ECE 320 - Quiz #8 - Name _____

DTL, TTL Logic, MOSFETs.

DTL Logic Gate:

Determine the voltges and currents for the following DTL gate. Assume

- Ideal 3904 transistors (Vbe = 0.7V, Vce(sat) = 0.2V, gain = 100)
- Ideal silicon diodes (Vf = 0.7V)
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MOSFETs

For the following MOSFET circuit, assume

- $k_n = 0.5\ A/V^2$
- $V_{th} = 2.00V$

Determine the operation point (Vds, Ids) for Vg = 10V

R 1000 + 100*mo + day	Vds Vg = 10V	Ids Vg = 10V

Ohmic Region: $V_{ds} < V_{gs} - V_{th}$

$$I_{ds} = k_n\left(V_{gs} - V_{th} - \frac{V_{ds}}{2}\right)V_{ds}$$

Saturated Region: $V_{ds} > V_{gs} - V_{th}$

$$I_{ds} = \frac{k_n}{2}(V_{gs} - V_{th})_2$$