MOS OPERATION.

3 JANUARY 2006

MOS TRANSISTOR.

- **Features :**
  - ✧ Technology is very scalable.
  - ✧ Smallest sized circuits can be fabricated.
  - ✧ Digital circuits have simplest realizations in CMOS.
  - ✧ MOS transistors act as an ideal switch.

MOS transistor operation.

- V_{GB} is negative , holes will be attracted from bulk ACCUMULATION REGION
- If $V_{GB} > 0$holes will be repelled and depletion region will be formed.
- If V_{GB} again increased electrons will be attracted.
- If $V_{GB} > V_{th}$ then inversion layer will be formed CHANNEL FORMATION.
- **assumptions :**
  - ✧ $V_{GB} < V_{th}, Q_I = 0$
  - ✧ $V_{GB} > V_{th}, Q_I = -C_{ox}(V_{gb} - V_{th})$
  - ✧ $C'_{ox} = \frac{\epsilon_{ox}}{t_{ox}}$
  - ✧ $C_{ox} = C'_{ox}WL$

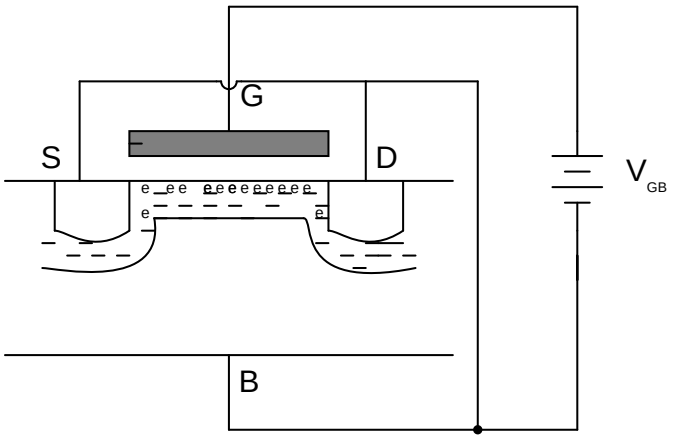

Figure 1: MOS operation