

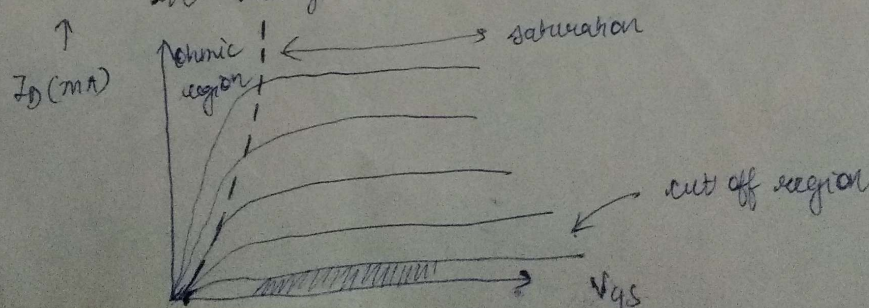
Student Name - Bhupesh Bhatt

Subject - VLSI

1. Transistor
2. Acceptor doped
3. p type substrate of moderate doping level
4. Conducting channel
5. source to drain
6. V_{ds} lesser than $V_{gs} - V_t$
7. decreases
8. resistor
9. open, closed
10. nMOS depletion

Ans 11) Operating modes of MOS -

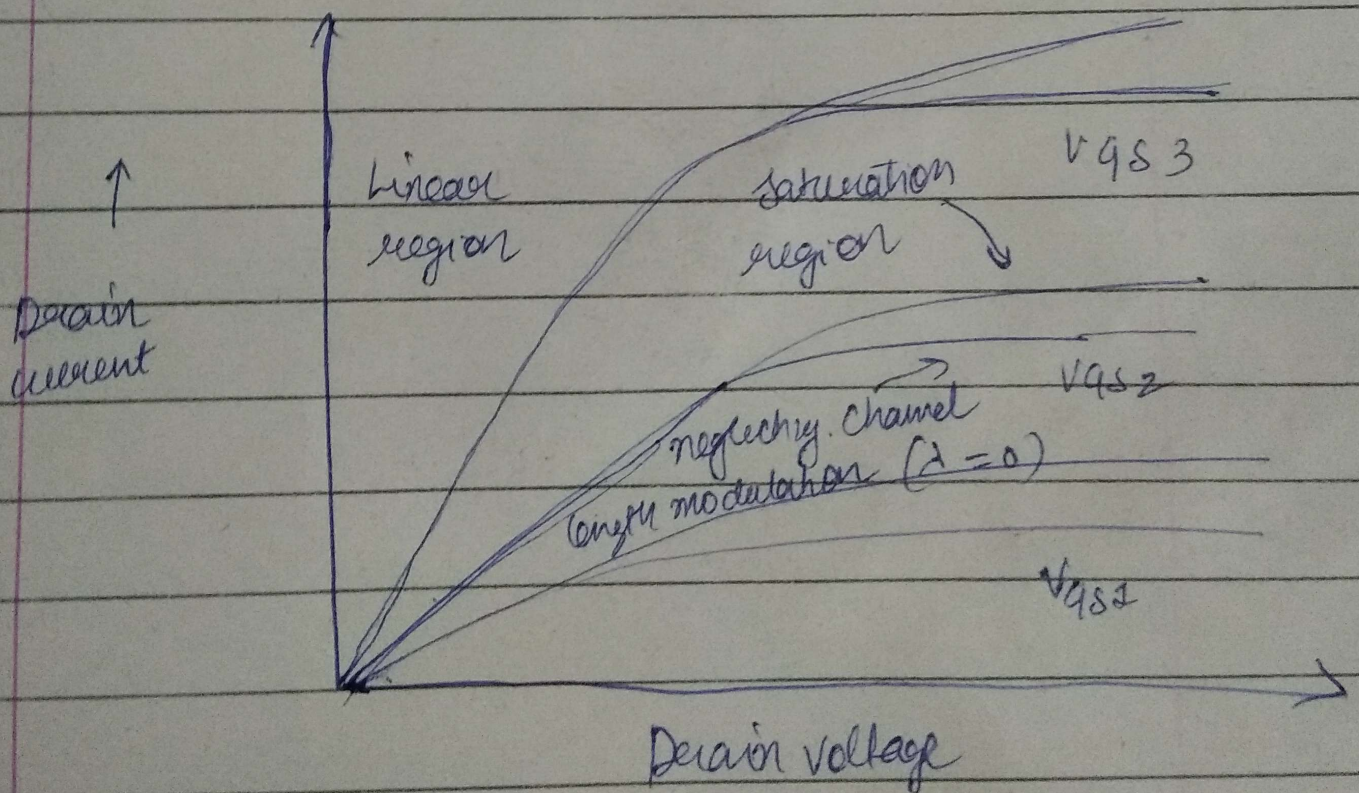
1. Cut off - A MOS device is in cut off when zero amount of current flows through it. Here the device functions as a basic switch.
2. Saturation region - In this region, the device will have their drain to source current value as constant without considering the enhancement in the voltage across the drain to source.
3. Linear/ohmic region - It is the region where the current across the drain to source terminal enhances with the increment in voltage across the drain to source path.



Ans 12)

Page No.			
Date			

channel length modulation (CLM) is an effect in field effect transistors, a shortening of the length of the inverted channel region with increase in drain bias for large drain biases. The result of CLM is an increase in current with drain bias and reduction of output resistance.



$$I_D = \frac{1}{2} \mu_n C_{ox} \frac{W}{L - \Delta L} (V_{GS} - V_{TH})^2$$