

國立彰化師範大學電子系 109 學年第二學期隨堂考考卷

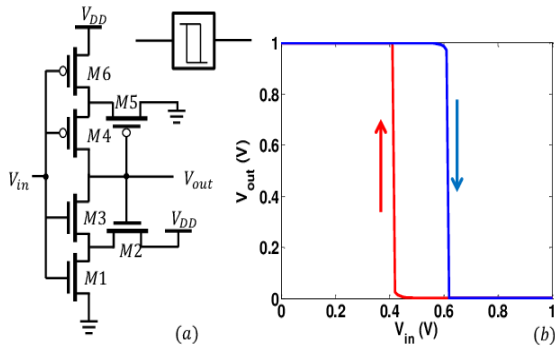
課目：VLSI 設計導論 日期：2021/3/31(Wed.) 時間：08:30~09:00am 地點：E406 老師：黃宗柱

學號：_____ 姓名：_____ 得分：_____

ill-in (填充題):

1. To simulate ./RC.sp using HSPICE, type the command line: `hspice -i RC.sp > RC.lis`
2. The command to move to the folder 'tmp' under the root path: `cd /tmp`
3. The command to list the files in a long format: _____
4. To pull down the low output of a 10-input NOR pseudo-nMOS gate with $W_p=W_n=W_{min}$ to $0.2V_{dd}$, $L_p/L_n =$ `9/5`.
5. A proper Bode plot should be better to cover 3 decades more left to the minimum zero/pole and right to the maximum one. Write the SPICE simulation command for a circuit with $R = 100$ and $C = 10p$:
`.AC DEC 101 0.16MEG 0.16T`

Question. Write the SPICE program (netlist) to draw the characteristic curve of a Schmitt inverter using a slow triangle transient simulation from 0V to 1V then back to 0V. Note to define the models of nMOS and pMOS transistors to a basic type models.



Circuit Name	
<code>.Model</code>	<code>MyNch NMOS</code>
<code>.Model</code>	<code>MyPch PMOS</code>
<code>M1 N Vin 0 0</code>	<code>MyNch L=1u W=1u</code>
<code>M2 Vdd Vout N 0</code>	<code>MyNch L=1u W=1u</code>
<code>M3 Vout Vin N 0</code>	<code>MyNch L=1u W=1u</code>
<code>M4 Vout Vin P VDD</code>	<code>MyPch L=1u W=2u</code>
<code>M5 0 Vout P VDD</code>	<code>MyPch L=1u W=2u</code>
<code>M6 P Vin VDD Vdd</code>	<code>MyPch L=1u W=2u</code>
<code>Vdd Vdd 0 1V</code>	
<code>Vin Vin 0 PWL(0 0 1u 1 2u 0)</code>	
<code>.PROBE (或 .OPTION POST)</code>	
<code>.END</code>	

請公正評分，改卷者簽字：_____