

Nov - Dec 2024

(B. Tech) Program :EXTC Scheme: III

Regular Examination: SY Semester: III

DSY Course Code: EXC405 Course Name: Electronic Devices and Linear IC's

Max. Marks: 60

Date of Exam: 20/12/24 3rd Duration: 02.5 Hours

EXC303

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Define the process of amplification? Explain the application of transistor as an amplifier with suitable circuit diagram		CO1	Un
b)	Explain the differential amplifier as a basic building block of operational amplifier.		CO2	Un
c)	Draw the circuit diagram of wein Bridge oscillator and calculate the value of R and Rf if $C=0.1\mu F$, $f=10\text{KHz}$ and $R_i=5\text{K}\Omega$		CO3	Ap
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Draw the circuit diagram of a triangular waveform generator using an op-amp and explain its working with the help of waveforms.		CO4	Un
b)	Explain capture range and lock range in PLL		CO6	Un
c)	Design astable multivibrator using 555 timers for a frequency of 1KHz and a duty cycle of 70%. Assume $C=0.1\text{microF}$		CO5	Ap
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Draw and explain the VI characteristics of CB or CE configuration of the transistor. Compare all the three regions identified in output characteristics and explain in which regions transistor acts as a closed switch, open switch and amplifier. Compare CB, CE and CC configurations.		CO1	Un
b)	1. Explain the significance of virtual ground in an op-amp 3. Explain closed and open loop basic op-amp configurations with its gain equations.		CO2	Un

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Nov – Dec 2024 (B. Tech) Program :EXTC Scheme: III Regular Examination: SY Semester: III Course Code: EXC403 Course Name: Electronic Devices and Linear IC's Date of Exam: 20/12/24 Duration: 02.5 Hours Max. Marks: 60		
---	--	--

EXC303

	2. Define CMRR, Slew rate, input offset voltage and input offset current.			
c)	Derive the expression for the frequency of oscillator of RC phase shift oscillator. Design phase shift oscillator so that $F_0=200\text{Hz}$		CO3	Ap
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Derive the expressions for the threshold levels and explain how they can be varied. With the help of neat diagram and voltage transfer characteristics explain the working of non-inverting Schmitt trigger.		CO4	Ap
b)	Compare and contrast Adder, Subtractor, and Averaging circuit using op-amp with equations		CO5	AP
c)	Design the practical integrator to operate at $f=4\text{KHz}$ and gain is equal to 2.		CO4	AP
