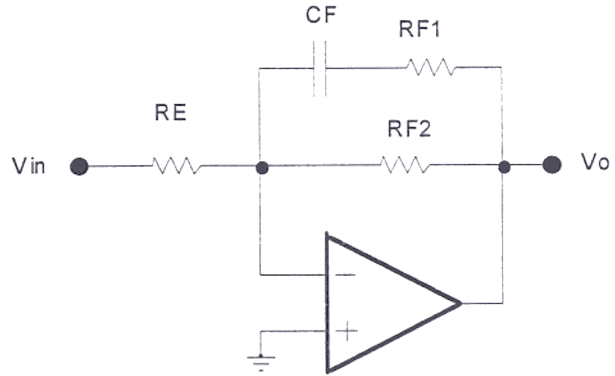


NAME: SOLUTION

LAB GROUP: MON TUE WED

OP AMP DATA: GBW = 5 MHz

- A) Derive the transfer function of the circuit assuming an ideal op amp.
- B) Sketch the ideal gain response and label all relevant values.
- C) Modify the ideal gain response to show the effect of the unideal op amp GBW on the response and label the new corner frequency.

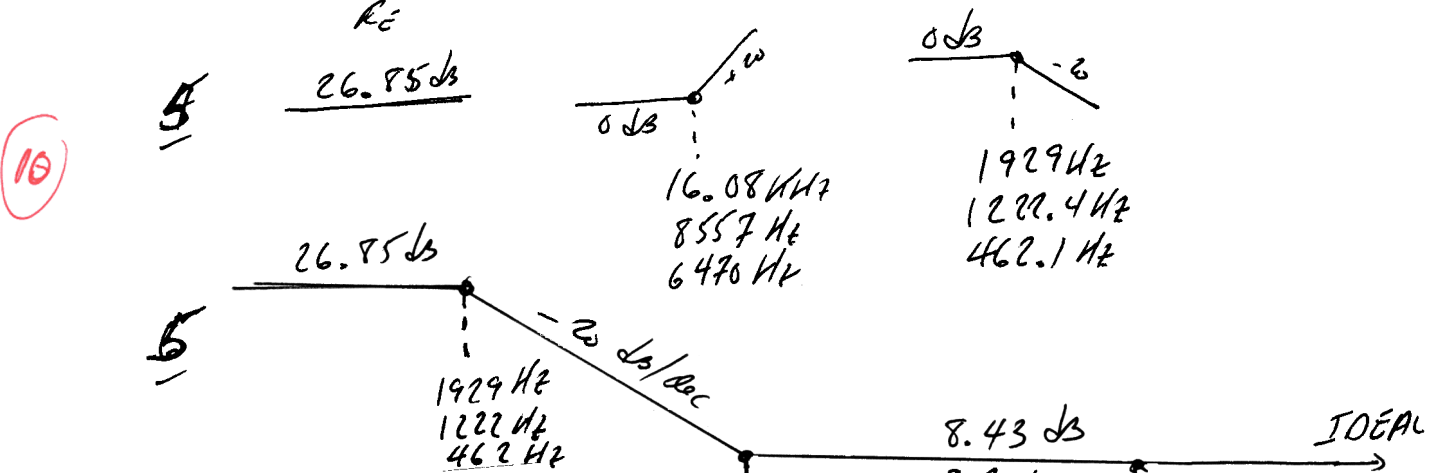


RE = 10k CF = 330 pF RF1 = 30k RF2 = 220k  
 620pF 820pF 180k 390k

(6) A) 
$$A_{UF} = -\frac{Z_F}{Z_E} = \frac{(R_{F1} + \frac{1}{sC_F}) // R_{F2}}{R_E} = -\frac{(1 + sC_F R_{F1}) // R_{F2}}{sC_F} \quad 3$$

$$A_{UF} = -\frac{R_{F2} (1 + sC_F R_{F1})}{sC_F} = -\frac{R_{F2}}{R_E} \frac{(1 + sC_F R_{F1})}{(1 + sC_F (R_{F1} + R_{F2}))} \quad 3$$

B) 
$$A_{UF} = -\frac{R_{F2}}{R_E} \cdot (1 + sC_F R_{F1})$$



(4) e) 
$$\beta_{OL} = \frac{104}{104 + 304 // 220k}$$

$$\beta_{OL} = 0.2747 = 1/3.64$$

$$F_{CB} = 5 \text{ MHz} / 3.64$$

ACTUAL