Unit 11 - Week 9 - Common source amplifier with active load; CMOS inverter

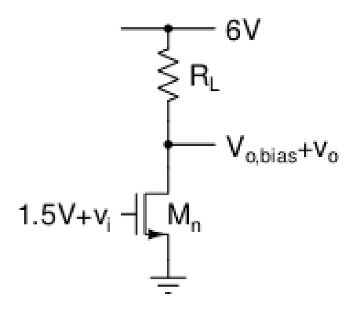
Course outline

Assignment 9

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-04-01, 23:59 IST.

1)



$\mu_n C_{ox} = 400\mu A/V^2$, $W/L = 16$, $V_{Tn} = 0.5\,V$.

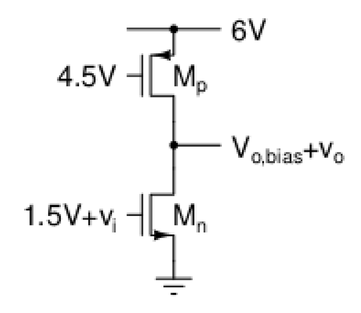
What is the maximum gain magnitude $|v_o/v_i|$ possible in the circuit above?

(The answer must be **the maximum gain magnitude**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 10

1 point

2)



M_p: $\mu_p C_{ox} = 100\mu A/V^2$, $W_p/L_p = 4$, $V_{Tp} = 0.5\,V$, $\lambda_p = 0.05\,V^{-1}$.
M_n: $\mu_n C_{ox} = 400\mu A/V^2$, $W_n/L_n = 1$, $V_{Tn} = 0.5\,V$, $\lambda_n = 0.05\,V^{-1}$

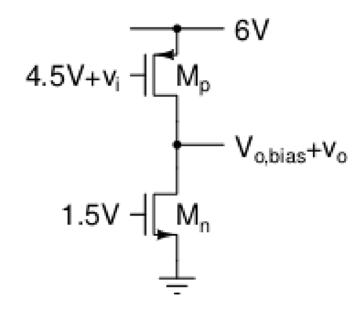
What is the gain v_o/v_i in the circuit above?

(The answer must be **value of the gain**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) -20

1 point

3)



M_p: $\mu_p C_{ox} = 100\mu A/V^2$, $W_p/L_p = 4$, $V_{Tp} = 0.5\,V$, $\lambda_p = 0.05\,V^{-1}$.
M_n: $\mu_n C_{ox} = 400\mu A/V^2$, $W_n/L_n = 1$, $V_{Tn} = 0.5\,V$, $\lambda_n = 0.05\,V^{-1}$

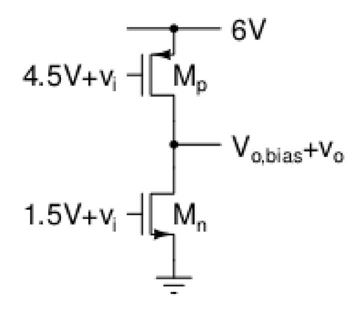
What is the gain v_o/v_i in the circuit above?

(The answer must be **value of the gain**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) -20

1 point

4)



M_p: $\mu_p C_{ox} = 100\mu A/V^2$, $W_p/L_p = 4$, $V_{Tp} = 0.5\,V$, $\lambda_p = 0.05\,V^{-1}$.
M_n: $\mu_n C_{ox} = 400\mu A/V^2$, $W_n/L_n = 1$, $V_{Tn} = 0.5\,V$, $\lambda_n = 0.05\,V^{-1}$

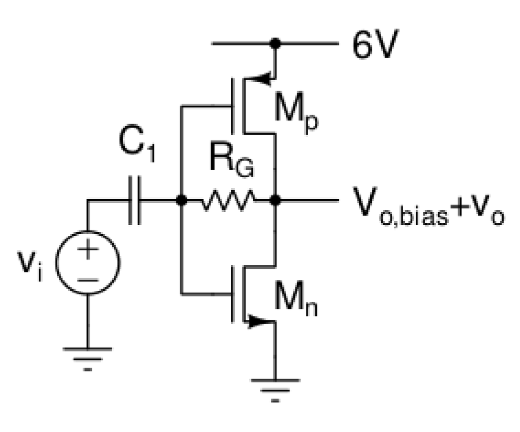
What is the gain v_o/v_i in the circuit above?

(The answer must be **value of the gain**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) -40

1 point

5)



M_p: $\mu_p C_{ox} = 100\mu A/V^2$, $W_p/L_p = 1$, $V_{Tp} = 0.5\,V$, $\lambda_p = 0.05\,V^{-1}$.
M_n: $\mu_n C_{ox} = 400\mu A/V^2$, $W_n/L_n = 4$, $V_{Tn} = 0.5\,V$, $\lambda_n = 0.05\,V^{-1}$

What is the bias voltage $V_{o,bias}$ in the circuit above?

(The answer must be **in volts (V)**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1.48,1.52

1 point

6) What is the bias current flowing through the transistors in the circuit above?

(The answer must be **in microamperes** (μA). Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 800

1 point

7) What is the gain v_o/v_i in the circuit above? Assume that R_G is very large.

(The answer must be **value of the gain**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) -25

1 point

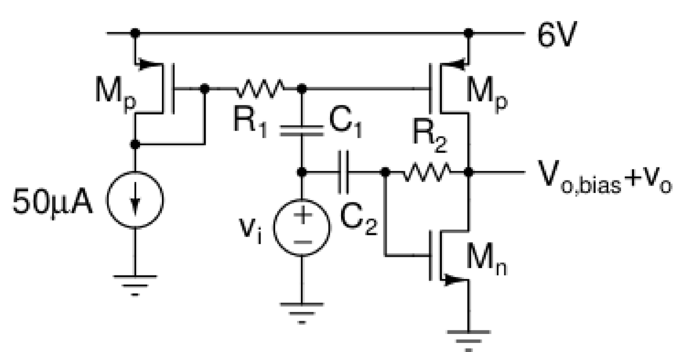
8) If $v_i = V_p \cos(\omega t)$, what is the maximum value of V_p that can be applied to the circuit while maintaining all transistors in saturation region?

(The answer must be **in millivolts (mV)**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 19,20

1 point

9)



M_p: $\mu_p C_{ox} = 100\mu A/V^2$, $W_p/L_p = 4$, $V_{Tp} = 0.5\,V$, $\lambda_p = 0.05\,V^{-1}$.
M_n: $\mu_n C_{ox} = 400\mu A/V^2$, $W_n/L_n = 1$, $V_{Tn} = 0.5\,V$, $\lambda_n = 0.05\,V^{-1}$

What is the gain v_o/v_i in the circuit above? R_1 and R_2 are very large.

(The answer must be **value of the gain**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) -80

1 point

10) If $v_i = V_p \cos(\omega t)$, what is the maximum value of V_p that can be applied to the circuit while maintaining all transistors in saturation region?

(The answer must be **in millivolts (mV)**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 6.1,6.2

1 point