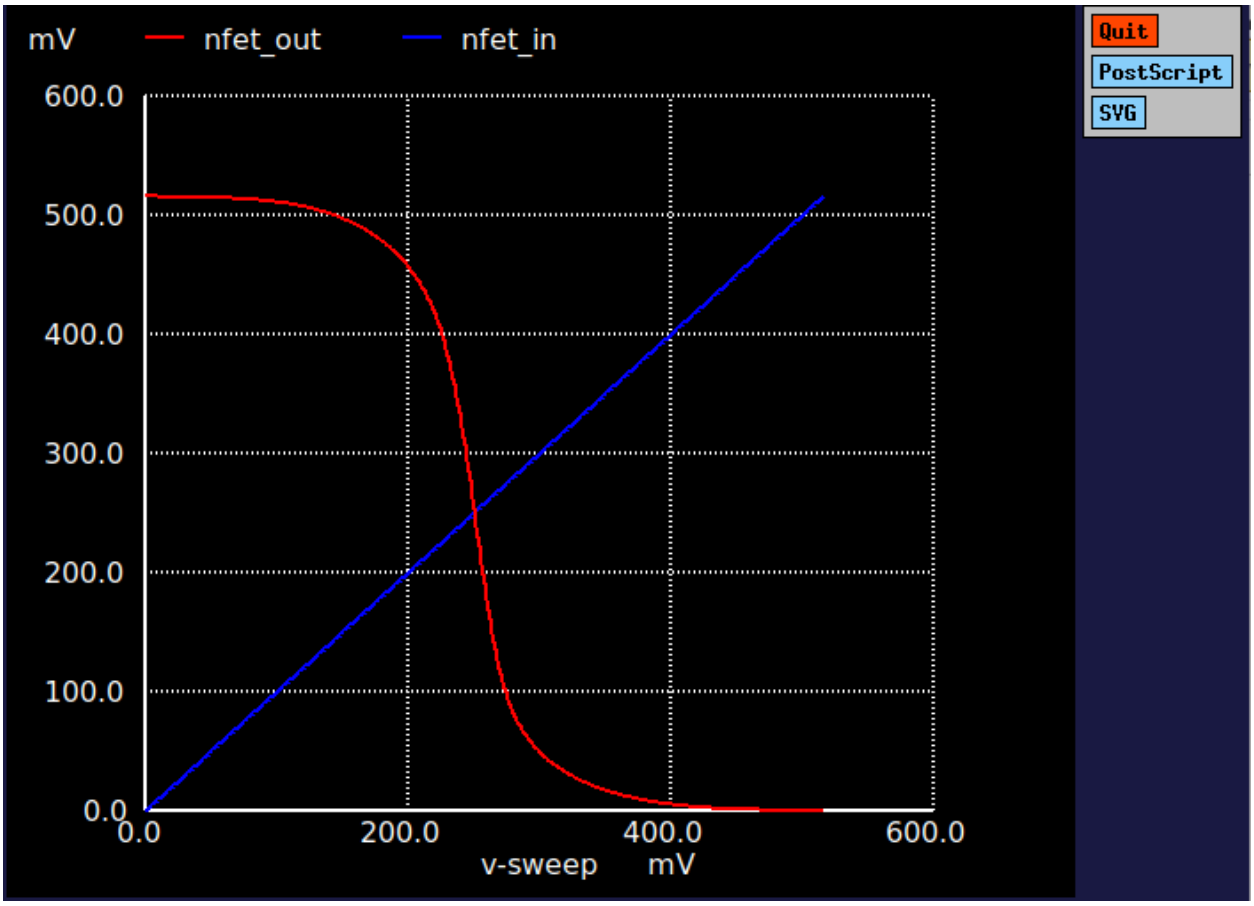
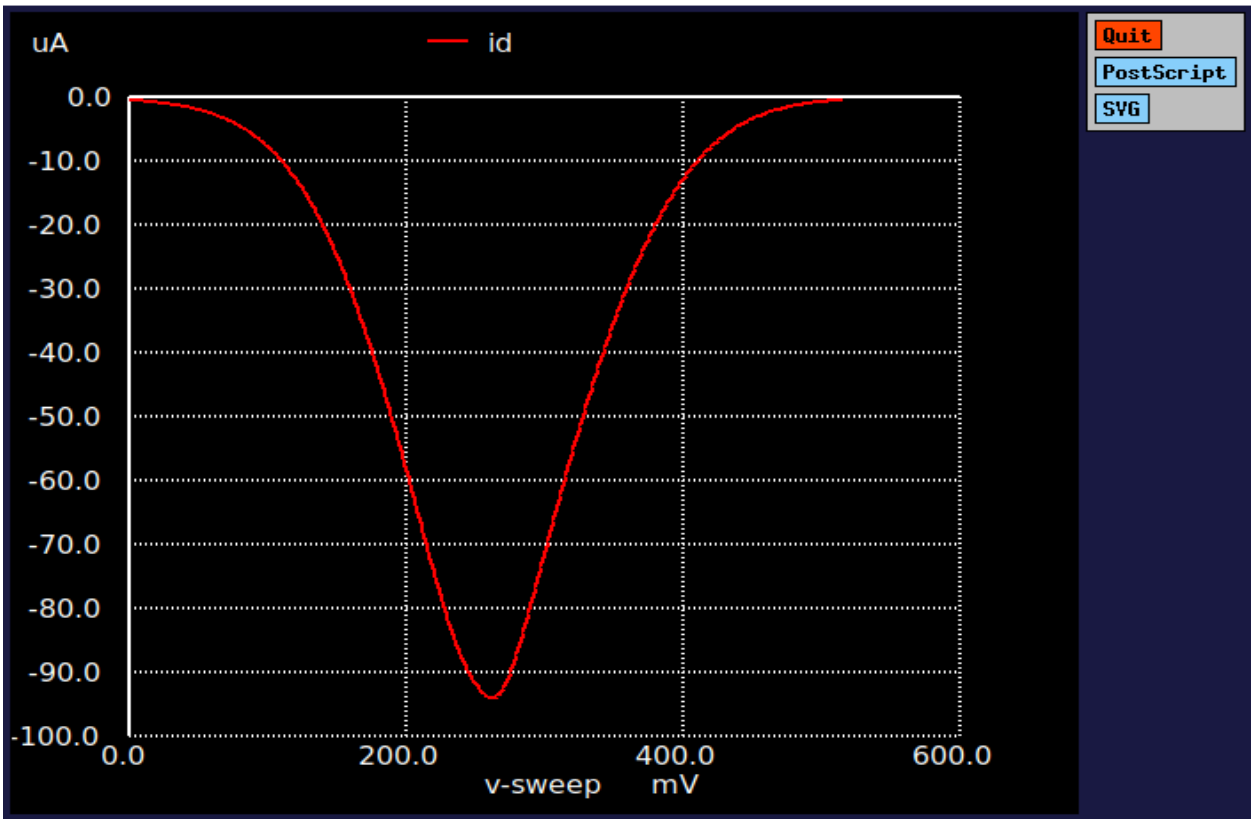
Q no 3 - Extract the following metrics from simulation results:

Switching Threshold Voltage (VTC)



Drain Current (Id)



Id = 92 uA

Gain, Noise Margin, Transconductance -

```
Using SPARSE 1.3 as Direct Linear Solver

No. of Data Rows : 517
v_th                =  2.504164e-01
max_gain            =  7.944395e+00 at=  2.530000e-01
vil                 =  2.517901e-01
voh                 =  2.395343e-01
vih                 =  2.535175e-01
vol                 =  2.258113e-01
v_th = 2.504164e-01
max_gain = 7.944395e+00
vil = 2.517901e-01
voh = 2.395343e-01
vih = 2.535175e-01
vol = 2.258113e-01
nmh = -1.39832e-02
nml = 2.597880e-02
gm_max              =  8.087690e-04 at=  2.970000e-01
Doing analysis at TEMP = 27.000000 and TNOM = 27.000000
```

Power consumption and propagation delay -

```
Using SPARSE 1.3 as Direct Linear Solver

Initial Transient Solution
--------------------------

Node                                   Voltage
----                                   -------
nfet_out                              0.515756
nfet_in                                      0
vdd                                      0.516
v2#branch                          -4.66878e-07
v1#branch                           8.10647e-12

 Reference value :  0.00000e+00
No. of Data Rows : 120
tpr                =  2.500000e-11
tpf                =  2.578487e-11
id_pwr             =  -6.71690e-16 from=  2.00000e-11 to=  6.00000e-11
tpr = 2.500000e-11
tpf = 2.578487e-11
tp = 2.539243e-11
id_pwr = -6.71690e-16
pwr = -3.46592e-16
power = 8.664806e-06
Doing analysis at TEMP = 27.000000 and TNOM = 27.000000
```

Frequency

```
Initial Transient Solution
--------------------------

Node                                   Voltage
----                                   -------
nfet_out                              0.515756
nfet_in                                      0
vdd                                      0.516
v2#branch                          -4.66878e-07
v1#branch                           8.10647e-12


No. of Data Rows : 71
tr                 =  2.100000e-11
tf                 =  2.386970e-11
t_delay = 4.486970e-11
f = 2.228675e+10
ngspice 2 ->
```