

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

Nov – Dec 2025

(B. Tech) Program: EXTC Scheme : III

Regular/~~Supplementary~~ Examination: SY Semester: III

Course Code: EXE303 and Course Name: Electronic Devices and ~~Linear~~ Circuits

Date of Exam: 2/12/2025

Duration: 02.5 Hours

Max. Marks: 60

Instructions:

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

Q.N	Question	Max	CO	BT
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Illustrate how a Zener diode is used as a voltage regulator with a neat circuit diagram.		1	U
b)	Design a fixed bias network for $I_C = 2 \text{ mA}$ and $V_{CE} = 6 \text{ V}$ using a 12V supply.		2	Ap
c)	Explain why MOSFET is preferred in high-input impedance applications.		3	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Analyze the impact of Miller effect on high-frequency response.		5	U
b)	List different classes of power amplifiers.		6	U
c)	Illustrate the concept of cascading with a neat block diagram of a multistage amplifier.		4	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Draw and label the characteristics of a D-MOSFET.		2	U
b)	Describe the role of the emitter bypass capacitor on amplifier gain.		3	U
c)	Draw the high-frequency small-signal model for CS amplifier.		4	U
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Explain the working of Class A power amplifier.		6	U
b)	Explain Differential amplifier with MOSFET.		1	U
c)	Define differential gain and common-mode gain of a differential amplifier. What is CMRR?		5	U
