

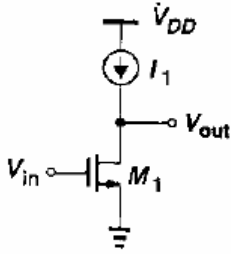
## Analog Circuit Designing

Max. Time – 30 min

Max. Marks – 30

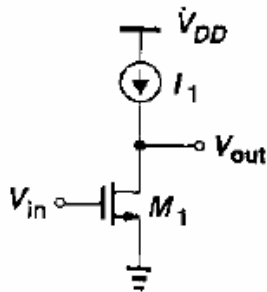
Name \_\_\_\_\_

Question 1:- As Bias Current  $I_1$  increase then Voltage Gain ( $V_{out}/V_{in}$ ) of the amplifier shown below -



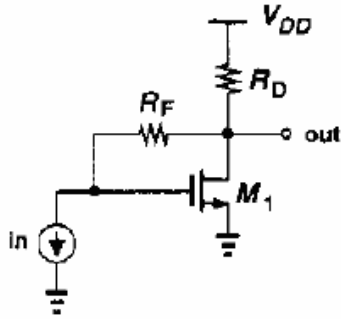
- a) Decreases
- b) Increases
- c) Remain Constant

Question 2:- If Length  $L_1$  of Mosfet  $M_1$  increases then Voltage Gain ( $V_{out}/V_{in}$ ) of the Amplifier shown below -



- a) Decreases
- b) Increases
- c) Remain Constant

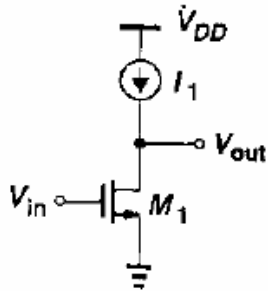
Question 3:- which type of feedback is shown in figure given below



- a) Voltage – Voltage feedback
- c) Current – voltage feedback

- b) Voltage – current feedback
- d) current – current feedback

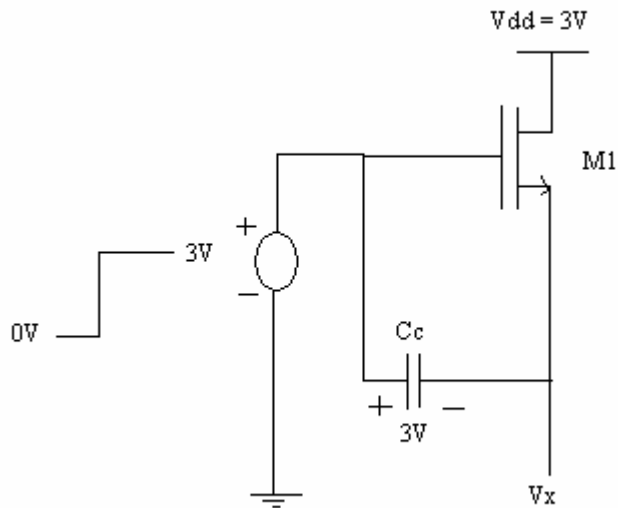
Question 4:- If Length  $L_1$  of Mosfet  $M_1$  increases then total noise of amplifier shown below -



- a) Decreases
- b) Increases
- c) Remain Constant

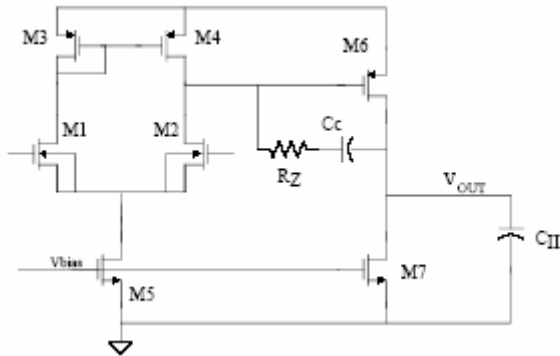
Question 5:- In Figure shown below Capacitor  $C_c$  is initially charge to 3V (polarity shown in figure), an input voltage pulse at time  $t=0$  change from 0V to 3V , what will be the voltage at node  $V_x$  at time  $t = \text{infinity}$  ?

Given  $V_t$  of M1 = 0.7V



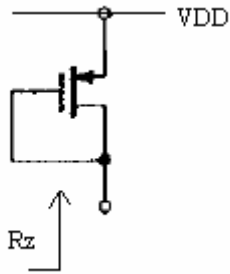
- a) 0.7 V
- b) -0.7 V
- c) 1.4 V
- d) 2.3 V
- e) None of these

Question 6: When I reduce the length of M7 transistor then CMRR of OPAMP shown below -



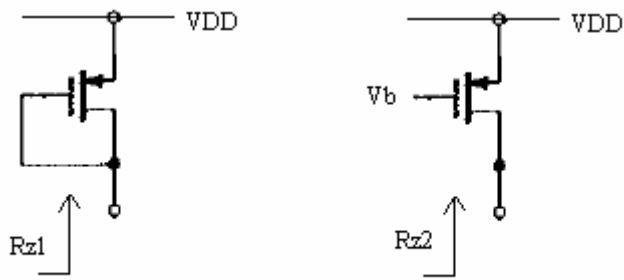
- a) Decrease
- b) Increase
- c) Remain constant

Question 7 :- Total most accurate resistance  $R_z$  model of transistor shown below



- a)  $1/g_m$
- b)  $1/(g_m + g_{mb})$
- c)  $1/(g_m + g_o)$
- d)  $1/(g_{mb} + g_o)$

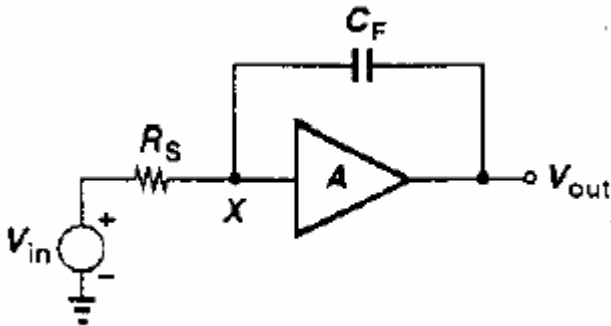
Question 8 :-



If in both case W/L of transistors are same then

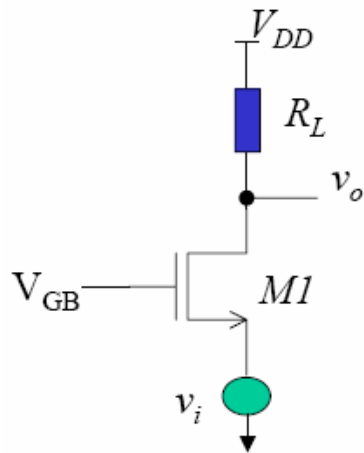
- a)  $Rz1 > Rz2$
- b)  $Rz1 < Rz2$
- c)  $Rz1 = Rz2$

Question 9:- Pole associate with node X is –



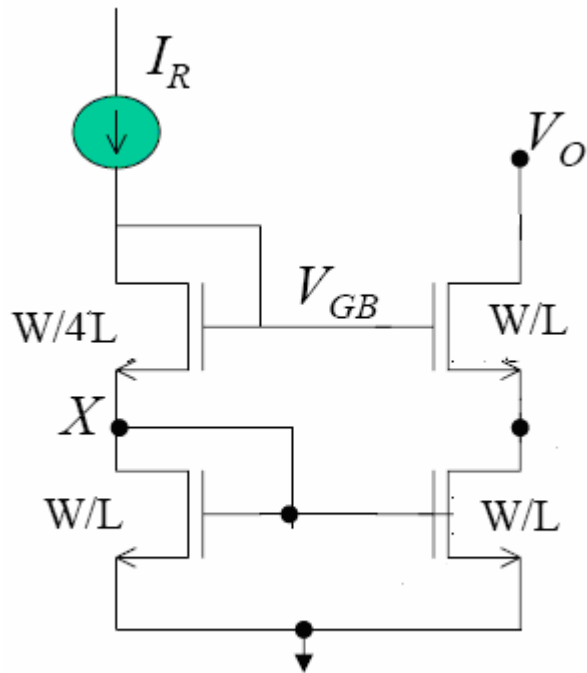
- a)  $1/[Rs(1+A)Cf]$
- b)  $1/[Rs(1+1/A)Cf]$
- c)  $1/[Rs(1-A)Cf]$
- d)  $1/[Rs(1-1/A)Cf]$

Q 10 :- Voltage Gain of the Amplifier Given below is equal to



- a)  $g_{m1} * R_L$
- b)  $[g_{m1} + g_{mb}] * [R_L \parallel r_{o1}]$
- c)  $[g_{m1} + g_{mb} + g_{o1}] * [R_L \parallel r_{o1}]$
- d)  $g_{m1} * [R_L \parallel r_{o1}]$

Question 11 :- if  $W/L$  nmos Overdrive is  $\Delta V$  & threshold Voltage is  $V_t$



Then min  $V_o$  to maintain every transistor in saturation

a)

$$3\Delta V + V_t$$

b)

$$\Delta V + V_t$$

c)

$$2\Delta V + V_t$$

d)

$$2\Delta V$$

Q 12 :- Feedback Circuit of Current Voltage feedback should have

- a) High Input Impedance , High Output Impedance
- b) High Input Impedance , Low Output Impedance
- c) Low Input Impedance , High Output Impedance
- d) Low Input Impedance , Low Output Impedance

Q 13: - Total Input & Output Impedance of a current amplifier is \_\_\_\_\_ & \_\_\_\_\_ when we put it into current - current feedback circuit.

- a) Increase , Increase
- b) Increase , Decrease
- c) Decrease, Increase
- d) Decrease , Decrease

Q 14: - A Transfer Function is given below

$$H(s) = \frac{K_1 s^2 + K_2 s + K_3}{s^2 + \frac{\omega_o s}{Q} + \omega_p^2}$$

Then Match the following

$$K_1 = K_3 = 0$$

High Pass

$$K_1 = K_2 = 0$$

Notch (Band eliminate)

$$K_2 = K_3 = 0$$

Low Pass

$$K_2 = 0$$

Band Pass