Department of Engineering, University of Cambridge, Trumpington St, Cambridge, CB2 1PZ, UK.

Received 20 July 2006; accepted 21 November 2006; published online 26 January 2007. The frequent claim that the Tabor parameter \( \lambda \) governs the transition from the DMT theory to the JKR theory is investigated. The change from the simple surface force law \( r \propto A/h^3 \) of the DMT theory to the Lennard–Jones law \( r \propto A/h^3 - B/h^9 \) of the MDT theory and the numerical solutions is noted, and the ‘adhesive force’ is evaluated for both laws. Except in the limit of zero Tabor parameter \( D_m = 1/3 \).


Society is never prepared to receive any invention. Every new thing is resisted, and it takes years for the inventor to get people to listen to him and years more before it can be introduced.Â CHAPTER 12 Three-Phase Circuits. 479. amount of wire required for a three-phase system is less than that required for an equivalent single-phase system.