King Fahd University of Petroleum and Minerals
Electrical Engineering Department
EE303 Electronics II
Exam # II

Name:	I.D#	No.	Sec.#

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Question No.1

Assume the op amp is ideal.

(a) Drive the voltage transfer function for the bandpass filter shown in Fig. 1.

(b) If R_1=10kΩ, design the filter such that the magnitude of the midband gain is 50 and the 3dB cutoff frequencies are 200Hz and 5kHz.

Fig. 1

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Question No.2

Consider the amplifier in Fig. 2. The op-amp parameters are A_v=5000, R_i=1kΩ, and R_o=1kΩ, and the transistor parameters has β_o=100 and biased to have g_m=8*mA/V* and ro=100kΩ.

(a) Which type of feedback topology is incorporated?

(b) Use feedback analysis to find values for closed loop gain v_o/v_i and input and output resistances.

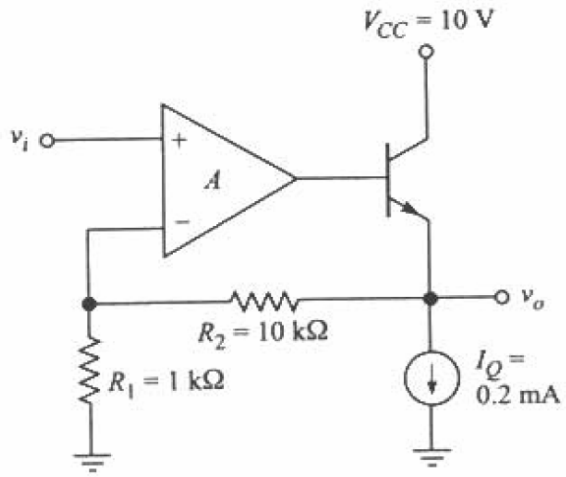
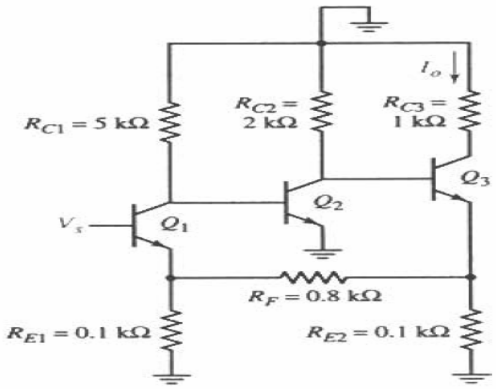


Fig. 2

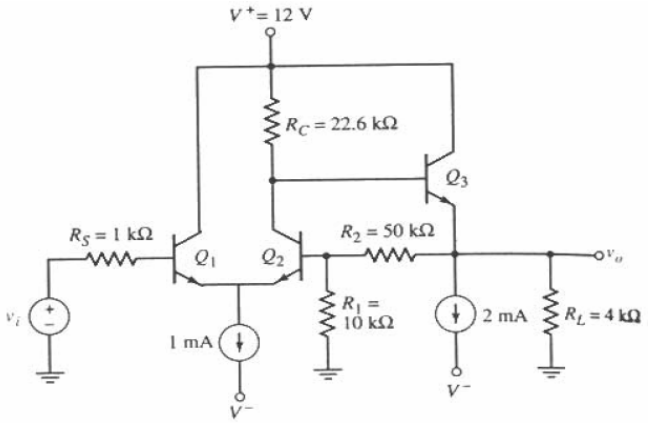
Question No.3

(a) Determine the type of feedback and calculate the feedback factor β for each amplifier shown in Fig. 3.

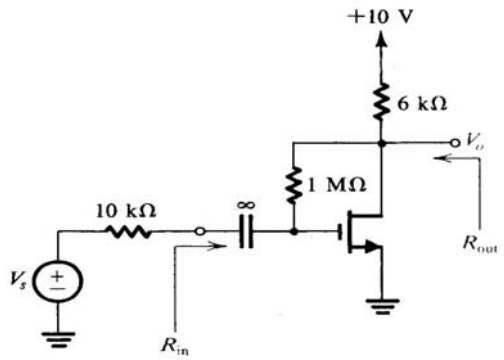
(b) Find approximate value for the transconductance gain $\frac{Io}{Vs}$ for the amplifier shown in Fig. 3(b).



(a)



(b)



(c)

Fig. 3