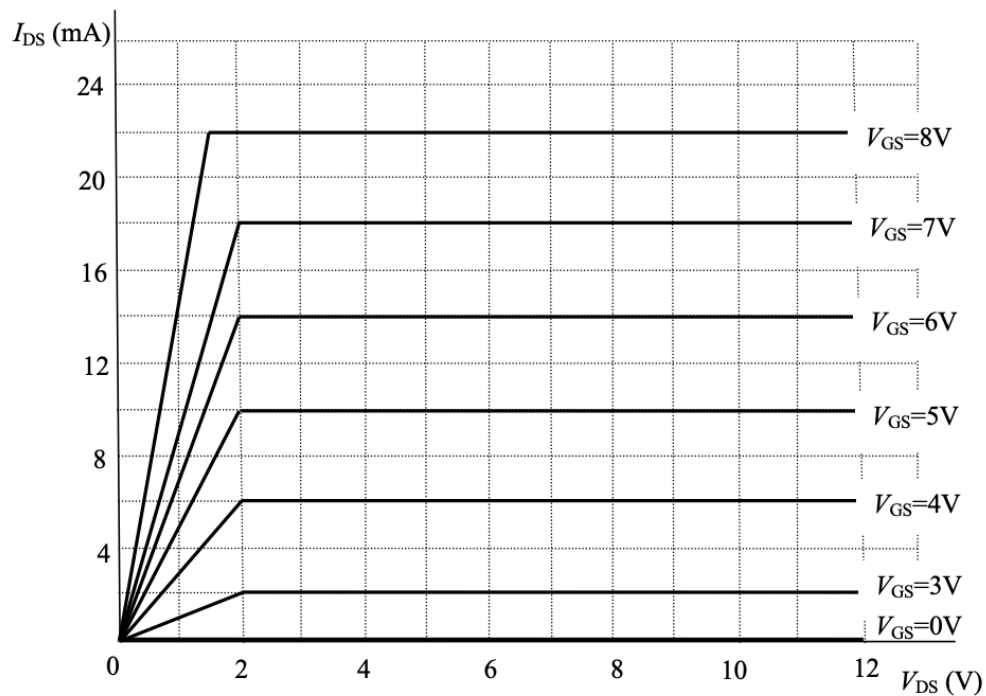


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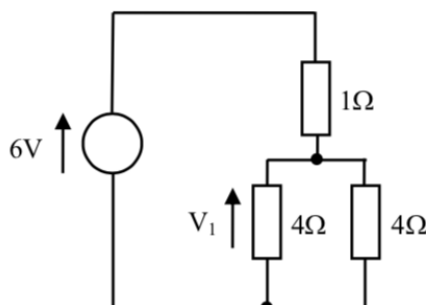
Supervision 4

Lectures: Electronics, Devices and Circuits

- 1) Draw the circuit diagram of a NOT gate that comprises an n-channel MOSFET and a resistor R.
- 2) For the NOT gate in Question 1, plot the relationship between the input voltage, V_{in} , and the output voltage, V_{out} . The power supply voltage, $V_{DD} = 10\text{ V}$, $R = 500\ \Omega$, and the MOSFET has the characteristics given in the following figure.

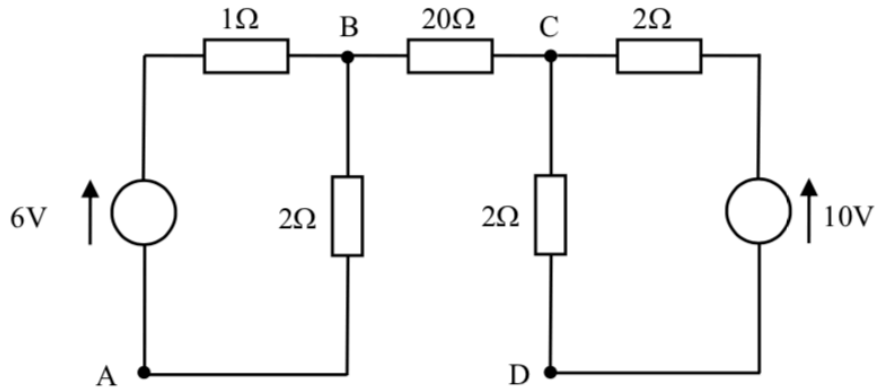


- 3) For the NOT gate in Question 2, calculate the power dissipated by resistor R when $V_{in} = 8\text{ V}$.
- 4) For the following circuit:



- (a) What is the current through the 1Ω resistor?
- (b) What is voltage V_1 ?
- (c) What power is dissipated in each of the 4Ω resistors?

5) For the following circuit:



- (a) What is the current flowing through the 20Ω resistor?
- (b) Find the voltage at nodes B, C, and D with respect to node A, i.e., V_{AB} , V_{AC} and V_{AD} .