

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Years Integrated Course]
B.Sc. (Information Technology)
2nd Semester Syllabus

Effective From June-2003

Paper No : 204
Paper Title : Basic Electronics.

[L : 4, P : 0 Hrs]

1. Fundamentals of Electrical Engineering

- 1.1. Introduction of AC supply, Voltage, Current, Power, Frequency, Phase & DC supply
- 1.2. Passive components, Resistor, capacitor, Inductor & their properties, Simple R, L & C circuits.
- 1.3. Ohm's Law & Kirchoff's laws, Series & parallel connection of resistors & capacitors.
- 1.4. Heating effect due to current and need of fuses.
- 1.5. Voltage source, Ideal Volt source, conversion of voltage source into current source, Thevenin's theorem, maximum power transform theorem.
- 1.6. Electromagnetism, Flux, Flux density, Magnetic force, permeability, B-H curve
- 1.7. RC time constant
- 1.8. Electromagnetic Induction & transformer.
- 1.9. Resonance tank circuits

2. Semi conductor Physics

- 2.1. Properties of Semiconductors
- 2.2. Commonly used Semiconductors
- 2.3. Intrinsic & Extrinsic semi conductors
- 2.4. P Type & N Type semiconductors
- 2.5. PN Junction & Biasing

3. Semiconductor Diode

- 3.1. Diode, symbol, ratings, forward & reverse bias characteristics
- 3.2. Half wave rectifier, full wave rectifier, bridge rectifier, simple filter circuits
- 3.3. Zener Diode & its applications

4. Transistor (Introductory concepts)

- 4.1. PNP & NPN Transistor,
- 4.2. CB, CC, CE configurations & biasing
- 4.3. Transistor as an amplifier
- 4.4. Transistor as a switch
- 4.5. Alpha & Beta parameters
- 4.6. Frequency response & bandwidth
- 4.7. RC coupled Transistor Amplifier & Transformer coupled transistor amplifier - their circuit diagram.
- 4.8. Audio power amplifier
- 4.9. Push Pull amplifier
- 4.10. Principle of negative feedback in Amplifier & Gain.
- 4.11. Transistor tuned amplifier circuit
- 4.12. Oscillate Circuits, Crystal Oscillator
- 4.13. Different type of signals: Sine Wave, Saw Tooth, Triangular, Pulses.
- 4.14. Multivibrators

5. LED, Photo Diode, Photo Transistor, Thermistor, LDR, BCR, Triode, their Characteristics & Applications.

6. FET, MOSFET & Construction, Symbol & Basic Circuits, their Advantage over Transistor.

Recommended Books:

1. Principles of Electrical Engineering & Electronics - V.K. Mehta
2. Fundamentals of Electronics - Asok Singh
3. Electrical Technology - B.L.Theraja (Part I)
4. Electronics Principles - Malvino