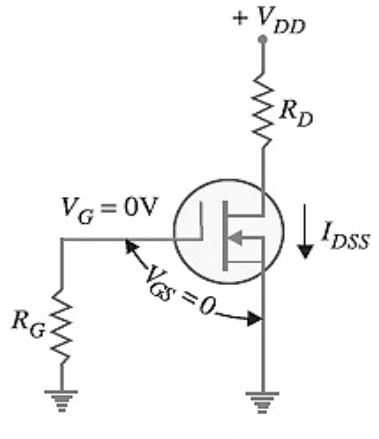
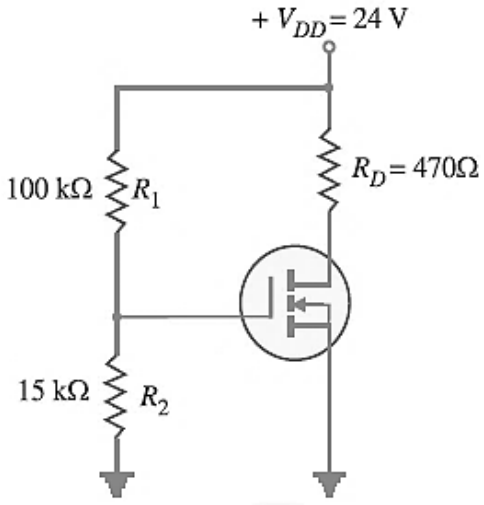
Electronic Devices

Sheet #8

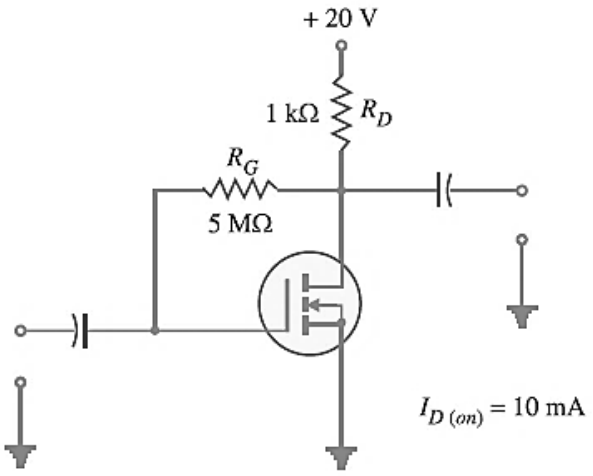
1. Determine the drain-to-source voltage (V_{DS}) in the circuit shown, if V_{DD} =18V and R_D = 620Ω. The MOSFET data sheet gives $V_{GS\,(off)}$ = – 8V and I_{DSS} =12 mA.



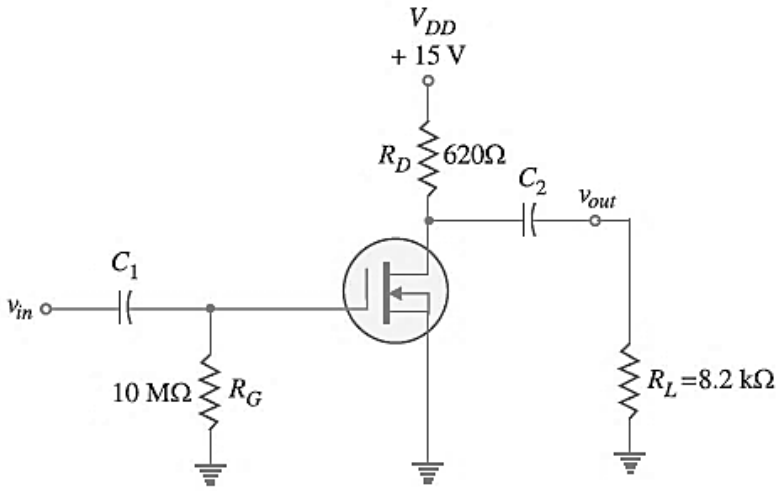
2. Determine V_{GS} and V_{DS} for the EMOSFET circuit shown. The data sheet for this particular MOSFET gives $I_{D\,(on)}$ = 500 mA at V_{GS} = 10V and $V_{GS\,(th)}$ = 1V.



3. Determine the values of I_D and V_{DS} for the circuit shown. The data sheet for this particular MOSFET gives I_D (on) = 10 mA.



4. The D-MOSFET used in the amplifier shown has an I_{DSS} =12 mA and g_m =3.2mA/V. Determine (i) d.c. drain-to-source voltage V_{DS} and (ii) a.c. output voltage.



5. The NMOS used in the amplifier shown has r_o =100 KΩ and g_m =1mA/V. Determine the overall voltage gain, input and output resistances.