

Basic Electronics (EC – 1001)

Course Code	EC- 1001	Credits-4	L – 3 , T- 1, P-0
Name of the Course	Basic Electronics		
Lectures to be Delivered	52 (1 Hr Each) (L= 39, T = 13 for each semester)		
Semester End Examination	Max. Marks: 100	Min. Pass Marks: 40	Maximum Time: 3hrs
Continuous Assessment (based on sessional tests (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max. Marks: 50

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D, and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 40% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each section will carry 15% of the total marks of the semester end examination for the course.

2. **For Candidates:** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

Section –A

Brief review of Band Theory, Transport phenomenon in semiconductors, Electrons and Holes in Intrinsic semiconductor, Donor and acceptor impurities, charge densities in semiconductor. PN Junction, Reverse and Forward Bias conditions, Diode Characteristic and parameter, Ideal vs Practical diode, equivalent circuits and frequency response, rectification-half and full wave, Zener and Avalanche Diode.

Section B

Bipolar junction transistor (BJT), Junction Field effect transistor (JFET) and metal oxide semiconductor (MOSFET) and their characteristics as circuit and gain elements
Two port network analysis, h-parameter and trans-conductance, equivalent circuits for FET, CE, CB and CC amplifiers and comparison of their circuit parameters
Unijunction transistor (UJT), UJT characteristics, parameters and circuit operation. Photo transistor

Section C

Bias for transistor amplifier: fixed bias, emitter feed back bias. Feedback principles. Types of feedback, Stabilization of gain, reduction of non-linear distortion, change of inputs and output resistance by negative feed back in amplifiers. Amplifiers coupling, types of coupling, Amplifier pass band, Eq circuits for BJT at high frequency response of CE, RC- Coupled amplifiers at mid, low and high frequencies.

Section D

Semi Conductor processing, active and passive elements, integrated circuits, bias for integrated circuits. Basic operational amplifiers, Application of operational amplifiers- adder, subtractor, integrator, differentiator and Comparator.

Books:

1. A.P. Malvino , Electronic Principles.
2. J.D. Ryder Electronic Fundamentals and Applications.
3. J. Millian and C.C. Halkias, Integrated Electronics
4. J. Millman and C.C. Halkias , Electronic Circuits and Devices.
5. N.N. Bhargava & Kulshrestha: Electronic Devices.