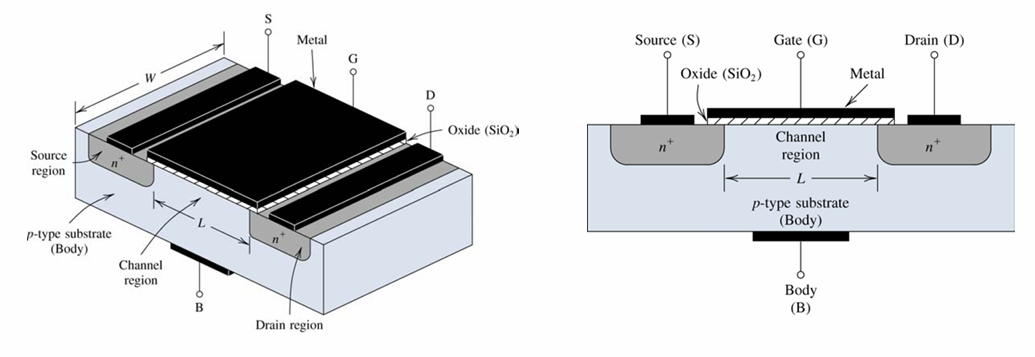
**Lab 2**

**Name: Mihir Malikali Mithani.**

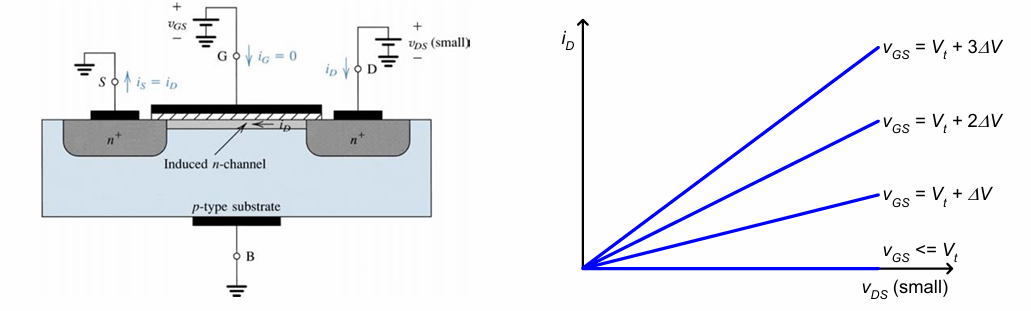
**Enrollment No: 92301733025.**

**Experiment:** Hands-on experimentation on the current-voltage characteristics of NMOS transistor and PMOS transistor and find power dissipation

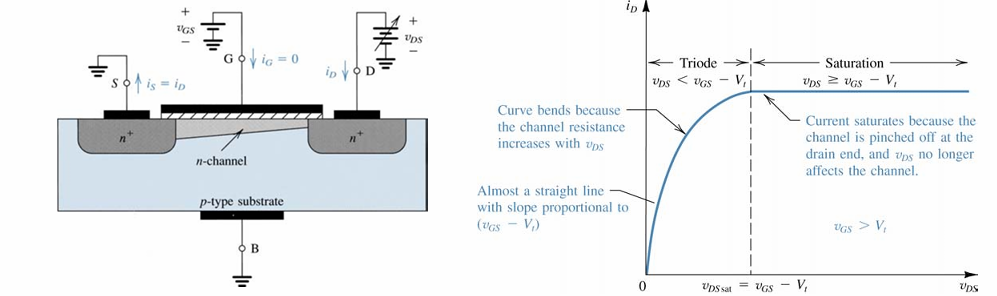
**Device Structure and Physical Operation**

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**Linear Operation**

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**Triode to Saturation Region**

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**Cutoff Mode:**

Occurs when

A MOSFET is in cutoff when no channel has been induced. Thus, for an enhancement NMOS device:



Likewise, for an enhancement PMOS device:



**Triode Mode:**

Occurs when and





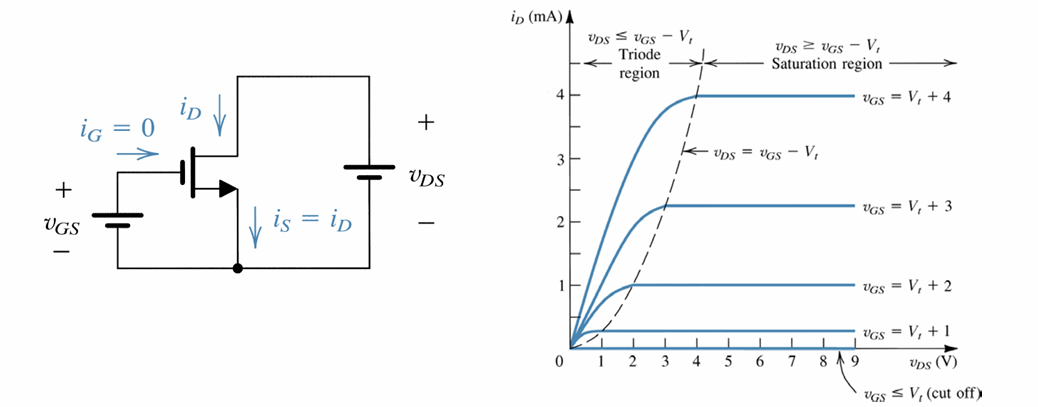
**Saturation Mode:**

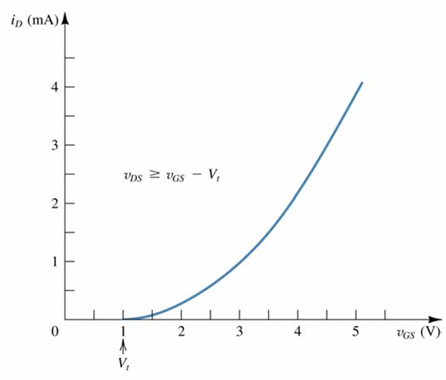
Occurs when and

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**Circuit**

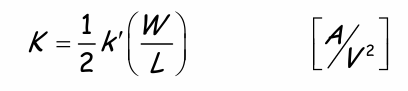
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**The Process Transconductance Parameter k′ is a constant that depends on the process technology used to fabricate an integrated circuit. Therefore, all the transistors on a given substrate will typically have the same value of this parameter.**

**The Channel Aspect Ratio WL is simply the ratio of channel width W to channel length L. This is the MOSFET device parameter that can be altered and modified by the circuit designer to satisfy the requirements of the given circuit or transistor.**

**We can likewise combine these parameter to form a single MOSFET device parameter K :**

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**Observation Table:**

**NMOS**

**Model Parameters:**

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**PMOS**

**Model Parameters:**

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**Output Waveform**

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**Conclusion**