SY Div. C_ECA(2020 pattern) CIE test 3 on UNIT No. 05 and UNIT No 06-AY 2022-23 (Duration 1.30 Hrs)

Note: All the questions are mandatory. You can give this test only once and it can not be resubmitted. Solve all problems and upload the PDF or image of the solution. Write your name and Roll no. on each page.

* Required

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If VGS is less than Vth, the E-MOSFET is working in ----------region *

- (●) cut off
- ( ) saturation
- ( ) Ohmic
- ( ) reverse saturation

MOSFET operates in saturation region has following parameters: IDQ=0.3 mA, VD=3V, K=0.24 mA/V2, Vtn=1V, Determine VGS =---------- *

- ( ) 25.8
- ( ) 258 V
- ( ) 0.258 V
- (●) 2.58 V

For CS MOFET amplifier, the frequency of output signal is -------that of the input signal. *

- ( ) lower than
- ( ) equal to
- (●) higher than

For N channel E-MOSFET having the parameters: Kn= 1 mA/V2, VGS= 0.99 V, Vtn= 0.4 V. Determine IDQ .

- ○ 17.4 mA
- ○ 0.0174 mA
- ◉ 0.174 mA
- ○ 27.8 mA

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For N channel E-MOSFET having the parameters: λ = 0.02 V-1., IDQ=0.174 mA, Determine small signal resistance (ro) of the device. *

- ○ 0.28 Kohm
- ○ 2.87 Kohm
- ○ 100 Kohm
- ◉ 287 Kohm

For with bypass capacitor N ch. E-MOSFET CS amplifier, following parameters are given: VDD= 5V, RD= 7 Kohm ,Vtn= 0.8 V, Kn= 2 mA/V2, IDQ=0.5 mA and λ = 0. The values of gm and Av are respectively------ *

- ◉ 1.41 mA/V, -9.87
- ○ -1.41mA/V, 9.87
- ○ 7.45 mA/V, 15
- ○ 7.45 mA/V, -15

Which of the following improvements is (are) a result of the negative feedback in a circuit? *

- ○ Higher input impedance
- ○ Better stabilized voltage gain
- ○ Improved frequency response
- ◉ All of the above

Determine the voltage gain with feedback for a voltage-series feedback having A = –100, R_I = 15 kΩ, R_O = 20 kΩ, and a feedback of β = –0.25. *

- ○ 3.85
- ◉ −3.85
- ○ −9.09
- ○ 9.09

Determine the input impedance with feedback for a voltage-series feedback having A = –100, R_I = 15 kΩ, R_O = 20 kΩ, and a feedback of β = –0.25. *

- ○ 110 kΩ
- ○ 290 kΩ
- ◉ 390 kΩ
- ○ 510 kΩ

Voltage feedback connections tend to _____ the output impedance. Current feedback connections tend to _____ the output impedance. *

- (●) decrease, increase
- ( ) increase, decrease
- ( ) increase, increase
- ( ) decrease, decrease
- ( ) Other:

If an amplifier has Av=100, BW=200 KHz and beta=0.05 then BWf=-----

- (●) 1.2 MHz
- ( ) 12 MHz
- ( ) 0.12 MHz
- ( ) 120 MHz

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9)In RC phase shift oscillator producing output at f = 500 Hz, R = 7.5 Kohm then C = ----. *

- (●) 0.01 micro F
- ( ) 0.017 micro F
- ( ) 0.012 nF
- ( ) 0.001 micro F

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