



CBCS SCHEME

USN Date AY 2 L E C 0 6 0

21EC34

Third Semester B.E. Degree Examination, Jan./Feb. 2023

Analog Electronic Circuits

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the classical discrete circuit bias (voltage divider bias) method of BJT. (08 Marks)
- b. Explain the three biasing methods to bias MOS Amplifier circuits. (12 Marks)

OR

- 2 a. Explain the T equivalent circuit model of MOSFET. (08 Marks)
- b. Derive an expression for voltage gain of MOSFET with necessary waveforms. (06 Marks)
- c. Explain biasing a BJT using collector to base feedback resistor. (06 Marks)

Module-2

- 3 a. Explain the common source amplifier and derive the expression for voltage gain. (10 Marks)
- b. A transistor amplifier is fed with a signal source having an open circuit voltage V_{sig} of 10mV and an internal resistance r_{sig} of 100K Ω . The voltage V_i at the amplifier input and the output voltage V_o are measured both without and with load resistance $R_L = 10K\Omega$ connected to the amplifier output. The measured results are as follows :

	V_i (mv)	V_o (mv)
Without R_L	9	90
With R_L connected	8	70

Find all the amplifier parameters. (10 Marks)

OR

- 4 a. With a neat diagram, explain the three frequency bands of MOSFET. (06 Marks)
- b. Explain the high frequency model of MOSFET. (06 Marks)
- c. Explain common source follower and derive the expression of voltage gain. (08 Marks)

Module-3

- 5 a. Explain the properties of negative feedback. (10 Marks)
- b. Explain the transformer coupled class – A power amplifier and show that efficiency is 50%. (10 Marks)

OR

- 6 a. Explain the circuit operation of class – B power amplifier and also explain the transfer characteristics. (08 Marks)
- b. Explain the Four basic feedback topologies of the amplifier. (12 Marks)

Module-4

- 7 a. Explain R and 2R resistor digital to analog (D/A) converter and also derive the expression of output voltage. (10 Marks)
- b. Explain the first order lowpass Butterworth filter with necessary voltage gain. (10 Marks)

21EC34

OR

- 8 a. Explain the operation of monostable multivibrator. (10 Marks)
b. Explain the two types of Bandpass filters. (10 Marks)

Module-5

- 9 a. Explain the block diagram of power electronic system. (06 Marks)
b. List and explain the applications of power electronics. (06 Marks)
c. Explain the static anode – Cathode characteristics of SCR. (08 Marks)

OR

- 10 a. Explain the turn on methods of a Thyristor. (10 Marks)
b. Explain the construction and working of UJT. (10 Marks)
