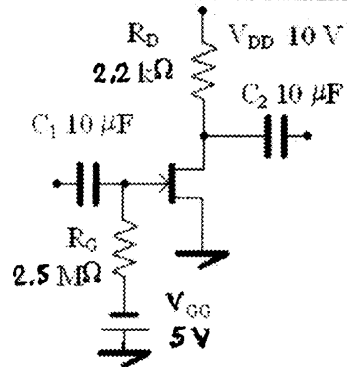


Baskent University, Faculty of Engineering
BME 222-01 – Electronics (Spring Semester 2004/2005)
Quiz 3 – May 16, 2005

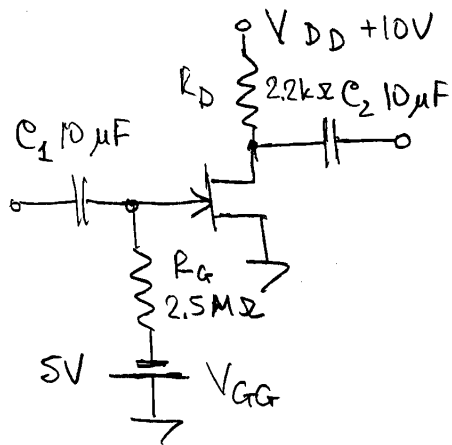
Student Name _____

Faculty No: _____



The JFET of Figure has values of $V_P = -8 \text{ V}$ and $I_{DSS} = 16 \text{ mA}$. Determine the values of V_{GS} , I_{DQ} and V_{DSQ} for the circuit. **Hint:** Use analytical method.

5 points.
Good Luck!



The JFET in Figure has values of $V_p = -8V$ and $I_{DSS} = 16mA$. Determine the values of V_{GS} , I_{DQ} and V_{DSQ} for the circuit. Hint: use analytical method

Solution:

1. Since none of V_{GG} is dropped across the gate resistor R_G , V_{GS} is found as

$$V_{GS} = -V_{GG} = -5V$$

2. Using this value of V_{GS} and the parameters listed above, the value of I_D is found as

$$I_{DQ} = I_{DSS} \left(1 - \frac{V_{GS}}{V_p}\right)^2 = 16 \cdot 10^{-3} \left(1 - \frac{-5}{-8}\right)^2 = 2.25 \cdot 10^{-3} = 2.25mA$$

3. Now, the value of V_{DS} is found as

$$V_{DSQ} = V_{DD} - I_{DQ} R_D = 10 - 2.25 \cdot 10^{-3} \cdot 2.2 \cdot 10^3 = 5.05V$$