

SARDAR PATEL UNIVERSITY
B.Sc (4th Semester)
Electronics
US04CELE01
Electronics Devices And Applications
(Three credit course – 3 hours per week)
(Effective from June 2011)

- Unit 1 Field Effect transistor:-
Transistors specifications, Power dissipation, heat sinking, decibel and frequency response, JEFT fabrications and packaging, N & P channel JEFT, Characteristics of JEFT, Parameters of JEFT.
- Unit 2 FET Biasing Circuits:-
FET Biasing and basic JEFT circuits :- DC Load line & bias point, fixed voltage bias circuit, Self bias, Potential divider bias circuits, Comparison of basic JEFT bias circuits, biasing MOSFETS.
- Unit 3 MOSFET:-
FET Amplification, DC switching, JFET Voltage amplifier, FET equivalent circuit, enhancement MOSFET, Depletion - enhancement -MOSFET, VMOSFET, Handling MOSFET.
- Unit 4 FET Circuits:-
Common source circuit and its as equivalent circuit, complete ac equivalent circuit, Common drain circuit and its as equivalent circuit, complete ac equivalent circuit, Common gate circuit and its ac equivalent circuit, complete ac equivalent circuit.
- Unit 5 Opto-electronics Devices 1:-
Light units, Photo multiplier tube, Photo conductive cell, Light emitting diode, Photo diode, solar cell, Photo-transistors and photo Darlington.
- Unit 6 Opto-electronics Devices 2:-
Liquid crystal display, Piezo electric crystals, Opto electronics couplers, laser diode, PIN diode, seven segment display.

Text Books:

1. Electric engineering fundamentals, Vincent Deltore (2nd Edition)
2. Electronics devices and circuit, David Bell,
3. Digital integrated electronics, Herbert Taub, Donald Schelling
4. Basic Electronics by Bhargava

SARDAR PATEL UNIVERSITY
B.Sc. (Semester – 4)
Subject: Electronics Course:US03CELE02
Instrumentation and Digital Electronics
(Three Credit Course – 3 Hours per week)
(Effective from June-2011)

Unit – 1 Logic Families

Logic Specifications, Logic Families- RTL, DTL, TTL, ECL, I²L –Logic circuits and their performances and specifications, I²L NAND Gate, I²L NOR Gate, ECL OR/NOR Gate, Interfacing

Unit – 2 XOR-XNOR Gates

XOR-XNOR Gates and their applications, Parity Checker, Code Convertor, Controlled Inverter, Comparator, Half and Full Adder, Half and Full Subtractor, Parallel Binary Adder

Unit – 3 Flip Flops

R S Flip Flop, Clocked R S Flip Flop, D Flip Flop, Edge Triggered D Flip Flop, J K Flip Flop, JK Master/Slave Flip Flop, Applications of Flip Flop, ANSI/IEEE Symbols for Flip Flops

Unit – 4 Multivibrators and their applications

Schmitt Trigger, Astablemultivibrator, Introduction to decoders, Decimal decoder, Seven Segment Decoder, Multiplexer , 16 to 1 Multiplexer, Encoder, Decimal to BCD Encoder

Unit – 5 Counters

Binary Ripple Counter, Asynchronous Counter 4 Bit, Mod -5,6 and 7, Synchronous Counter Mod6,7and 8, Combinational Counter Mod 5 and 7, Advantages and Disadvantages of various Counters

Unit – 6 Applications of Counters

Binary Decade Counter, Decoding Gates, Decoding Waveforms, BCD Counter, Up/Down Counter, Shift Counter

Scope of syllabus:

Text Books:

- 1.Modern Electronics Instrumentation & Measurement Techniques(Unit 1) By A. D. Helfrick& W. D. Cooper
- 2.Digital Electronics By William Gothmann(Unit 3,4)
- 3.Digital Principles & Applications(Unit 3 to 6) by A. P. Malvino& D. P. Leach

Reference Books:

- 1.Digital fundamental By Thomas L. Floyd
- 2.Digital and Micro processor Electronics By Byron W. Putman
- 3.Digital Electronics By C. E. Strangio
- 4.Digital Computer Electronics(Unit 5) (An Introduction to Microcomputer) By A. P. Malvino

SARDAR PATEL UNIVERSITY
B.Sc (4th Semester)
Electronics
US04CELE03 Practical.
(Three credit course – 6 hours per week)
(Effective from June 2011)

1. JFET Characteristics
2. FET voltage amplifier
3. Fixed voltage biasing using FET / BJT / MOSFET
4. Self biasing using FET/ BJT / MOSFET
5. Potential divider biasing using FET/ BJT / MOSFET
6. XOR, XNOR gate applications
7. Half and Full Adder
8. Half and Full subtracter
9. Flip-flops (RS, Clocked RS, D, JK Flip – flops)
10. Schmitt trigger using transistor
11. Astable multivibrator using transistor
12. Monostable multivibrator using transistor
13. Asynchronous counter (MOD 16, 8, 7)
14. Synchronous counter (MOD 16, 8, 7)
15. BCD counter

And other experiments based on syllabus

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar-388120
B.Sc. (Semester – 4)
Subject: Electronics
Course: US03CELC01
Electronics & Communication
(Three Credit Course – 3 Hours per week)
(Effective from June-2011)

- Unit 1.** Vector Analysis
Scalar and Vector, Vector algebra, the rectangular co-ordinate system, vector components and unit vector, the vector field, dot product, cross product, Cylindrical co-ordinate system, Spherical co-ordinate system.
- Unit 2.** Coulomb's Law and Electric Field Intensity
The experimental law of coulomb, electric field intensity, field due to continuous volume charge distribution, field of a line charge, field of a sheet of charge.
- Unit 3.** Electric flux Density, Gauss's Law & Divergence
Electric Flux density, Gauss's law, application of Gauss's law: for symmetrical charge distribution and differential volume element, Divergence, Maxwell's First Equation, Vector operator and Divergence theorem
- Unit 4.** Energy and Potential
Energy expended in moving a point charge in an electric field, line integral, definition of potential difference and potential, the potential field of a system of a charges, conservative property, dipole, energy density in the electrostatic field.
- Unit 5.** Current and Conductor
Current and Current density, continuity of current, metallic conductor, conductor properties and boundary condition, method of Images, semiconductor.
- Unit 6.** Dielectric and Capacitances
The nature of dielectric material, boundary condition of perfect dielectric material, capacitance, several capacitance examples, capacitance of two wire line.

References:-

1. Engineering Electromagnetics: W.H.Hayt&J.A.Buck.
2. Theory & Problems of Electromagnetics: Joseph A.Edminister.

SARDAR PATEL UNIVERSITY
B.Sc (4th Semester)
Electronics And Communication.
US04CELC03
Practical.

(Three credit course – 6 hours per week)
(Effective from June 2011)

1. To study RF Amplifier.
 2. To study IF Amplifier.
 3. Automatic Gain Control.
 4. Automatic Frequency Control.
 5. Low and High Pass Filters.
 6. To study AM Radio Transmitter.
 7. To study FM Radio Transmitter.
 8. Characteristics of Buffer Amplifier (CC Amplifier.)
 9. Band Pass And Band Stop (Notch)Filters.
 10. Clipping And Clamping Circuit.
 11. To study Television Receiver
 12. Pre-emphasis and DE-emphasis of Audio signals.
- And other experiments based on syllabus.

SARDAR PATEL UNIVERSITY
S.Y.B.Sc (4th Semester)
Computer Hardware.
US04EELE01 Fundamentals of Computer Hardware.
(Two credit course – 2 hours per week)
(Effective from June 2011)

UNIT – 1 COMPUTER SOFTWARE

What is software, Relationship between hardware and software, Types of software, Machine language, Assembly language, Assembler, High level language, Compiler, Interpreter, Firmware

UNIT - 2 OPERATING SYSTEM:

Operating systems yesterday and today,
PC Operating system: DOS, Windows NT workstation, Windows 9X, Windows XP,
Network Operating system, Windows NT server, Embedded Operating system

UNIT – 3 NETWORKING

Use of network: Simultaneous access, Shared peripheral devices, Personal communications, Easier data backup, Common types of Network: LAN, WAN, Hybrid Network, CANs, MANs, HANs, Intranets and Extranets, Network Topologies, Network Media – Wire Based media and Wireless media, Protocols.

UNIT – 4 DATA COMMUNICATIONS AND INTERNET

Modems, Digital data connections, Broadband connections, DSL technology, Cable Modem Connections. ATM, Wireless Network, What is internet? Connecting to the internet through – wires, Dial – up connections, High Speed Broadband connections, ISDN services, DSL services, Cable modem services

TEXT BOOK:

1. Computer Fundamentals By P.K. Sinha (BPB Publications)
2. Introduction To Computers By Peter Norton (sixth edition) (The McGraw– Hill Companies)