Question (1):
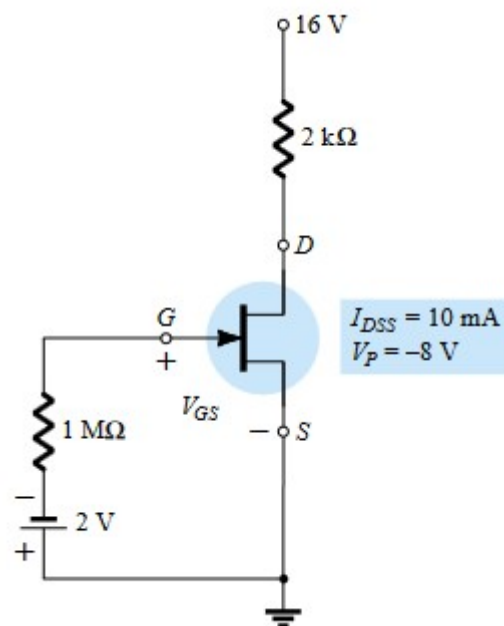
Using the data provided on the specification sheet of Fig. 5.39
and an average thresh-old voltage of VGS(Th) 3 V,
 determine:

(a) The resulting value of k for the MOSFET.
(b) The transfer characteristics.

Question (2):

Determine the following for the network of figure.
(a) VGS Q. (b) ID Q.(c) VDS. (d) VD. (e) VG.

Question (3):

The fixed-bias configuration of Example 6.1 had an operating point defined by V_{GS_Q}
$= -2$ V and $I_{D_Q} = 5.625$ mA, with $I_{DSS} = 10$ mA and $V_p = -8$ V. The network is
redrawn as Fig. 9.14 with an applied signal V_i. The value of y_{os} is provided as 40 μS.
(a) Determine g_m.
(b) Find r_d.
(c) Determine Z_i.
(d) Calculate Z_o.
(e) Determine the voltage gain A_v.
(f) Determine A_v ignoring the effects of r_d.
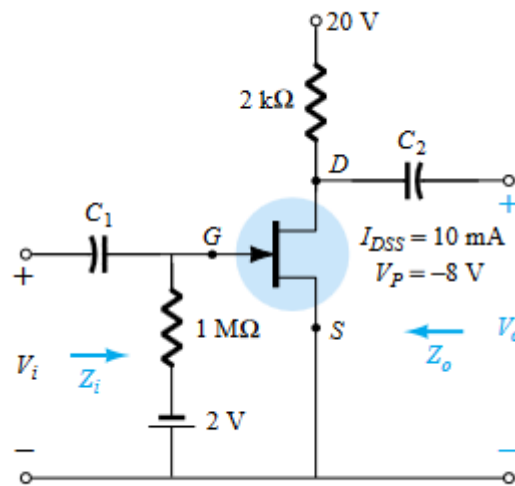
Question (4):

The self-bias configuration of Example 6.2 has an operating point defined by $V_{GS_Q} = -2.6$ V and $I_{D_Q} = 2.6$ mA, with $I_{DSS} = 8$ mA and $V_P = -6$ V. The network is re-drawn as Fig. 9.20 with an applied signal V_i. The value of y_{os} is given as 20 μS.

(a) Determine g_m.
(b) Find r_d.
(c) Find Z_i.
(d) Calculate Z_o with and without the effects of r_d. Compare the results.
(e) Calculate A_v with and without the effects of r_d. Compare the results.