Elecronic circuit - I (ECE2101)
Group Assignment (Group of 5 students maximum , Due date: 26/04/2023)

1. For the circuit shown below in Figure 1, Calculate I_B, I_C, I_E and V_{CE}

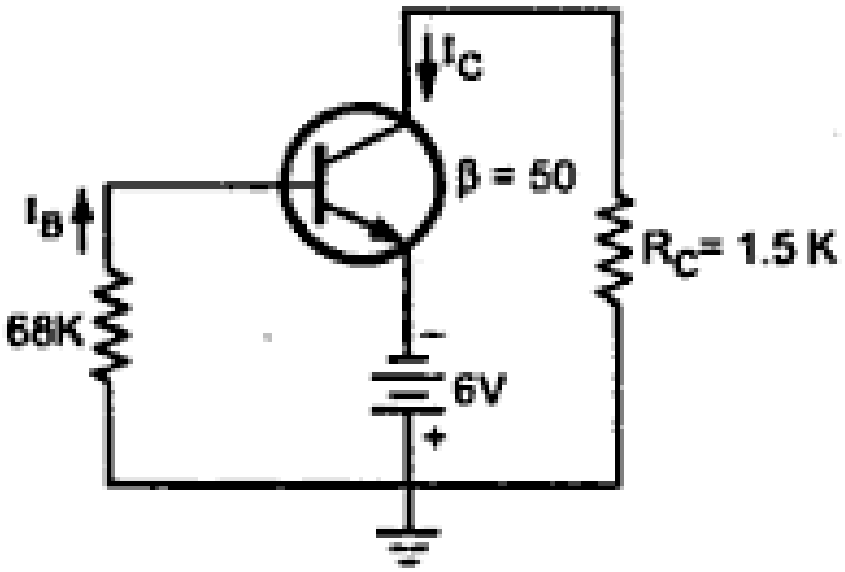

Figure 1

2. Draw the circuit diagram of a collector-base bias circuit of common base (CB) and (CC), and derive expression of both input and output analysis

3. In the circuit shown in Figure 2 find I_C when $V_{CB} = 8V$ and V_{CB} when $I_C = 2mA$

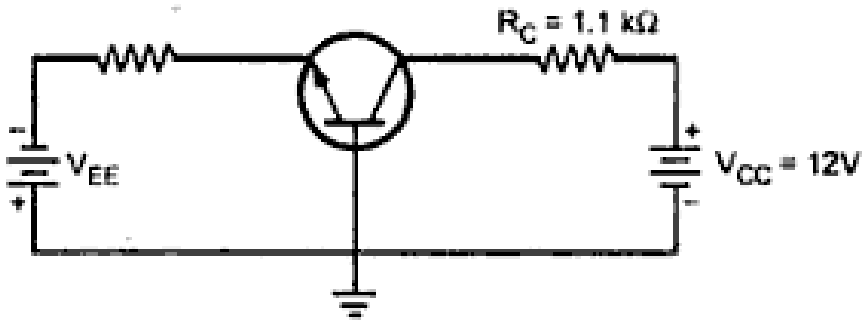

Figure 2

4. In the circuit shown below in Figure 3, calculate I_B, I_C and V_{CE}

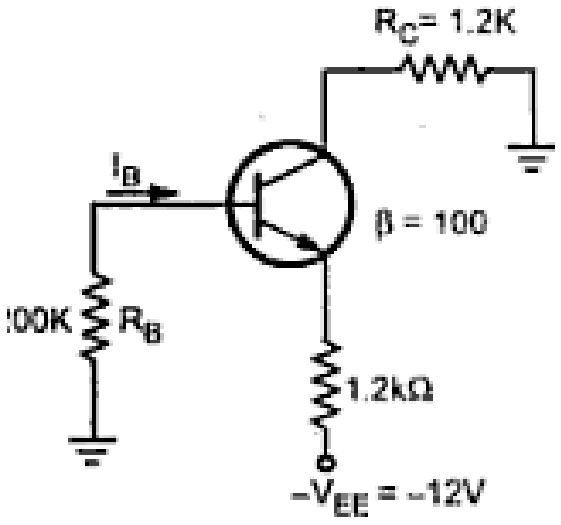

Figure 3

5. Using the approximate h-parameter model, obtain the expression for a CB and CC circuit for A_i, Z_i, A_V and Z_0.

6. The transister amplifier shown in Figure 4 uses a transistor whose h-paramets as follows: $h_i = 1.2K\Omega$, $h_f = 75$, $h_0 = 25 \times 10^{-6}\Omega$. Calculate A_i, A_v, Z_{in} and Z_o

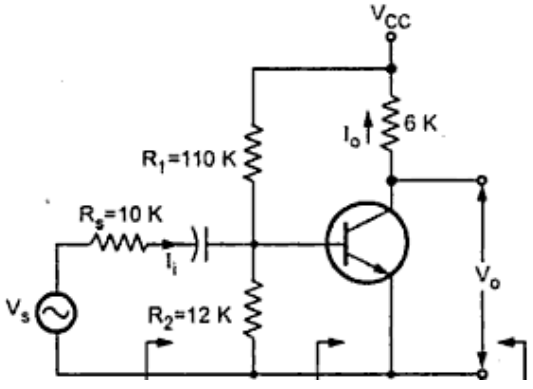

Figure 4

7. In the circuit shown below in Figure 5, Calculate V_{GSQ}, I_{DQ} V_{DSQ} and V_D

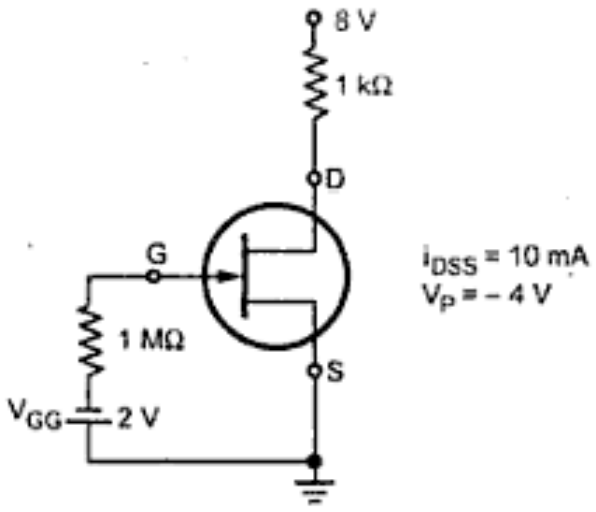

Figure 5

8. Derive the expression for A_V, Z_i and Z_o of a JFET source follower.

9. For the amplifier shown in Figure 6, calculate A_v, Z_i, Z_o . Assume for FET $g_m = 2mA/V$, $r_d = 10K\Omega$

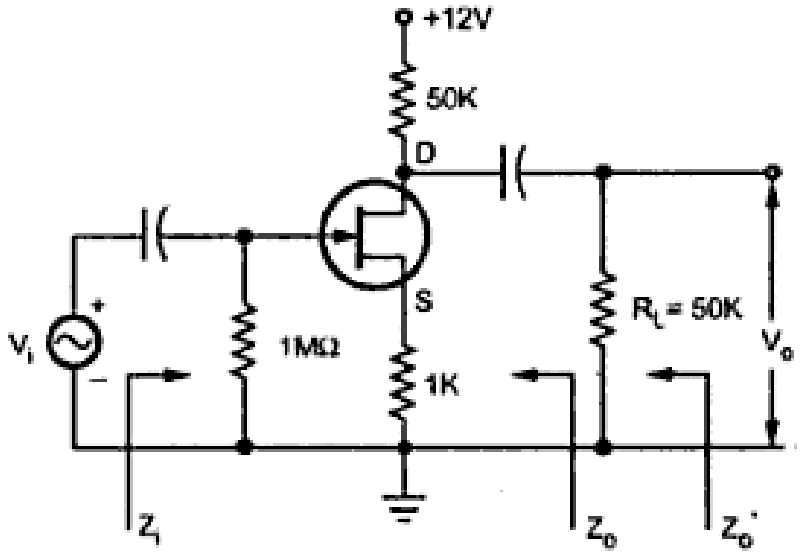

Figure 6