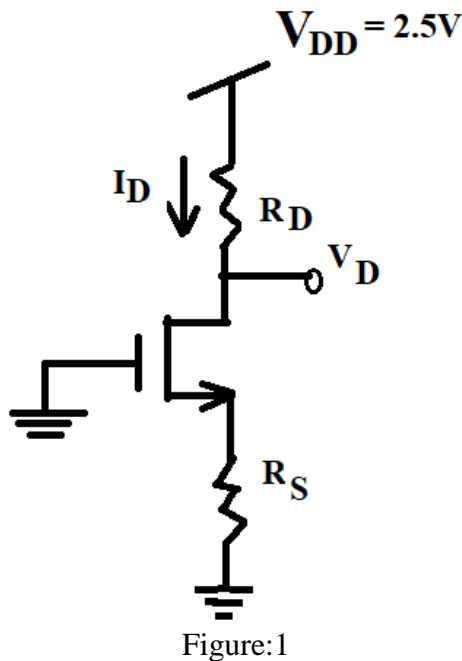


**Tutorial No.07**

**1**

Design the circuit of Fig.1 so that the transistor operates at  $I_D=0.4\text{mA}$  and  $V_D=0.5\text{V}$ . The NMOS transistor has  $V_{to}=0.7\text{V}$ ,  $\mu_n C_{ox}=100\mu\text{A}/\text{V}^2$ ,  $L=1\mu\text{m}$  and  $W=32\mu\text{m}$ . Neglect the channel length modulation ( $\lambda=0$ ).



**2**

Design the circuit in Fig.2 to obtain a current  $I_D=80\mu\text{A}$ . Find the value required for  $R$ , and find the dc voltage  $V_D$ . Let the NMOS transistor have  $V_{to}=0.6\text{V}$ ,  $\mu_n C_{ox}=200\mu\text{A}/\text{V}^2$ ,  $L=0.8\mu\text{m}$  and  $W=4\mu\text{m}$ . Neglect the channel length modulation ( $\lambda=0$ ).

