Course Title :- Electronic Circuit design

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Module :- 4th

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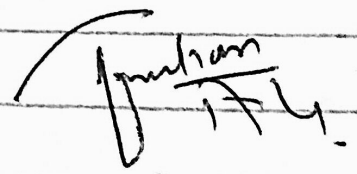
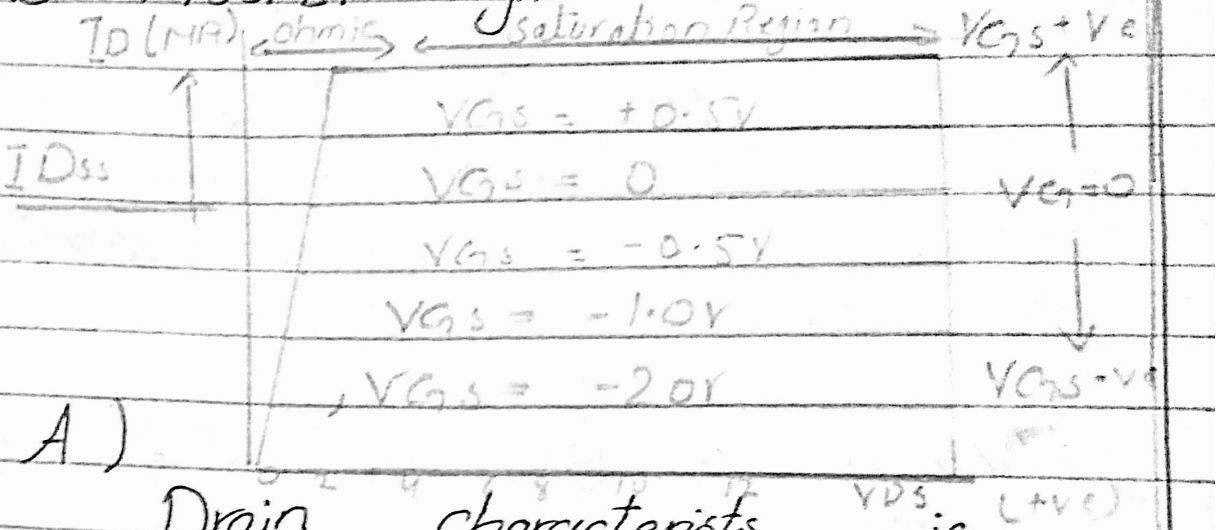
Signature :- 

Q.1 Explain the drain characteristic curve of D-MOSFET give below.



(Part A)

Drain characteristics is characterists between Drain current and Voltage VDs for various voltage VGs.

As ID is the output current and VDs is the output voltage & various voltage is the input voltage.

* When VDs is increased ID (mA) will also increased.
* When VGs or the pitch occur.
* When we increase VGs positive i-e 0.5 the gate terminal

become +ive the free charge carier electron in the p-type attracted toward the gate and the chanal will have more electron so the current will increase. So increase in V_{G2} cause I_{DS} increase.

(Part B)

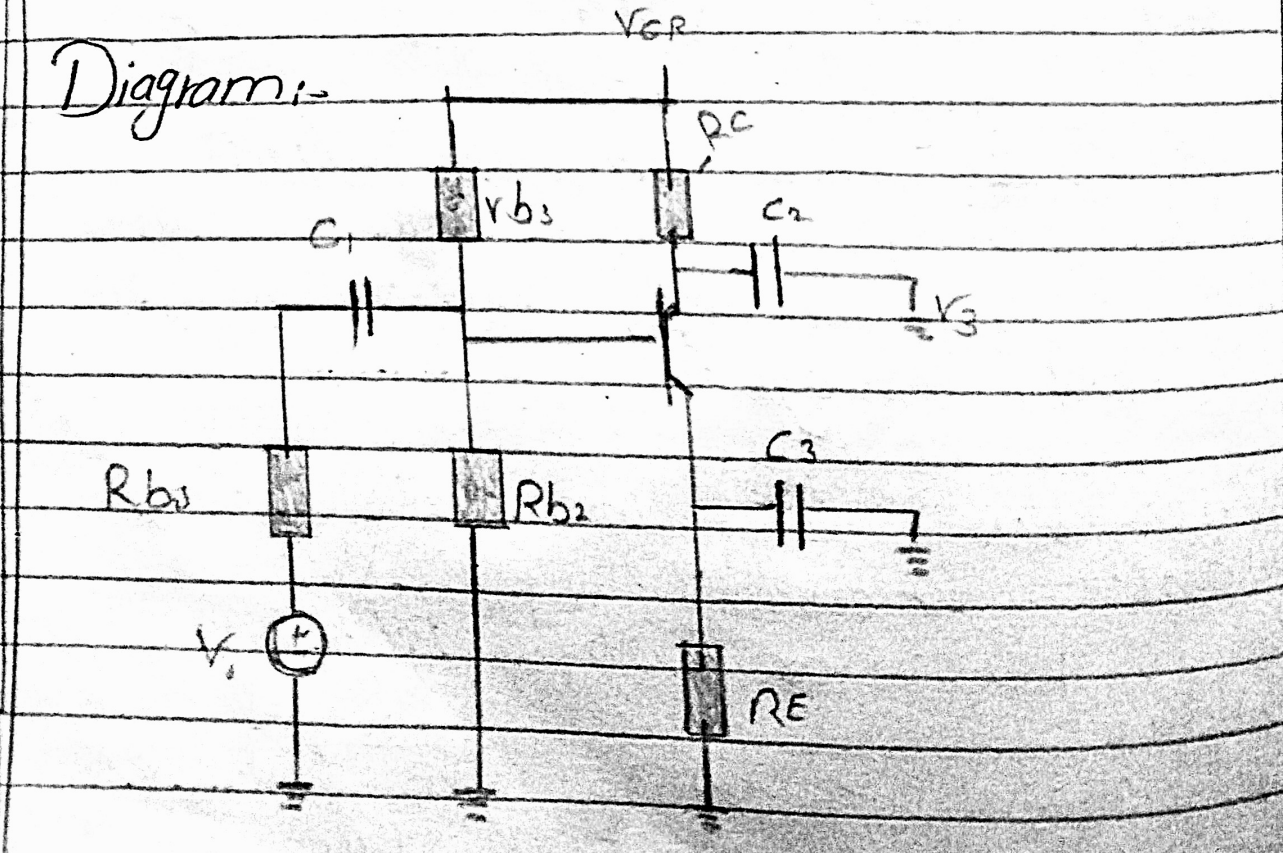
Sketch the hybrid model and write equations for the Transistor in common emitter configuration.

Hybred mode of transister

Diagram :-

Equation :-

Diagram:-



Equation :-

$h_{ie} = \frac{V_{be}}{I_b}$ ⟶ input impedence.

$h_{re} = \frac{V_{be}}{V_{ce}}$ ⟶ Reverse voltage ration

$h_{fe} = \frac{I_c}{I_b}$ ⟶ forward current gain

Q-2 A certain operational amplifier has a common mode gain of 0.6 and an open loop differential voltage gain of 400,000. Evaluate the CMRR & express it in decibels.

Given :-

open loop differential voltage gain is 400,000

Common mode gain = 0.6

Required :-

CMRR = ?

Solution :

Formula

$CMRR = A_{OL} / A_{CM}$

$CMRR = 400,000 / 0.6$

$\Rightarrow$ 666 , 666.667

CMRR is decibels

$CMRR = 20 \log (A_{OL} / A_{CM})$

$\Rightarrow 20 \log (666,666.667$

$\Rightarrow 116.47$ dB

Q-3 (Part A)

Explain the concept behind negative feed back in operational amplifiers

NEGATIVE FEED BACK

Negative Feed back is the process where by a portion object output voltage of an alin compliFier is returned to the input with a phase angle that opposes (Subtrad form) the input signal :-

Negative Feed back in op amp.

Concept:

Amplifier have a very larg number and the output of the input. amplifier is extremly high than the input. So we take connecting from the output to the input for Stabilization because it has very high gain is not stable. For Stabilization The negative feedback in op-amplifier

Q=3 (Part B)

State the following Statment as True or False and also give the reason for your answer.

"The output of a Summing amplifier is positive."

The output of Summing amplifier is positive"

- its statment is not correct beacause Summing amplifier is an applicatio of an iverting operational amplifier configuration. Which has more than on input and its output will be negative