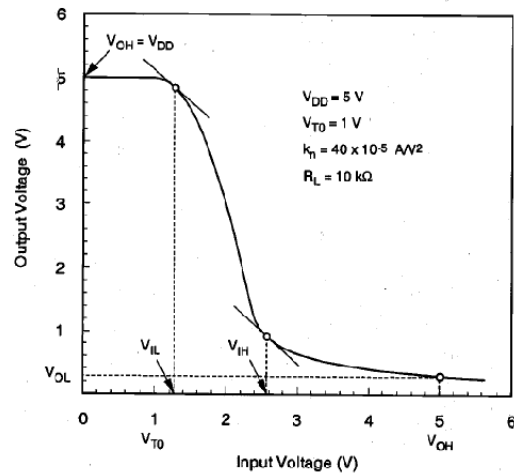
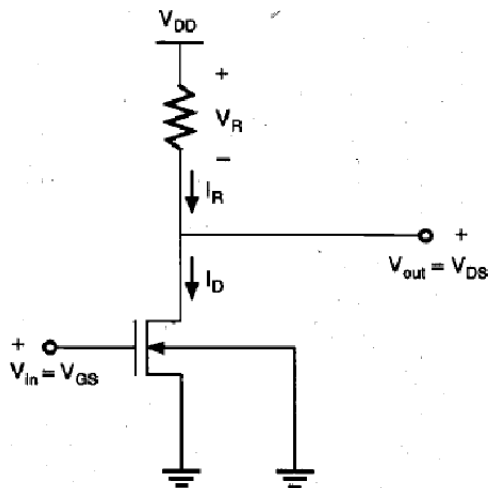


## EXPERIMENT-1

### Resistive Load Inverter

Aim: Design and determine Critical voltages, Noise Margin  $NM_H$  and  $NM_L$  of Resistive load Inverter.

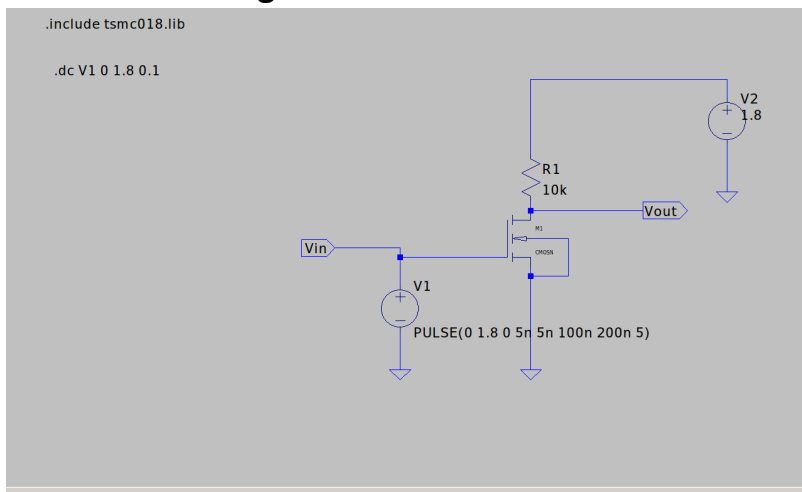


Initially Set the values to

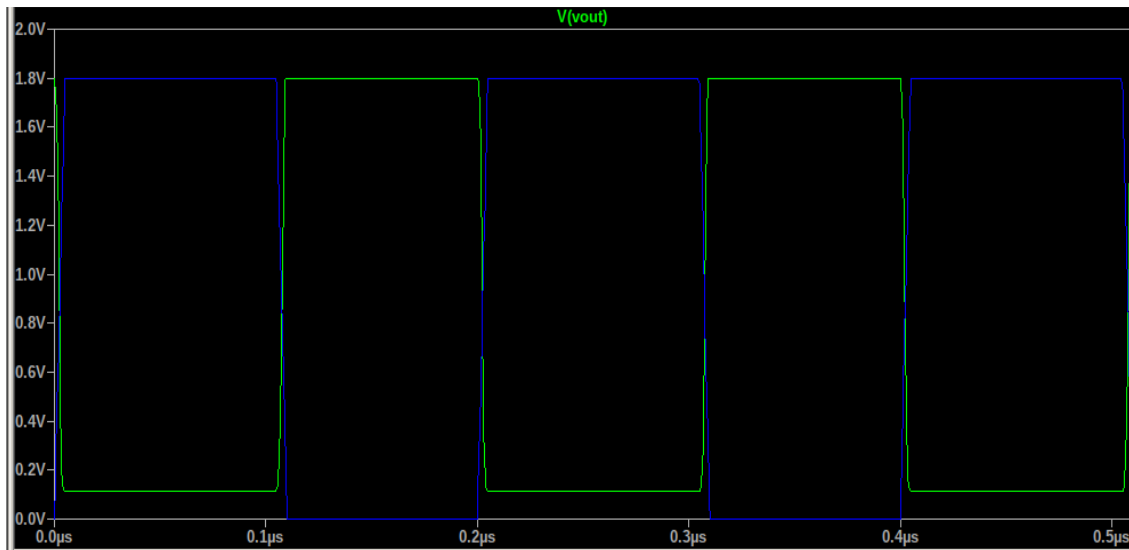
$R_L = 10k \text{ ohm.}$

$(W/L)_n = 1\mu/180n$

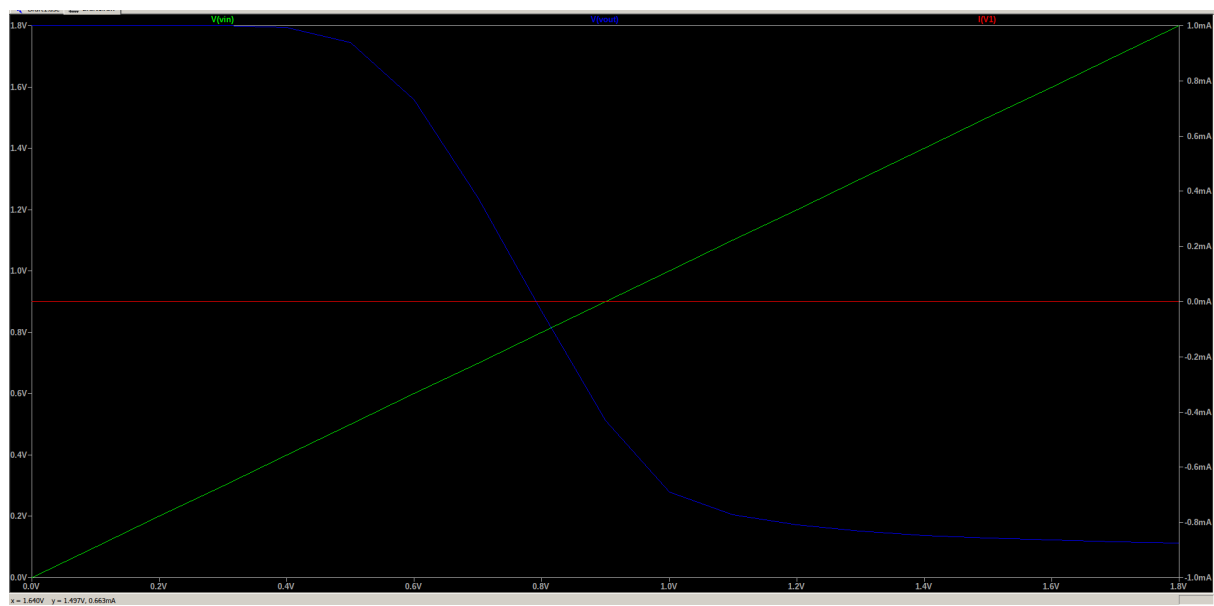
Paste the Screenshot of the following  
1. circuit diagram



## 2. Transient analysis waveforms:



## 3. DC analysis waveforms



### Observations from above analysis:

Keep  $W = 1\mu$  (constant)

RL ( $\Omega$ )	V <sub>OL</sub> (V)	V <sub>OH</sub> (V)	V <sub>IL</sub> (V)	V <sub>IH</sub> (V)	Average power Mention the unit	NM <sub>H</sub> = V <sub>OH</sub> - V <sub>IH</sub>	NM <sub>L</sub> = V <sub>IL</sub> - V <sub>OL</sub>
10K	0.195	1.795	0.402	1.103	-170.15 $\mu$ W	0.692	0.207
20K	0.140	1.791	0.399	0.802	-97.266 $\mu$ W	0.989	0.259
30K	0.140	1.786	0.399	0.906	-68.221 $\mu$ W	0.880	0.259
40K	0.088	1.772	0.393	0.798	-52.698 $\mu$ W	0.974	0.305
50K	0.126	1.77	0.404	0.699	-42.925 $\mu$ W	1.071	0.278

Keep  $R_L = 10K\Omega$  (constant)

W	V <sub>OL</sub> (V)	V <sub>OH</sub> (V)	V <sub>IL</sub> (V)	V <sub>IH</sub> (V)	Average power Mention the unit	NM <sub>H</sub> = V <sub>OH</sub> - V <sub>IH</sub>	NM <sub>L</sub> = V <sub>IL</sub> - V <sub>OL</sub>
1 $\mu$	0.281	1.747	0.417	1.001	-170.15 $\mu$ W	0.746	0.136
2 $\mu$	0.164	1.715	0.416	0.897	-191.23 $\mu$ W	0.818	0.252
3 $\mu$	0.164	1.694	0.413	0.798	-200.67 $\mu$ W	0.896	0.249
4 $\mu$	0.106	1.652	0.405	0.795	-206.54 $\mu$ W	0.857	0.299
5 $\mu$	0.093	1.767	0.402	0.789	-210.61 $\mu$ W	0.978	0.309

Results:

A resistive load inverter is designed and Critical voltage noise margin NMH and NML of the inverter is determined