

بسم الله الرحمن الرحيم

King Fahd University of Petroleum and Minerals
Department of Electrical Engineering

Semester II 2006/2007

Electronics II EE303

Major (1)

ATTEMPT ALL QUESTIONS
TIME ALLOWED 50 MINUTES

Q1. Can the circuit shown in Fig. 1 amplify a signal in the frequency range 300 Hz to 4.0kHz? YOU MUST JUSTIFY YOUR ANSWER.

Q2. Write the necessary specifications for an amplifier (including the required DC supply voltage) that is required to process a signal obtained from a sensor with the following specifications: the internal resistance of the sensor is 1kOhm and it produces frequencies in the range of 35kHz to 65kHz. The output of the amplifier is expected to feed a load that can be represented by a resistor = 10kOhms. The output voltages of the sensor are in the range of 10mV to 20 mV and the load is expecting a maximum voltage = 1V.

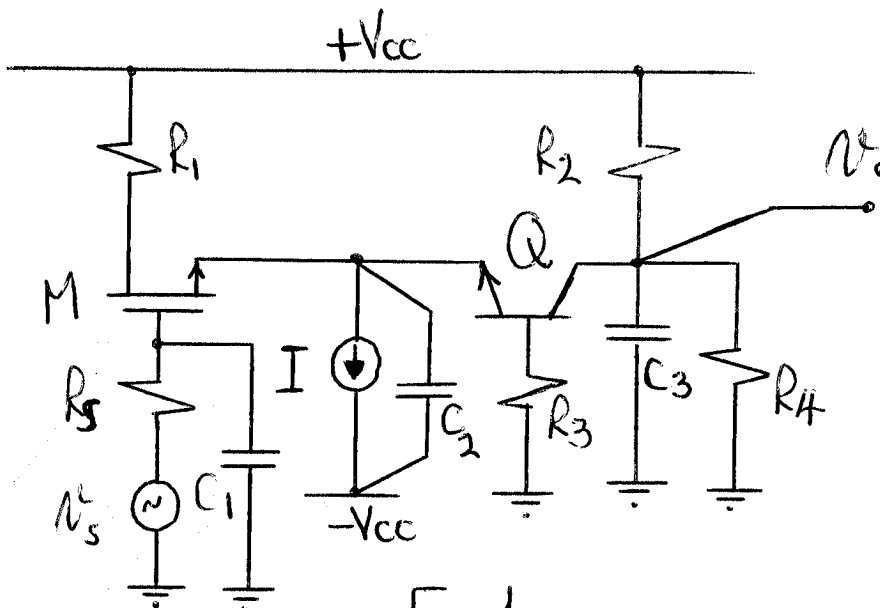


Fig. 1

$$R_s = 100 \Omega, C_1 = 100 \text{ PF}, R_1 = R_2 = 10 \text{ K}, R_3 = 100 \Omega,$$

$$R_4 = 10 \text{ K}, C_2 = 200 \text{ PF}, C_3 = 50 \text{ PF}$$

$$r_{\pi Q} = 1 \text{ K}, \beta_Q = 99, g_{mQ} = 10 \text{ mA/V}$$

$$I = 5 \text{ mA}, V_{cc} = -V_{cc} = 10 \text{ V}$$