Total No. of Questions : 4]

SEAT No. :

PA-5

[Total No. of Pages : 2

[5931] -7
S.E. (E & TC)
ELECTRONIC CIRCUITS
(2019 Pattern) (Semester - I) (204181)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q.4.***
2) ***Figures to the right indicate full marks.***
3) ***Draw the neat sketch wherever necessary.***

Q1) a) Explain construction and working of N-Type Enhancement MOSFET in details? **[5]**

b) List the non-Ideal characteristics of MOSFET? What is channel length modulation. Explain in details? **[5]**

c) Design a common source amplifier with voltage divider bias for I_D = 1mA, V_{DS} = 6.4V, V_{TN} = 2.0V, V_{DD} = 10V and K_n = 0.80 mA/V^2. Assume suitable data as require. **[5]**

OR

Q2) a) Using V-I characteristics, show in which regions MOSFET operates? Write drain current equation for the respective regions? **[5]**

b) How Body effect & Temperature effect will impact on overall performance of MOSFET? **[5]**

c) Determine the current Z_D and O/P voltage V_{DS} for the DC bias MOSFET circuit using voltage divider bias using parameter as, R_{G1}= 270KΩ, R_{G2}= 240 KΩ, R_S = 3.9KΩ, R_D = 10KΩ, V_{DD} = 5V, K_n = 0.16mA/V^2, V_{GS} = 2.45V, V_{TN} = 1.2V **[5]**

P.T.O.

Q3) a) Explain the effect of negative feedback on amplifier circuit? **[5]**

b) Draw block diagram of current series feedback amplifier and derive equation of gain, R_{if} and R_{of}? **[5]**

c) Draw a RC phase shift oscillater and calculate Frequency of oscillation for R = 8.9kohm and C = 0.1 μF. **[5]**

OR

Q4) a) Calculate the value of R_{if}, R_{of}, A_{vf} for a voltage series feedback amplifier for given specification R_i = 1.2KΩ, A_V = 75, R_o = 7.3KΩ, $\beta = 0.20$. **[5]**

b) Compare all four types of feedback amplifier with parameter Avf, bandwidth, R_{if}, R_{of} and output? **[5]**

c) What is barskhausen criteria for sustain oscillation? Explain working of oscillator? **[5]**