ENEE236 CH7 Homework Problems

*10. For the network of Fig. 7.83, determine:
   a. I_D.
   b. V_{DS}.
   c. V_D.
   d. V_S.

*11. Find V_S for the network of Fig. 7.84.
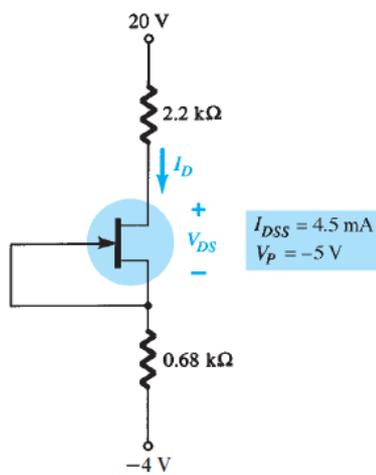
FIG. 7.83
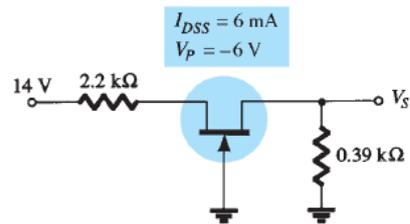
FIG. 7.84

15. Determine the value of R_S for the network of Fig. 7.87 to establish $V_D = 10$ V.

16 V

R_1 36 kΩ R_D 2 kΩ

$\circ V_D = 10$ V

$I_{DSS} = 12$ mA
$V_P = -8$ V

R_2 12 kΩ R_S
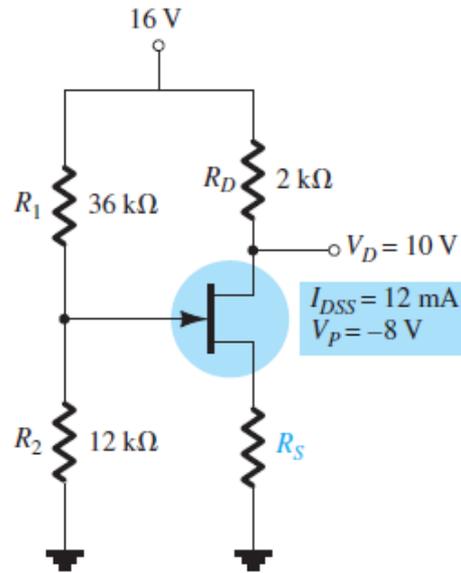
FIG. 7.87

*21. For the network of Fig. 7.93, determine:
   a. I_{D_Q} and V_{GS_Q}.
   b. V_{DS} and V_S.

18 V

2.2 kΩ

I_{D_Q}

$I_{DSS} = 8$ mA
$V_P = -8$ V

V_{GS_Q}

0.39 kΩ

-4 V
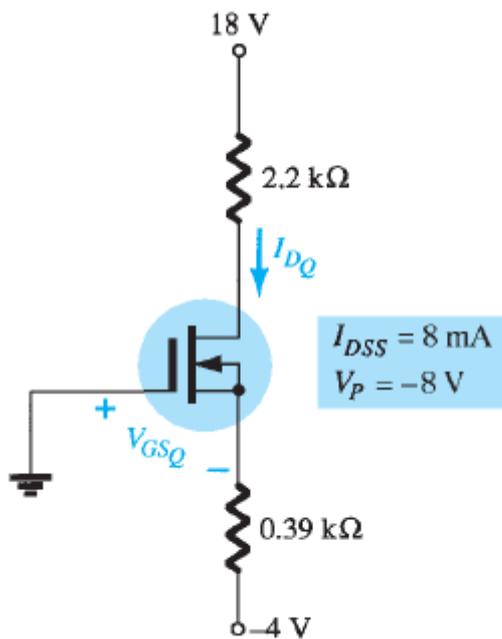
FIG. 7.93

22. For the network of Fig. 7.94, determine:
  a. I_{D_Q}.
  b. V_{GS_Q} and V_{DS_Q}.
  c. V_D and V_S.
  d. V_{DS}.

22 V

1.2 kΩ

I_{D_Q}

1 MΩ

$+$
V_{DS_Q}
$-$

V_{GS_Q} $-$
$+$

0.51 kΩ

$V_{GS\,(Th)} = 4\ V$
$V_{GS\,(on)} = 7\ V$
$I_{D\,(on)} = 5\ mA$
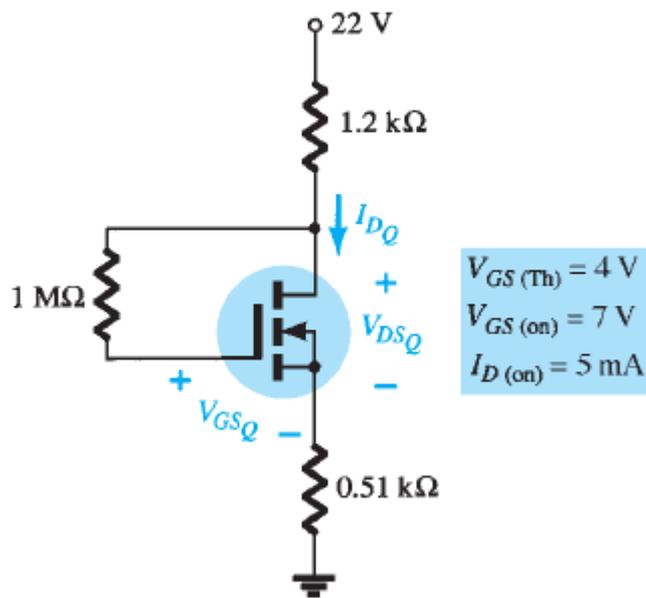
FIG. 7.94

*25. For the combination network of Fig. 7.97, determine:
  a. V_B and V_G.
  b. V_E.
  c. I_E, I_C, and I_D.
  d. I_B.
  e. V_C, V_S, and V_D.
  f. V_{CE}.
  g. V_{DS}.

16 V

40 kΩ

2.2 kΩ

V_B, V_G

V_D

I_D

$+$

V_{DS}

$-$

$I_{DSS} = 6$ mA
$V_P = -6$ V

V_S, V_C I_C

I_B

$+$

V_{CE} $\beta = 100$

$-$

10 kΩ

V_E I_E

1.2 kΩ

FIG. 7.97