



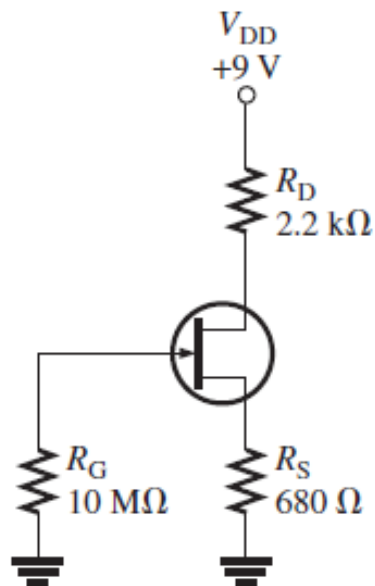
# North South University

## School of Engineering & Physical Sciences

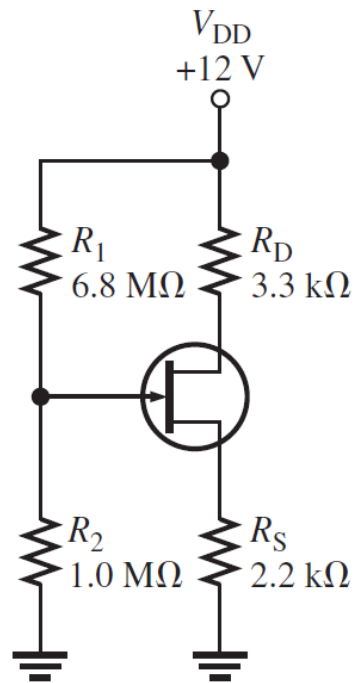
EEE 111/ ETE 111 Analog Electronics-I

Assignment-2 (Full marks-100)

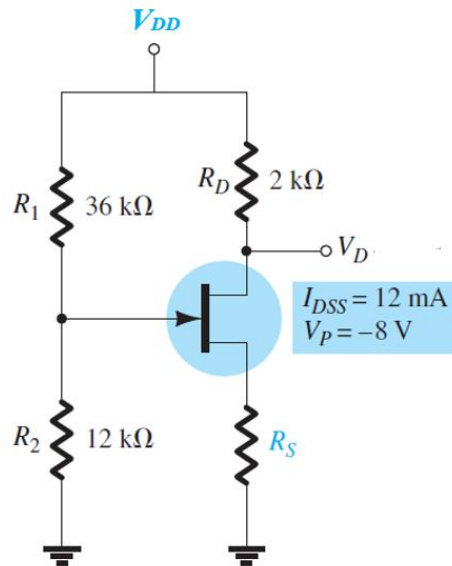
1. Determine the approximate Q-point for the JFET shown in the following [CO1] [15]  
Figure. The particular device has a  $V_P$  of  $-6V$  and  $I_{DSS}$  of  $4mA$ .



2. Determine  $I_D$  and  $V_{GS}$  for the JFET with voltage-divider bias in the Figure [CO1] [15]  
below. Given that for this particular JFET, the parameter values are such that  $V_D = 7V$ .



3. Determine  $I_{DQ}$  and  $V_{GSQ}$  for the following network where the value of  $R_S =$  [CO1] [40]  
 Sum of the digits of your student ID  $\times 20$ . Also, the value of  $V_{DD} =$   
 Sum of the digits of your student ID  $\times \frac{2}{3}$  [Example:  $R_S$  for ID  
 2131951643 =  $(2 + 1 + 3 + 1 + 9 + 5 + 1 + 6 + 4 + 3) \times 20 =$   
 $700 \Omega$ ;  $V_{DD} = (2 + 1 + 3 + 1 + 9 + 5 + 1 + 6 + 4 + 3) \times \frac{2}{3} =$   
 $23.33 \text{ V}$ ].



4. For the circuit shown in the Figure below, calculate the following-

[CO2] [30]

- i)  $r_e$
- ii)  $Z_i$  (consider  $r_o = \infty$ )
- iii)  $Z_o$  (consider  $r_o = \infty$ )
- iv)  $A_v$  (consider  $r_o = \infty$ ).
- v) Re-calculate  $Z_i$ ,  $Z_o$ , and  $A_v$ , considering  $r_o = 50 \text{ k}\Omega$ .

