



St. PETER'S UNIVERSITY

St. Peter's Institute of Higher Education and Research

(Declared Under Section 3 of the UGC Act, 1956)

AVADI, CHENNAI – 600 054

TAMIL NADU

B.Sc. (ELECTRONICS)

Code No. - 322

(Effective From 2009 – 2010)

(Distance Education)

Regulations and Syllabi

(I & II & III Year)

St. PETER'S INSTITUTE OF DISTANCE EDUCATION

Recognized by Distance Education Council and

Joint Committee of UGC – AICTE - DEC, New Delhi

(Ref. F. No. DEC/SPU/CHN/TN/Recog/09/14 dated 02.04.2009 and

Ref.F.No.DEC/Recog/2009/3169 dated 09.09.2009)

St. PETER'S UNIVERSITY
St. PETER'S INSTITUTE OF DISTANCE EDUCATION
Chennai – 600 054.

Code No. – 322
B.Sc. (ELECTRONICS)
(Distance Education)

Regulations and Syllabi
(Effective from 2009 – 2010)

- 1. Eligibility:** Candidates who have passed the Higher Secondary Examination conducted by the Government of Tamilnadu with Mathematics as one of the subjects, or any other examination recognized as equivalent thereto are eligible for admission to Three Year B.Sc Programme in Electronics.
- 2. Duration:** Three Years.
- 3. Medium:** English is the medium of instruction and examination.
- 4. Methodology:** The methodology of distance education includes supply of self-instructional study materials in print format and in CD, face-to-face instruction for theory and practicals for a limited period during week ends and on holidays, provision of virtual class in phased manner, dissemination of information over e-mail, Student - Support Service at various Centres of the University, Continuous Assessment and End Assessment conducted by the University at various parts of India.
- 5. Weightage for Continuous and End Assessment:** There is no weightage for Continuous Assessment unless the ratio is specifically mentioned in the scheme of Examinations. The End Assessment (EA) has 100% weightage.

6. Credit System: Credit system be followed with 36 credits for each Year and each credit is equivalent to 25 hours of effective study provided in the Time Table of the formal system.

7. Scheme of Examinations

First Year

Code No.	Course Title	Credit	Marks	
			EA	Total
Theory				
109UTMT01 109UHIT01	Tamil - I Hindi - I	6	100	100
109UEHT02	English - I	6	100	100
109UELT03	Allied : Basic Mathematics - I	6	100	100
109UELT04	Fundamentals of Analog and Digital System	6	100	100
109UELT05	Microprocessor and Microcontrollers	6	100	100
109UELPO1	Practical – I Record	3	90 10	100
109UELPO2	Microprocessor Lab Record	3	90 10	100
Total		36	700	700

Second Year

Code No.	Course Title	Credit	Marks	
			EA	Total
Theory				
209UTMT01 209UHIT01	Tamil - II Hindi - II	6	100	100
209UEHT02	English - II	6	100	100
209UELT03	Allied: Basic Mathematics - II	6	100	100
209UELT04	Analog Integrated Circuits	6	100	100
209UELT05	Electronic Devices	6	100	100
209UELPO1	Electronic Devices Lab Record	3	90 10	100
209UELPO2	Analog Integrated Circuits Lab Record	3	90 10	100
Total		36	700	700

Third Year

Code No.	Course Title	Credit	Marks	
			EA	Total
Theory				
309UELT01	Electronic Communication	8	100	100
309UELT02	Electronic Magnetic Theory	7	100	100
309UELT03	Radar, Television and Microwave Engineering	8	100	100
309UELT04	Programming in C	7	100	100
309UELP01	Communication System lab Record	3	90 10	100
309UELP02	Microcontroller Lab Record	3	90 10	100
Total		36	600	600

8. Passing Requirements: The minimum pass mark (raw score) be 40% in End Assessment.

9. Grading System: Grading System on a 10 Point Scale be followed with 1 mark = 0.1 and the conversion of the Grade point as given below.

$$\begin{aligned} \text{Overall Grade Point Average (OGPA)} &= \frac{\text{Sum of Weighted Grade Points}}{\text{Total Credits}} \\ &= \frac{\sum (EA)C}{\sum C} \end{aligned}$$

The Overall Grade: The Overall Grade and Classification of all successful candidates be arrived at from the Overall Grade Point Average as stipulated in the following conversion Table.

Grade	Over all Grade Point Average(OGPA)	Over all weighted Average marks	Classification
0	9.0 to 10.0	90 to 100	First Class
A	8.0 to 8.9	80 to 89	First Class
B	7.0 to 7.9	70 to 79	First Class
C	6.0 to 6.9	60 to 69	First Class
D	5.0 to 5.9	50 to 59	Second Class
E	4.0 to 4.9	40 to 49	Third Class
F	0.0 to 3.9	0 to 39	Reappearance

The Grade Sheets of successful candidates provide particulars such as (1) Overall weighted Average Marks and (2) Overall Grade.

10. Pattern of the Question Paper: The question paper for the End Assessment will be set for three hours and for a maximum of 100 marks with following divisions and details.

Part A: 10 questions (with equal distribution to all units in the syllabus). Each question carries 2 marks.

Part B: 5 questions with either or type (with equal distribution to all the units in the syllabus). Each question carries 16 marks.

The total marks scored by the candidates will be reduced to the maximum prescribed in the Regulations.

11. Syllabus

109UFLT03 - ALLIED: BASIC MATHEMATICS - I

Objectives

To explore the fundamental concepts of Mathematics.

UNIT-I

Partial fractions, Binomial, Exponential, logarithmic series (No proof) summation problems.

UNIT-II : THEORY OF EQUATIONS

Relation between the roots and coefficients, solution under simple conditions, formation and solution of equations with imaginary roots, transformation of equation by increasing, decreasing or multiplying the roots by a constant, Reciprocal Equation.

UNIT-III : MATRICES

Operations on matrices, Adjoint and inverse of a matrix - Determinant of a matrix, Solving equations by matrix method & Cramer's rule, Rank of a matrix.

UNIT-IV : TRIGONOMETRY

Complex numbers, modulus - amplitude form, Demoivres theorem (without proof) & its applications, Expansions of $\sin_n \theta$, $\cos_n \theta$, $\sin n\theta$, $\cos n\theta$, $\tan n\theta$ - Expansions of $\sin \theta$, $\cos \theta$, $\tan \theta$ in terms of θ

UNIT-V: HYPERBOLIC FUNCTIONS

Definition, Relation between circular & hyperbolic functions - Separation into real & imaginary parts, Logarithm of a complex number, Simple problems.

Reference Books

1. P.Kandasamy, K.Thilagavathy (2003) Allied Mathematics Vol-I, II S.Chand & company Ltd., New Delhi-55.
2. S.P.Rajagopalan and R.Sattanathan,(2005) Allied Mathematics .Vol. I & II. Vikas Publications, New Delhi.
3. P.R.Vittal (2003) Allied Mathematics. Marghan Publications, Chennai.
4. P.Balasubramanian and K.G.Subramanian,(1997) Ancillary Mathematics. Vol. I & II. Tata McGraw Hill, New Delhi.

109UFLT04 - Fundamentals of Analog and Digital System

Unit - 1

Basic Operational Amplifier: Concept of differential amplifiers, block diagram of an operational amplifier(IC741),

Op-Amp parameters: input offset voltage, input offset current, input bias current, differential input resistance, input capacitance, offset voltage adjustment range, input voltage range, common mode rejection ratio, slew rate, supply voltage rejection ratio.

Op-Amp in open and closed loop configuration: Frequency response of an op-amp in open loop and closed loop configurations, inverting, Non-inverting, summing and difference amplifier, Integrator, differentiator, voltage to current converter, current to voltage converter.

Unit - 2

Number system and codes. Decimal, Binary, Hexadecimal, Octal, conversions of one code to another, complements (One's and two's), Signed and Unsigned number. Addition and subtraction multiplication. Gray and Hamming codes, Logic gates and Boolean algebra.: Truth table,. OR, AND, NOT, XOR, XNOR, Universal, (NOR and Nandigates.) Boolean theorems, De-Morgan theorems Principal of duality, Digital logic families. Fanin and Fanout, noise margin, power dissipation, figure of merit, current and voltage parameter ,RTL, DTL, TTL,ECL,HTL,MOS,CMOS.

Unit - 3

Combinational logic analysis and design : Standard representation of logic functions (SOP and POS), Karnaugh map minimization, Quine McCluskey minimization. Multiplexers(2:1,4:1) and Demultiplexers (1:2,4:1), Implementing logic functions with multiplexer, Adder (half and full) and subtractor, Encoder (8 to 3)and Decoder(3 to 8)

Unit - 4

Sequential logic design: Latch, Flip Flop (F.F.), S-R, J-K, F.F and T and D type F.F's, Clocked FFs, Registers, Counter (ripple synchronous and asynchronous) state table, state diagrams and sequential machines .

Unit - 5

A/D and D/A Converters successive approximation ADC,R/2R, Ladder DAC

Memories : General memory operation, ROM, RAM (static and Dynamic) PROM ,EPROM, EAPROM .

SUGGESTED BOOKS

1. Modern Digital Electronics: R.P. Jain, 3rd edition .TMH Publications.
2. Digital Fundamentals: Floyd, CBS Publishers.
3. R.A. Gayakwad, Op-Amps and Linear IC' s, Pearson Education (2003)
4. R.L. Tokheim, Digital Principles, Schaum's Outline Series, Tata McGraw-Hill(1994)
5. Donald P. Leach, Albert Paul Malvino, Digital Principles and Applications, Tata McGraw Hill(1995)
6. M.Morris Mano, Michael D.Ciletti, Digital Design, Pearson Education Asia, (2007)
7. Thomas L. Floyd, Digital Fundamentals, Pearson Education Asia(1994)
8. S.P. Bali, Solved Problems in Digital Electronic, Sigma Series, Tata McGraw-Hill,(2005)
9. W.H. Gothmann, Digital Electronics': An Introduction To Theory and Prentice Hall of India (2000)

Unit- 1

8086 Microprocessor: Internal architecture, Real mode memory addressing, Introduction to protected mode memory addressing, Memory Paging

Addressing modes: Data-Addressing modes, Program Memory-Addressing modes, Stack Memory- Addressing Modes.

Unit- 2

Programming 8086 using-

Data movement instruction: MOV, PUSH/POP, Load-Effective Address, String data transfers, miscellaneous data transfer instructions.

Arithmetic and Logics instructions: Addition, subtraction and comparison, multiplication and division, BCD and ASCII arithmetic, Basic logic instructions, Shift and Rotate, String comparisons.

Unit -3

Programming 8086 using-

Program control instructions: Jump group, controlling the flow of an assembly language program, procedures, introduction to interrupts, Machine control and miscellaneous instructions

Interrupts: Basic interrupt processing, interrupt instructions, operation of real mode and protected mode interrupt, interrupt flag bits, Hardware interrupts, expanding the interrupt structure.

Unit- 4

Peripheral Devices: 8255- Programmable Peripheral Interface, 8253- Programmable interval Timer, 8259- Priority Interrupt Controller, 8279- Programmable Keyboard/Display Interface, 8251-USART, 8237/8257-Programmable DMA Controller.

Unit- 5

Other Microprocessors: Introduction to 80186/286/386/486 and Pentium microprocessors.

Introduction to Microcontrollers: Advantages and applications of Microcontrollers (8051).

SUGGESTED BOOKS

1. B. Brey, The Intel Microprocessors- Architecture, Programming and Interfacing, Pearson Education (2003)
2. D. V. Hall, Microprocessors and Interfacing- Programming and Hardware, Tata McGraw Hill (1999).

109UELP01 - Practical 1

1. Introduction to basic components Resistor, Capacitor, Inductor, Diode, Transistor and ICs.
2. Familiarization with CRO, Calibration of X and Y axis measurements of voltage.
3. Measurements of
 - a. Frequency
 - b. Phase
 - c. Current
 - d. Resistance using CRO
4. Familiarization and to study characteristics of Multimeter/ VTVM
5. Find an equivalent T Network for a Four terminal unknown T network measuring input and output impedances
6. Study of Resonant circuit and determination of sharpness resonance and Bandwidth
7. Study of R-C, R-C-L circuit using DC source. Plotting growth and Decay of currents time constant etc.
8. Study of PN Junction Diode as a Rectifier.
9. Study of Integrated and Differentiated shape using RC circuits.
10. Study of characteristics of operational Amplifier.
11. Study of a Parameter of transistor.
12. To verify and design AND, OR, NOT, XOR gates using NAND gates.
13. Design Half Adder and Full Adder.
14. Design Half and Full Subtractor.
15. To design Digital to Analog and Analog to Digital Convertor.
16. Design a Shift Register from D/T/JK Flip flop. Study Serial and Parallel Shifting data.
17. To study Thevenin's Theorem, Norton Theorem, Superposition Maximum Power Transfer Theorem.

109UELP02 - MICROPROCESSOR LAB

1. Data transfer using direct & indirect addressing.
2. Block data transfer
3. Addition -8-bit, 16 bit
4. Subtraction -8 bit, 16 bit
5. Multiplication
6. Division
7. Array Addition
8. Logic operators – AND, OR, NOT
9. Binary to decimal & decimal to binary
10. Binary to BCD & BCD to binary
11. Largest & smallest from a set of numbers
12. Sorting (Ascending & descending)
13. BCD addition & subtraction
14. Up / down counter
15. Square wave generation
16. Stepper motor interfacing
17. Traffic light Interfacing.

209UFLT03- Allied BASIC MATHEMATICS II

UNIT-I : DIFFERENTIAL CALCULUS

Logarithmic differentiation, parametric differentiation, Differentiation of implicit function, Application of differentiation: Maxima and minima, successive differentiation, nth derivative of standard functions Leibnitz Theorem (with out proof).

UNIT-II: DIFFERENTIAL CALCULUS (CONTD)

Polar coordinates - Angle between the radius vector and the tangent, Angle of intersection of 2 curves, Pedal equation of a curve. Partial differentiation: Euler's theorem on homogeneous functions Jacobians.

UNIT-III: INTEGRAL CALCULUS Integration of rational function involving algebraic expressions of the form

$$\frac{1}{ax^2+bx+c}, \frac{1}{\sqrt{ax^2+bx+c}}, \frac{px+q}{\sqrt{ax^2+bx+c}}, \frac{px+q}{ax^2+bx+c}, \frac{\sqrt{px+q}}{\sqrt{ax^2+bx+c}}$$

integrations using simple substitutions integrations involving trigonometric functions of the form

$$\frac{1}{a+b \cos x}, \frac{1}{a^2 \sin^2 x + b^2 \cos^2 x}$$

Integration by parts, bernoulli's formula.

UNIT-IV : INTEGRAL CALCULUS (CONTD)

Properties of definite Integral, Reduction formulae for $\sin_n x \, dx$, $\cos_n x \, dx$, (n +ve integer) Evaluation of $\int_0^{\pi/2} \sin_n x \, dx$, $\int_0^{\pi/2} \cos_n x \, dx$. Fourier series for a function defined on (0, 2) or (-,).

UNIT-V : ORDINARY DIFFERENTIAL EQUATION

Second order linear differential equation with constant coefficient, Partial differential equation : Formation of equation by elimination of constants and arbitrary functions. Complete intergrals & general intergrals, Four standard types.

Reference Books

1. P.Kandasamy, K.Thilagavathy (2003) Allied Mathematics Vol-I, II S.Chand & company Ltd., New Delhi-55.
2. S.P.Rajagopalan and R.Sattanathan,(2005) Allied Mathematics .Vol. I & II. Vikas Publications, New Delhi.
3. P.R.Vittal (2003) Allied Mathematics . Marghan Publications, Chennai
4. P.Balasubramanian and K.G.Subramanian,(1997) Ancillary Mathematics. Vol. I & II. Tata McGraw Hill, New Delhi.

209UFLT04- ANALOG INTEGRATED CIRCUITS

Unit I Operational amplifier: Basic differential amplifier analysis, block diagram representation of typical op–amp parameters, inverting & non inverting amplifiers, voltage follower, current mirror, cascade & cascode amplifier.

Op-amp circuits: Summing amplifier, differential amplifier, instrumentation amplifier, integrator, differentiator, logarithmic & antilogarithmic amplifier, typical circuits and applications.

Unit II Active filters: Introduction, simple circuits & explanation of low pass, high pass, band pass, band reject & all pass filters, typical circuits and applications.

Waveform generators: sine wave oscillators, multivibrators, triangular wave generators, voltage controlled oscillators (VCO).

Unit III Timers & their applications, principle of operation, typical circuits, applications, popular IC versions

Voltage regulators: basic circuits, configuration & characteristics of voltage regulators, basic blocks of linear voltage regulators, concept of three terminal fixed regulators and switching regulators & SMPS, typical circuits, applications.

Unit IV Voltage comparators: basic comparators characteristics, typical comparator circuits using Op-amp, comparators ICs, different types of comparators, Schmitt trigger, typical circuits, principle of operations, applications.

Multipliers, modulators & demodulators: analog multiplier, application of multipliers, modulators & demodulators, balanced modulators, principle and applications, typical circuits, principle of operation, applications.

Unit - 5

Phase locked loops: Operating principle of the PLL, lock range and capture range, major building blocks of PLL, typical ICs, typical circuits, applications, popular ICs.

Text books

1. OP-AMPS & linear ICs, Gaykwad
2. Integrated circuits, Boltkar

References

1. Integrated electronics, Millman & Halkias
2. Electronic devices & circuits, Mottershed
3. OP–AMP design & applications, Tobey & Huelsman

209UELT05- Electronic Devices

Unit-1

Vacuum tube Devices and Gas Filled Tubes. Basic Idea about thermoionic emission from metals, vacuum tubes and their characteristics, space charge effects, load line and inter electrode capacitance, secondary emission. variable tube and beam power tube.
Hot cathode and cold cathode diodes, thyratrons, ignitrons, VR tubes and their applications.

Unit- 2

Semiconductor Basics : Energy band in solids (metal, semiconductor and insulators), concept of effective mass, density of states, carrier concentration at normal equilibrium in intrinsic semiconductors, derivation of Fermi level for intrinsic semiconductors, donors, acceptor, majority carriers (electrons and holes), dependence of Fermi level on temperature and doping concentration.

Diode : p-n junction diode, formation of depletion layer, space charge at a junction. derivation of electrostatic potential difference at thermal equilibrium, depletion width and depletion capacitance of abrupt p-n junction, diode equations and the I-V characteristic, Zener and avalanche mechanism, Zener diode.

Unit- 3

Metal Semiconductor Junction : Ohmic & Rectifying Contacts.

Bipolar Junction Transistor (BJT) : PNP and NPN transistor, basic transistor action, energy band diagram of transistor in thermal equilibrium, early effect, input and output characteristics of CB, CE and CC configurations.

Uni-junction Transistor (UJT) : Construction, working and I-V characteristics of UJT.

Thyristor Devices : Basic construction and Characteristics of Thyristor, Semiconductor Controlled Device(SCR), Characteristic and two transistor model of SCR.

Unit- 4

Field Effect Transistor (FET) : Construction of JFET, idea of channel formation, pinch-off voltage, Transfer and output characteristics.

Unit - 5

MOSFET : MOS Diode, Basic construction of MOSFET and working, I-V characteristics, enhancement and depletion modes, Complimentary MOS (CMOS).

SUGGESTED BOOKS

1. S.M.Sze, Semiconductor Devices : Physics and Technology, John wiley & Sons (2002)
2. Ben Streetman and S.Banerjee, Solid State Electronic Devices, Pearson Education (2006)
3. Jasprit Singh, Semiconductor Devices : Basic Principles, John Wiley and Sons (2001)
4. Kanaan Kano, Semiconductor Devices, Pearson Education (2004)
5. Robert F. Pierret, Semiconductor Devices Fundamental, Pearson Education (2006)
6. Dennis Le Croisette, Transistors, Pearson Education (1989).

209UELP01 - ELECTRONIC DEVICES LAB

1. Familiarization of components (Resister , capacitor, transformers)
2. Study of measuring instruments - CRO , Function generator , Millimeter (Digital

/ Analog) , Power supplier

3. Soldering practice through simple circuits

4. PCB Fabrication

5. Characteristics V- I

a) Rectifier diode - silicon/ Germanium

b) Light Emitting diode

c) Zener diode

d) Photo diode

e) LDR

6. Transistor characteristics

a) C –B configuration

b) C-E configuration

Measurement of current gain, voltage gain, Z_{in} , Z_{out}

7. FET characteristics – transconductance, Z_{out} , Amplification factor

8. UJT characteristics –Intrinsic stand off ratio, peak point, valley point

9. SCR characteristics – Break over voltage.

References

1. T.D. Kuryachan & Shyam Mohan S, "Electronics Lab Manual, Vol. I", Ayodhya Publications

2. Walter C. Bosshart, "Printed Circuits Board Design and manufacturing", Tata McGraw-Hill Publishing LTD.

209UELP02 - ANALOG INTERGRATED CIRCUITS LAB

1. OP – AMP – Non inverting & inverting Amplifier (AC & DC)

2. Adding & subtractor (DC only)
3. OP –AMP parameters
CMRR, offset voltage, off set current, Bias current, slow ratio
4. Oscillator a) RC phase shift
b) Wein Bridge
Design, out put wave form
5. Astable Multivibrator
Design, output wave form
6. Mono stable Multivibrator
Design, out put wave form
7. Schmitt trigger
Design, output wave form
8. Timer IC 555
Astable Multivibrator Design, out put wave form
9. Mono stable Multivibrator – Design, output wave forms
10. Voltage Regulators a) Fixed 78xx, 79xx
b) Variable 723
Calculation of regulation (load /line)
11. VCO – 566 IC
Design, output wave form
12. PLL NE 565 –characteristics
Lock range, capture range
13. Active filters 1st order LPF, HPF, BPF, Notch filter
Design, frequency response
14. Integrators & Differentiators
Design, waveforms

Text books

1. T.D. Kuryachan & Shyam Mohan S, "Electronics Lab Manual, Vol.II", Ayodhya Publications.

309UFLT01 - ELECTRONIC COMMUNICATION I

Unit 1 Introduction – Messages & signals – Elements of communication systems – Modulation – Need for modulation- Amplitude modulation –Side band- AM signals &

spectra, power relations, product modulator, single sideband AM –AM generation.

Unit-2

High level & low level AM transmitters - AM receivers - Super heterodyne receivers – SSB generator balanced modulator -SSB transmitters –SSB receivers.

Unit 3 Frequency modulation -FM & PM signals – spectra – Band with – narrow band & wide band FM – generation – direct FM – VCO – phase modulator – indirect FM – demodulation of FM- balanced discriminator, de- emphasis & pre-emphasis – FM transmitter & receivers – FM stereo transmission & reception.

Unit -4 Sampling – Aliasing - PAM, PWM, PPM – concept of FDM & TDM, pulse code modulation – quantization – generation & reconstruction – companding, concept of ASK, FSK, PSK, DPSK.

Unit 5 Introduction to Antennas- Radiation mechanism– elementary doublet, folded dipole, Antenna gain & resistance – directional antennas – dipole Arrays, Yagi- Uda antenna

Text books

1. Electronic communication – Kennedy
2. Monochrome & color television – R.R .Gulathi

Reference

1. Electronic communication - Ruddy & Coolen

309UFLT02 - ELECTRO MAGNETIC THEORY

Unit I Concept of Circuit & Fields, Vector Analysis, Physical interpretation of

gradient, Divergence & curl, integral theorems & comparison

Unit II Electrostatics : Introduction, fundamental relations of electro static field – Gauss’s law - special Gauss surfaces – the potential function, divergence theorem – Poisson’s & Laplace’s equation.

Unit - 3

Magnetostatics : Biot – Savart law, force between two current carrying coils – Magnetic flux density, Magnetic field intensity, Intensity of Magnetisation - Ampere’s circuit theorem – Lorent’s force- Magnetic vector potential – Boundary conditions for magnetic fields.

Unit - 4 Electrodynamics: Faradays law of induction – modified Amperes law – Maxwell’s equation – wave equation – solutions of wave equation in free space – pointing vector- electromagnetic energy – Boundary conditions.

Unit- 5 Radiation & propagation of Radio waves: Radiation of electromagnetic fields – polarization – isotropic radiator – plane waves – electromagnetic spectrum – propagation of waves in free space – Ground wave propagation – sky wave- ionospheric propagation- critical frequency & maximum usable frequency – skip distance.

Text books

1) Electromagnetic waves & radiating systems – Jordan & Balmier -PH (New edition)

Reference

- 1) Fundamentals of Electrodynamics- Grifith (IV Edition)
- 2) Fundamental of electronic waves – Hugh Hildeeth skilling. Ane books
- 3) Fundamental of electromagnetics – Micah
- 4) Engineering electromagnetics- Haytt
- 5) Electromagnetic field theory fundamentals – BhagGuru & Hussein Hizioglu- Cambridge.

309UELT03 - Radar, Television and Microwave Engineering

Unit -1

Radar Engineering: Pulsed radar system, range equation. Parameters affecting the maximum

range of radar, noise figure, radar antenna and scanning and tracking, display system, P.P.I. and M.T.I. (Block diagram discussion), Radar range equation, C.W. and Frequency Modulation, CW radar, Phased array radar. Pulse compressed radar, Radar used to navigation, duplexer.

Unit-2

Television Engineering: Monochrome T.V. Camera Tube: image orthicon, vidicon, plumbicon, Theory of scanning, interlaced scanning, blinking and synchronizing pulses. Block diagram discussion of a T.V. transmitter. T.V. picture vertical and horizontal deflection systems. Block diagram discussion of T.V. receiver, receiving antenna and T.V. Channel.

Unit-3

Basic concept of colour transmission in T.V. systems, colour T.V. transmitter and receiver, block diagrams Primary and Secondary colours, Colour combinations, chromo and Luminance Processing as per PAL system. Colour TV receiver (PAL), Colour picture tube and its requirements.

Unit-4

Microwave Engineering : Klystron magnetron and Gun effect devices, Microwave Components. Microwave. measurements and applications of microwave.

Unit – 5

Basic principle, fundamentals, performance factors, pulsed radar, Antennas & scanning, display methods, pulsed radar systems, MTI recons, CW Doppler radar, CW Radar

SUGGESTED BOOKS

1. Electronic Communication, George Kennedy, 3rd Edition, TMH
2. Electronic Communication, Roddy and Coolen, 4th Edition, PHI
3. Fundamental of Microwave engineering – Collins
4. Electronic & radio engineering, Terman
5. Principles of communication systems, Taub & Schilling

309UELT04 – PROGRAMMING IN C

UNIT-I

Fundamentals: Character set - Keywords - Identifiers - Data types - Constants - Variables - Operators and their hierarchy - Expression - Statements - Input/Output functions.

UNIT-II

Decision making statements: if-else, while, do-while, for, switch I break, continue, goto statements.

Functions: Definitions - Arguments - Function prototype - Recursion - Library functions.

UNIT-III

Arrays: Array definition - Processing arrays - Passing array to a function - Multidimensional arrays - Strings - Storage classes - Multifile programs.

Pointers: Pointer declaration - Pointer arithmetic - Pointers and arrays - Pointer operation - Passing pointers to a function - Passing function to a function.

UNIT-IV

Structures and Unions: Structure definition - Processing a structure - Structures and pointers - Passing structure to a function - Self-referential structures - Unions.

UNIT-V

Data Files: Opening, Closing, Creating, Processing data files - Register variables and bitwise operations - Command line parameters - C preprocessor.

Text Books

1. Theory and Problems of Programming with 'C' (Schaum's Series) - B.S. Gottfried, McGraw Hill International Book Company.
2. Programming in ANSI C - E. Balagurusamy, Tata McGraw Hill Publishing Co. Ltd., 2/e.

Reference Books

1. Programming with 'C' - K.R. Venugopal & R.P. Sudep, Tata McGraw Hill Publishing Co. Ltd.
2. The C Programming Language - B.W. Kernighan & D.M. Ritchie, Prentice Hall of India Private Ltd., New Delhi, 2/e.
3. Mastering Turbo C - Stan Kelly & Bootle, BPB Publications, New Delhi.
4. Let Us C - Yashawant Kanetkar, BPB Publications, New Delhi, 3/e.
5. The Spirit of 'C' - H. Mullish & H.L. Cooper, Jaico Publishing House.

309UELP01 - COMMUNICATION SYSTEM LAB

1. AM generation
2. AM demodulation
3. Frequency response of IF amplifier
4. Mixer

5. Frequency modulation
6. Frequency demodulation
7. Balanced modulator
8. PAM
9. PAM demodulator
10. PWM
11. PWM demodulator
12. PPM
13. PPM demodulator
14. TDM.

309UELP02 - MICROCONTROLLER LAB

1. Addition – 8 bit, 16 bit.
2. Subtraction – 8 bit, 16 bit.
3. Multiplication
4. Array addition (multibyte)
5. Logical Operations – AND, OR, NOT
6. Decimal to ASCII and ASCII to Decimal.
7. Decimal to Hexa and Hexa to Decimal.
8. Ascending Order.
9. Descending Order
10. Up/down Counter
11. Block data transfer
12. Interfacing with LCD.
13. Interfacing with Matrix Keypad.
14. Square wave generator
15. Interfacing with ADC.
16. Interfacing with DAC.
17. Digital Clock.
18. Interfacing with Stepper Motor.