

KURUKSHETRA UNIVERSITY KURUKSHETRA
Course: B.Sc. (Hons) IT
Semester-III

Paper Code: BSIT-302

Nomenclature: -Transistor and Linear Integrated Circuits

Max. Marks: 40+10*

Time: 3hrs.

UNIT-I

Transistor at Low Frequencies: Transistor hybrid model, h parameters, Analysis of transistor amplifier circuit using h- parameters, Emitter follower, Comparison of transistor configurations, Simplified common emitter hybrid model.

UNIT-II

Integrated Circuit-I: Basics of Integrated Circuit Technology, Monolithic fabrication technique, Different Fabrication Processes: Crystal growth, Epitaxial growth, Oxidation, Masking and Etching, Diffusion of Impurities, Metallization, Classification of ICs (SSI, MSI, LSI and VLSI).

UNIT-III

Integrated Circuit-II: Transistors for Monolithic Circuits (NPN & PNP), Monolithic Diodes, Integrated Resistors, Integrated Capacitors and Inductors, JFET, MOSFET fabrication (Qualitatively), Monolithic Circuit Layout.

UNIT-IV

Operational Amplifier-I: DC Coupled Amplifier, Double ended differential Amplifier, differential gain. Common-mode gain, CMRR, ideal operational amplifier, Basic Concept of Feedback in Op amp, Inverting & non-inverting configuration, Buffer, Summing and Difference amplifier.

Reference Books:

- 1) Electronics for Scientist & Engineers by Vishvanathan.
- 2) Op. amp. and Linear Integrated Circuit by Ramakant A. Gayakward
- 3) Integrated Electronics by Millman & Halkias
- 4) Linear Integrated Circuits by Roy Choudhury & Shail Jain

Note:

1. Syllabus in each Theory Paper is divided in 4 units.
 - I. A Student is required to attempt 5 questions in all.
 - II. Question No 1 is compulsory, consisting of short answer type questions based on all the 4 units.
 - III. Two questions will be set from each unit. A student is required to attempt one question from each unit.
 - IV. All questions carry equal marks.
2. Use of simple calculator is permissible.
3. Instructions should be imparted using SI system of units. Familiarity with CGS system of units should also be ensured.
4. Distribution of Marks: 40+10.
 - * Each theory question paper will be of 40 marks of 3 hours duration and 10 marks in each theory paper are to be awarded through internal assessment in each semester.
5. Work load – 3 periods per week per theory paper