

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, April 2024
B. Tech. (ECE), Semester IV, 2022-26

Roll No.....

EE1121: VLSI Circuits

Time: 2.0 hours

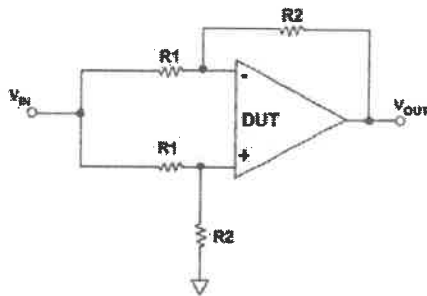
Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Mention all the assumptions for your answers clearly.

Q. 1 Explain qualitatively the input output characteristics of differential amplifier using graph. Why is constant current source used in the common source of the MOSFET used in the differential configuration. 5.0
(EE1121.3)

Q. 2 The op-amp in the schematic diagram shown below has CMRR of 80 dB, If R_2 and R_1 are 10K and 1K respectively, find the output voltage when v_{in} is 5 mV. 5.0
(EE1121.4)

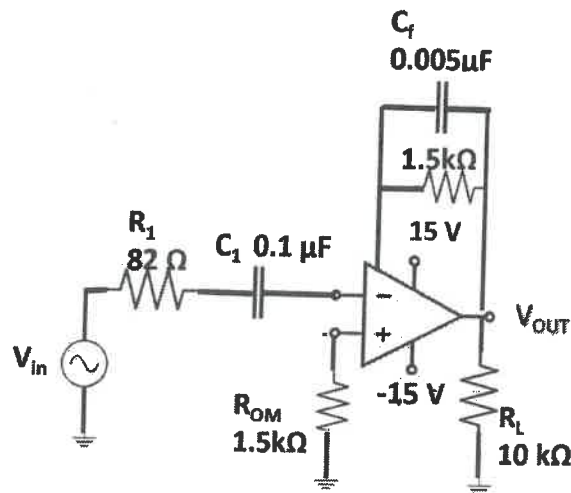


Q. 3 Why is Slew Rate an important specification for op-amps? A TL071 op-amp has slew rate of 10V/ μ sec and is used with negative feedback resistances of R_1 of 100 Ω and R_2 of 5 K Ω . Determine the maximum input signal peak for a signal and the maximum frequency so that output is bounded between ± 15 V. 5.0
(EE1121.4)

Q. 4 Design a square wave oscillator so that a signal of 5 V peak is generated at a frequency of 5 KHz. Show how can we generate the square wave with on and off times that are unequal? 5.0
(EE1121.5)

- Q.5 Draw the output waveform for the circuit shown in the Figure, where the input is a square wave of 1KHz. Show the calculations used to arrive at the results.

5.0
(EE1121.4)



- Q. 6 For the signal shown below, V_{UT} and V_{LT} are +25 mV and -25 mV respectively so that any noise signal crossing these limits produces V_{out} as shown in the figure below which varies between 0 to 5V. Design the Schmitt trigger so that op-amp 741 C is used for the above application.

5.0
(EE1221.5)

