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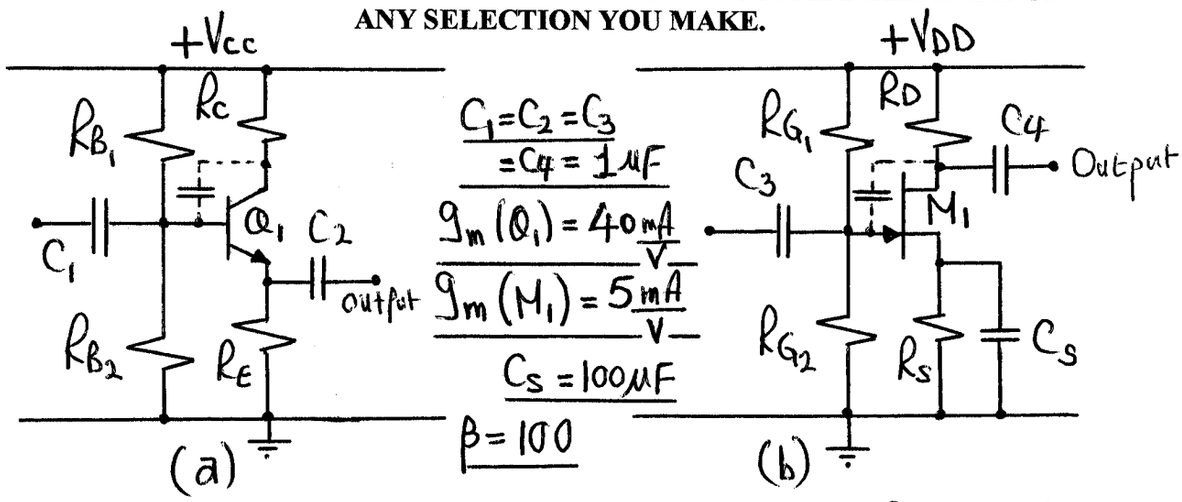
King Fahd University of Petroleum and Minerals
Department of Electrical Engineering

Semester I 2006/2007 **EE303 Electronics II** **Major (1)**

ATTEMPT ALL QUESTIONS
TIME ALLOWED 50 MINUTES

Your are working on the design of an instrumentation system. The system comprises a sensor whose output voltage is around 10 mV and its output frequency ranges from 20Hz to 20 kHz. The internal resistance of the sensor is 1 kOhm and the output of your system is required to be about 1 V and to feed a load that can represented by a resistance = 10 kOhm. Obviously you need an amplifier. Available in the market are the two amplifier shown in Figure.
You are requested to select the most appropriate amplifier for your system.

PLEASE SHOW ALL YOUR CALCULATIONS AND JUSTIFY THE BASIS OF ANY SELECTION YOU MAKE.



$C_1 = C_2 = C_3 = C_4 = 1\,\mu F$

$g_m(Q_1) = 40\,\frac{mA}{V}$

$g_m(M_1) = 5\,\frac{mA}{V}$

$C_S = 100\,\mu F$

$\beta = 100$

$C_\mu = 10\ PF$

$R_{B1} = R_{B2} = 10\,K\Omega$

$R_C = 10\,K\Omega$, $R_E = 1\,K\Omega$

$C_{dg} = 10\ PF$

$R_{G1} = R_{G2} = 1\,M\Omega$

$R_D = 10\,K\Omega$, $R_S = 1\,K\Omega$