

Reg No : Name :

**MAR ATHANASIOUS COLLEGE OF ENGINEERING, KOTHAMANGALAM**

(Govt. Aided Autonomous Institution)

Third Semester B.Tech. Degree (SAY Examination, February, 2026)

Course Code: B24EE2T04

Course Name: ELECTRONIC CIRCUITS II

Max. Marks: 100

Duration:3 Hours

PART - A: 30 Marks (10 Qns x 3 Marks)**Answer all questions**

1. Interpret the current gain and voltage gain of a Common Source MOSFET configuration.
2. Outline the importance of biasing of a discrete MOSFET amplifier.
3. Define Input Offset current of an OpAmp and elaborate its significance.
4. Illustrate the circuit of an OpAmp Subtractor and explain the voltage equation.
5. Define first order and second order active filters.
6. Draw and explain high pass active filter.
7. Mention any three applications of PLL.
8. Explain the role of phase detector in PLL.
9. Explain the low voltage configuration of IC 723.
10. What are adjustable voltage regulators?

PART - B: 70 Marks (5 Qns x 14 Marks)**Answer any One full question from each module.****Module 1**

11. a. Illustrate the working of a TTL NAND gate when both inputs are high. (10 Marks)
b. What is the role of the diode connected at the output stage ? (4 Marks)

OR

12. a. Explain depletion-mode MOSFET. (6 Marks)
b. Compare and contrast the working principles, and transfer characteristics of an n-channel enhancement-mode MOSFET and an n-channel depletion-mode MOSFET. (8 Marks)

Module 2

13. a. Derive the voltage gain of Inverting Summing Amplifier. (10 Marks)

b. Elaborate the concept of virtual ground of OpAmp with a figure. (4 Marks)

OR

14. a. List out the characteristics of ideal OpAmps. (6 Marks)

b. Illustrate the ac characteristics of practical OpAmps. (8 Marks)

Module 3

15. a. Explain the role of RC network in the OpAmp based Phase Shift Oscillator. (4 Marks)

b. Draw and explain the Wein bridge oscillator using OpAmp. (10 Marks)

OR

16. a. What are Multivibrators? (4 Marks)

b. With neat diagram explain the working of a monostable multivibrator using OpAmp. (10 Marks)

Module 4

17. a. With a neat functional diagram and waveforms, explain the working of a monostable multivibrator using 555 timer IC. (10 Marks)

b. Design a monostable multivibrator using 555 timer IC for a pulse width of 1.5 ms. (4 Marks)

OR

18. a. What is VCO? Give any two applications which require VCO. (4 Marks)

b. Draw the functional block diagram of 566 VCO and explain its operation with relevant equations. (10 Marks)

Module 5

19. a. What are voltage regulators? How are they classified? (7 Marks)

b. With neat diagram explain how voltage regulation is done using adjustable voltage regulators. (7 Marks)

OR

20. a. Explain the characteristics of general purpose regulators and compare it with switching regulators. (9 Marks)

b. List down the limitations of IC 723. (5 Marks)
