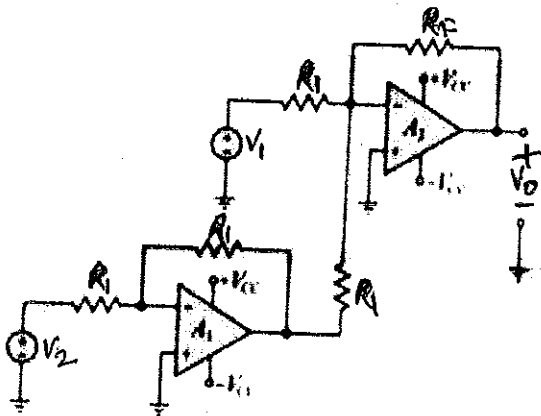
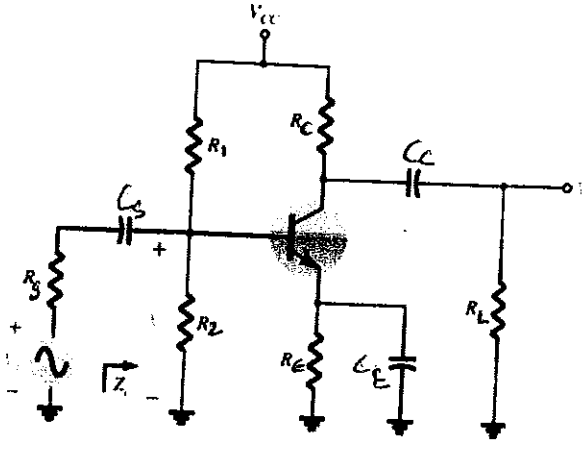


Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Calculator is allowed

Q.No	Question	CO	Marks
Q1	Show that for a differential amplifier, the output voltage is proportional to the difference of the applied input voltages.	C02	3
Q2	Find the expression of the output voltage V_o 	C04	3
Q3	Determine $f_{Ls}, f_{Lc}, f_{Le}, f_{Hi}, f_{Ho}$, Mid-band gain, and f_L, f_H and Bandwidth of the amplifier. for the given network using the following parameters- $R_1=40k\Omega, R_2=10k\Omega, R_C=4k\Omega, R_E=2k\Omega, C_S=10\mu F, C_C=1\mu F, C_E=20\mu F$ $R_S=1k\Omega, R_L=2.2k\Omega, r_o=0, V_{CC}=20V, C_{bc}=36pF, C_{bc}=4pF, C_{ce}=1pF$ $C_{wi}=6pF, C_{wo}=8pF, \beta=100$	C03	10

			
Q4	Write down the characteristics of an ideal operational amplifier. Draw the equivalent circuit for an operational amplifier. What do you understand by differential mode and common mode operation of a differential amplifier?	C01	4
Q5	What is Miller's Theorem? How can this theorem be used to separate the Stray Capacitance C_{bc} between the input and output sides for frequency analysis of the BJT amplifier connected in a voltage divider bias configuration? Also, draw the final r_e-model for low and high-frequency analysis of the BJT amplifier.	C03	1+3+1 =5