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| Logo_MEC  **LECTURE HANDOUTS**  **I/II**  **EEE** | **MUTHAYAMMAL ENGINEERING COLLEGE**  **(An Autonomous Institution)**  **(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)**  **Rasipuram - 637 408, Namakkal Dist., Tamil Nadu** | **L1** |

Course Name with Code : 19GES13 ELECTRIC CIRCUITS

Course Teacher : Dr.R.SAGAYARAJ

**Unit - 1 : DC CIRCUITS Date of Lecture:**

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| **Topic of Lecture:** Basic circuit elements |
| **Introduction :**   * Active and passive components form the two main types of electronic circuit elements. * An active component supplies energy to an electric circuit, and hence has the ability to electrically control the flow of charge. * A passive component can only receive energy, which it can either dissipate or absorb. |
| **Prerequisite knowledge for Complete understanding and learning of Topic:**   * Basics of Physics * Basics of atom. |
| **Detailed content of the Lecture:**  Types of Electronic Components   * Electronic elements that make up a circuit are connected together by conductors to form a complete circuit. If these connecting conductors are ideal conductors (i.e. they have no resistance) then all parts of the circuit can be classified into two main categories depending on whether they deliver or absorb energy from the circuit: * Active components * Passive components * Electrical symbols are used to represent both active and passive components. An example of a basic circuit made up of two electronic elements has been illustrated below: * Active Components * An active component is an electronic component which supplies energy to a circuit. Active elements have the ability to electrically control electron flow (i.e. the flow of charge). All electronic circuits must contain at least one active component. * Common examples of active components include: * Voltage sources * Current sources * Generators (such as alternators and DC generators) * All different types of transistors (such as bipolar junction transistors, MOSFETS, FETs, and JFET) * Diodes (such as Zener diodes, photodiodes, Schottky diodes, and LEDs) * **Passive Components** * A passive component is an electronic component which can only receive energy, which it can either dissipate, absorb or store it in an electric field or a magnetic field. Passive elements do not need any form of electrical power to operate. * As the name ‘passive’ suggests – passive devices do not provide gain or amplification. Passive components cannot amplify, oscillate, or generate an electrical signal. * Common examples of passive components include: * Resistors * Inductors * Capacitors * Transformers |
| **Video Content / Details of website for further learning (if any):**  <https://www.electrical4u.com/active-and-passive-elements-of-electrical-circuit/> |
| **Important Books/Journals for further learning including the page nos.:**  Charles K. Alexander, Mathew N.O. Sadiku, Fundamentals of Electric Circuits, McGraw Hill, 2013, Page N.o ( 11 -14) |

**Course Faculty**