B.Tech - Odd Sem : Semester in Exam-I

KONERU LAKSHMAIAH EDUCATION FOUNDATION
(Deemed to be University, Estd. u/s. 3 of UGC Act 1956)

Academic Year:2024-2025

23EC2104R - ANALOG ELECTRONIC CIRCUIT DESIGN

Set No: 2

Time:

S.NO	Answer All Questions
1.	ANSWER ALL THE QUESTIONS
1.A.	A BJT has current gain of 175. If the base current is 0.1 mA, what is the collector current?
1.B.	Draw the CC amplifier circuit and state its operation conditions.
1.C.	List the feedback amplifier topologies and draw the current series amplifier.
1.D.	Define pinchoff voltage in JFET.
1.E.	Sketch the enhancement mode n-MOSFET input and output curves.
1.F.	List the advantages and disadvantage of depletion mode MOSFET.
2.	ANSWER ALL THE QUESTIONS
2.A.	Produce the BJT - CE configuration Input and Output Characteristics and Parameters
2.B.	Construct the hybrid equivalent circuit of CB-amplifier and derive the CB hybrid model Parameters: Input impedance, Current Gain, Voltage gain and Output impedance.
2.C.	Define and apply JFET characteristics and parameters.
2.D.	Model the Depletion-mode MOSFET amplifiers.

3.	ANSWER ALL THE QUESTIONS
3.A.	Analyse the Small Signal Analysis of BJT.
3.B.	For the given amplifier circuit, VBE=0.7V, kT/q=26mV. Assume that the output resistance (ro) of the BJT is very high and the base current is negligible. The capacitors are also assumed to be short circuited at the signal frequency. Find the low frequency gain Vo/Vi of the amplifier.
4.	ANSWER ALL THE QUESTIONS
4.A.	Construct and discuss about Collector Feedback Biasing as an amplifier and derive the stability factor relation.
4.B.	Figure shows a Silicon BJT biased by collector feedback method, determine the operating point.
5.	ANSWER ALL THE QUESTIONS
5.A.	Analyse the JFET as Voltage-Divider Bias.
5.B.	Determine ID and VGS for the JFET with voltage-divider bias in Figure, given that for this particular JFET the parameter values are such that VD ≈ 7 V.
6.	ANSWER ALL THE QUESTIONS
6.A.	Develop and give an outline on MOSFET- small signal model.
6.B.	Model the depletion mode MOSFET curves. A D-MOSFET has the values VGS(off) =23 V and IDSS =6 mA. What will the drain current equal when VGS equals -1 V, -2 V, 0 V, +1 V, and +2 V?