Transistor DC Biasing

1. For the fixed-bias configuration Fig.1, determine:
   - **a.** I_{B_Q}.
   - **b.** I_{C_Q}.
   - **c.** V_{CE_Q}.
   - **d.** V_C.
   - **e.** V_B.
   - **f.** V_E.

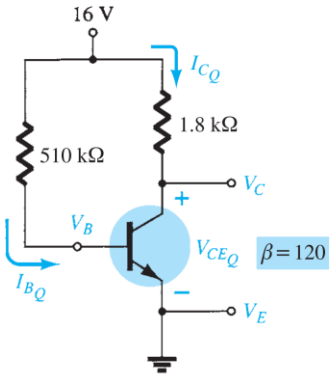

Fig.1

2. Given the information appearing in Fig. 2 , determine:
   - **a.** I_C.
   - **b.** R_C.
   - **c.** R_B.
   - **d.** V_{CE}.

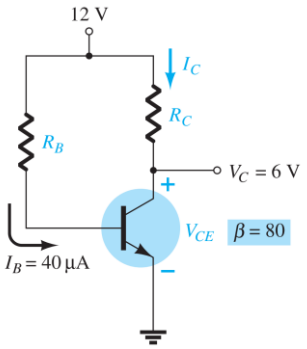

Fig. 2

3. Given the information appearing in Fig. 3 , determine:
   - **a.** I_C.
   - **b.** V_{CC}.
   - **c.** β.
   - **d.** R_B.

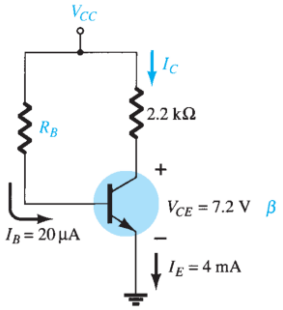

Fig.3

4. For the emitter-stabilized bias circuit of Fig. 4 , determine:
   - **a.** I_{BQ}.
   - **b.** I_{CQ}.
   - **c.** V_{CEQ}.
   - **d.** V_C.
   - **e.** V_B.
   - **f.** V_E.

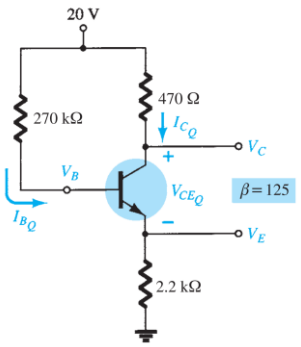

Fig. 4

5. Given the information provided in Fig. 5 , determine:
   a. R_C.
   b. R_E.
   c. R_B.
   d. V_{CE}.
   e. V_B.

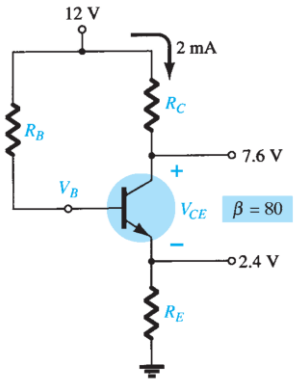

Fig.5

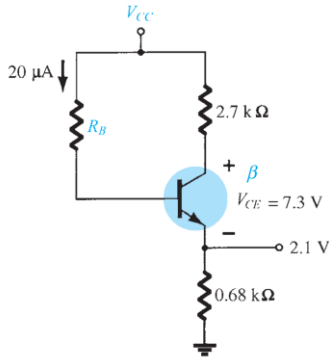

Fig.6

6. Given the information provided in Fig. 6 , determine:
   a. β.
   b. V_{CC}.
   c. R_B.

7. Determine the saturation current (I_{Csat}) for the network of Fig. 4.

8. For the voltage-divider bias configuration of Fig. 7, determine:
   a. I_{BQ}.
   b. I_{CQ}.
   c. V_{CEQ}.
   d. V_C.
   e. V_E.
   f. V_B.

9. Given the information provided in Fig. 8 , determine:
   a. I_C.
   b. V_E.
   c. V_B.
   d. R_1.

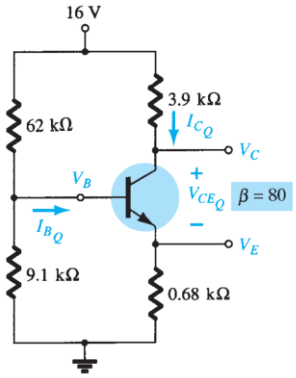

Fig.7

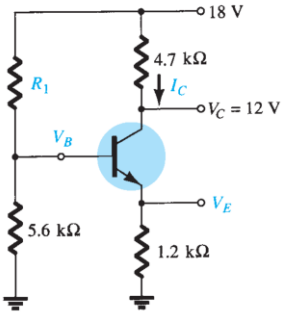

Fig.8

10. For the collector-feedback configuration of Fig. 9 , determine:
    a. I_B.
    b. I_C.
    c. V_C.

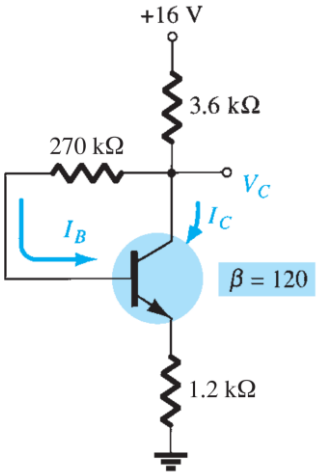

Fig.9

11. For the network of Fig. 10 , determine:
    a. I_B.
    b. I_C.
    c. V_E.
    d. V_{CE}.

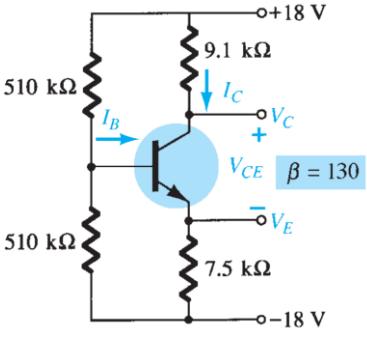

Fig. 10

12. For the *R–C*-coupled amplifier of Fig. 11 determine
    a. the voltages V_B, V_C, and V_E for each transistor.
    b. the currents I_B, I_C, and I_E for each transistor

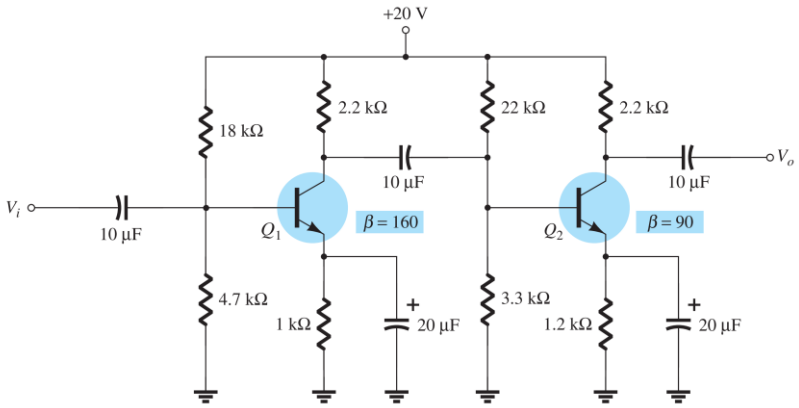

Fig.11

13. For the Darlington amplifier of Fig. 12 determine
    a. the level of β_D.
    b. the base current of each transistor.
    c. the collector current of each transistor.
    d. the voltages V_{C1}, V_{C2}, V_{E1}, and V_{E2}

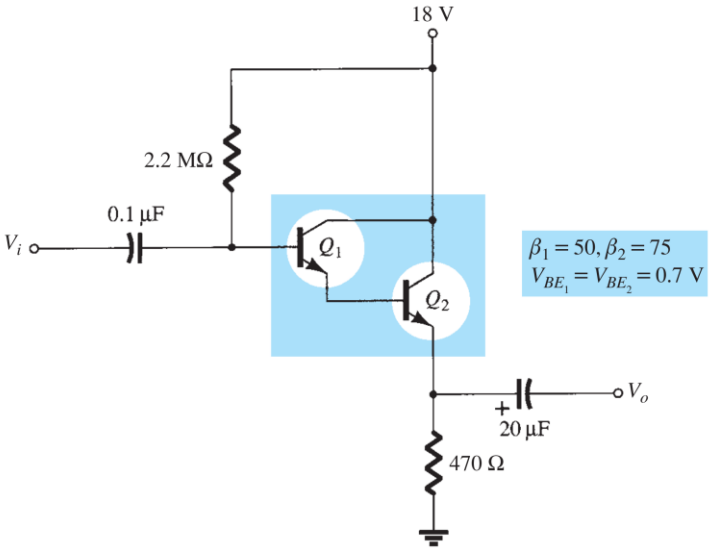

Fig.12

14. For the cascode amplifier of Fig. 13 determine
    a. the base and collector currents of each transistor.
    b. the voltages V_{B1}, V_{B2}, V_{E1}, V_{C1}, V_{E2}, and V_{C2}.

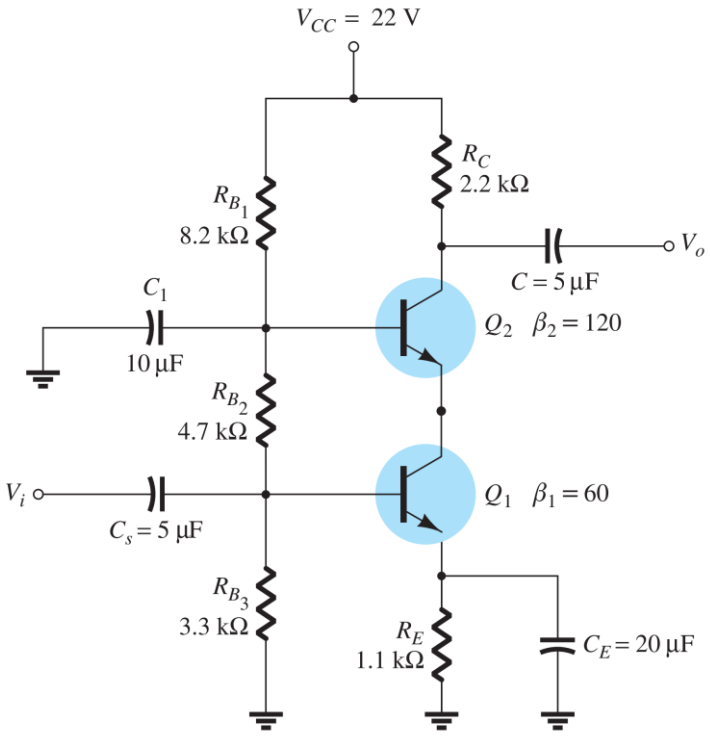

Fig.13