

DEPARTMENT OF COMPUTER AND ELECTRICAL ENGINEERING

ELNG 303 – LINEAR ELECTRONIC CIRCUITS, 2018/2019

MID-SEMESTER EXAMINATION

September, 2018

Duration: 70 minutes

Instruction(s): Answer all questions

Question 1.

- List 5 basic processes involved in fabricating an IC using the planner technology.
- For the amplifier shown in figure 1 below take $\beta = 100$ and $r_e = \frac{26mV}{I_E}$
 - Find emitter current I_E and collector current I_C
 - Draw the small signal equivalent circuit using the r_e model
 - Calculate the transistor gain = 57.7
 - Calculate the input impedance Z_{in} and output impedance Z_{out}

$V_{BE} = 0.7$

$I_1 + I_2 + I_3$
 but
 $I_1 = \frac{V_1}{R_1} = \frac{1}{20} = 0.05$
 $I_2 = \frac{V_2}{R_2} = \frac{-8}{40} = -0.2$
 $I_3 = \frac{V_3}{R_3} = \frac{3}{60} = 0.05$

$V_0 = 2V$

$I_C = 1mA$

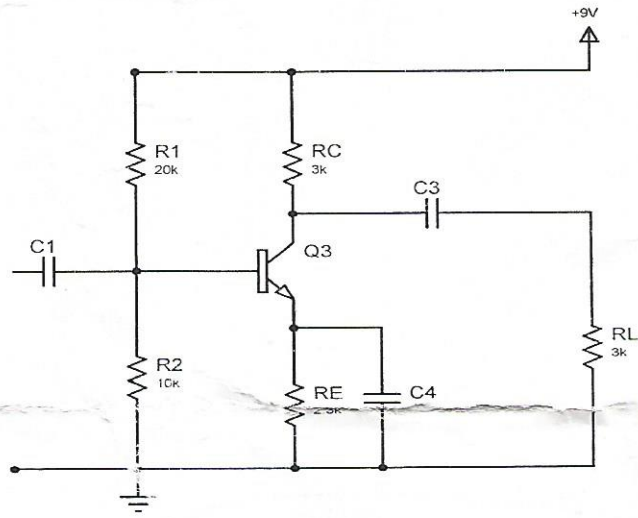


Figure 1

Question 2.

- List out 5 characteristics of ideal Op-Amp
- For the given op-amp circuit in figure 2 below
 - Calculate V_0
 - Find the current I_L flowing through R_L

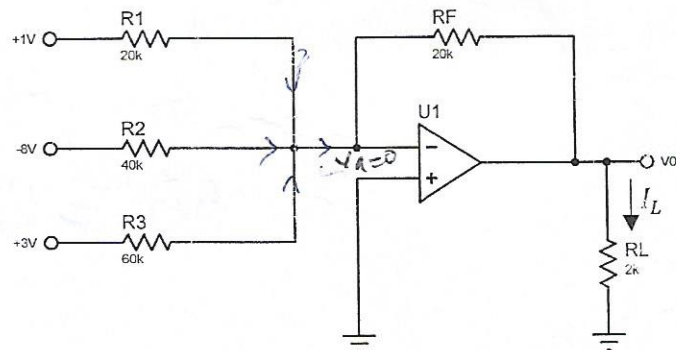


Figure 2: Op-amp circuit