Neptune Institute of Management & Technology

(Established Under R.S. (XXI of 1860) Act of Govt. of NCT of Delhi)
(ISO 9001 - 2008 Internationally Certified Institute)

Syllabus: Diploma in Electronics & Telecommunication Engineering

COURSE	**Diploma in Electronics & Telecommunication Engineering (D.E. – E & T)**
Min. Qualification	10th with 2 yrs. Exp
Course Fees	Rs. 6000/- per sem.
Exam Fees	Rs. 1000/- per sem.
Regn. No. Fee	Rs. 1000/-
Duration	1 sem. to 6 sem.
	Ist Sem 1. **Communication English** 2. **Applied Mathematics-I** 3. **Engineering Physics-I** 4. **Engineering Chemistry-I** 5. **Computer Application Lab** 6. **Workshop Practice Lab** **IInd Sem** 1. **Applied Mathematics-II** 2. **Engineering Physics-II** 3. **Engineering Chemistry-II** 4. **Engineering Graphics** 5. **Engineering Physics-II Lab** 6. **Engineering Chemistry-II Lab** **IIIrd Sem** 1. **Electrical Circuits and Instrumentation** 2. **Electronic Devices** 3. **C Programming** 4. **Microprocessor** 5. **Electronic Devices Lab** 6. **Electrical Circuits and Instrumentation Lab** **IVth Sem** 1. **Linear and Digital ICs** 2. **Computer Hardware and Networking** 3. **Industrial Electronics** 4. **Object Oriented Programming** 5. **IC Lab** 6. **Industrial Electronics Lab** **Vth Sem** 1. **VLSI** 2. **Microcontrollers**

3. Communication Engineering – I
4. Robotics
5. VLSI Lab
6. Communication Engineering – I Lab
7. Principles of Management

VIth Sem

1. Embedded Systems
2. Communication Engineering – II
3. Television Engineering
4. Embedded Systems Lab
5. Project
6. Marketing Management

CONTENTS

SUBJECT: COMMUNICATION ENGLISH

Unit 1: Letter writing - personal

Unit 2: Letter writing - official

Unit 3: Dialogue writing

Unit 4: Hints development

BLOCK 5 Proses

Unit 1: An Astrologer's day – R.K. Narayanan

Unit 2: The sun, The planets and the stars – C.Jones

Unit 3: The continuing spell of Ramanujam

Unit 4: On saying 'please' – A.G.Gardiner

SUBJECT 2: Applied Mathematics-I

BLOCK 1 Algebra

Unit 1: Determinants

Unit 2: Matrices

Unit 3: Permutation and combination

Unit 4: Binomial Theorem

BLOCK 2 Complex numbers

Unit 1: Real and imaginary parts

Unit 2: Demoivre's Theorem

Unit 3: Finding the n th roots of unity

Unit 4: Solving equations

BLOCK 3 Analytical geometry

Unit 1: Pair of straight lines

Unit 2: Circles

Unit 3: Family of circles

Unit 4: Concentric circles

BLOCK 4 Trignometry

Unit 1: Compound angles

Unit 2: Multiple angles

Unit 3: Sub multiple angles

Unit 4: Sum and product formulae

BLOCK 5 Differential calculas

Unit 1: Limits

Unit 2: Differentiation

Unit 3: Differentiation methods

Unit 4: Successive differentiation

SUBJECT: Engineering Physics – I

BLOCK 1 S I units and Statics

Unit 1: Fundamental quantities

Unit 2: Derived quantities

Unit 3: Concurrent forces

Unit 4: parallelogram Law of forces

BLOCK 2 Properties of matter

Unit 1: Stress and strain

Unit 2: Young's modulus

Unit 3: Viscosity

Unit 4: Surface Tension

BLOCK 3 Dynamics

Unit 1: Projectile Motion

Unit 2: Angle of projection

Unit 3: Circular Motion

Unit 4: Application of circular motion

BLOCK 4 Rotational motion of rigidity bodies

Unit 1: Moment of Inertia

Unit 2: Kinetic energy

Unit 3: Angular Momentum

Unit 4: Kepler's Law

BLOCK 5 Remote sensing and sound

Unit 1: Active and Passive remote sensing

Unit 2: Microwave remote sensing

Unit 3: Types of sound waves

Unit 4: Acoustics

SUBJECT: Engineering Chemistry - I

BLOCK 1 Acids – Bases, Catalysis

Unit 1: Theories of Acids and Bases

Unit 2: Industrial application

Unit 3: Positive and Negative catalyst

Unit 4: Characteristics of Catalyst

BLOCK 2 Pollution

Unit 1: Air Pollution

Unit 2: Global warming

Unit 3: Water Pollution

Unit 4: Green Chemistry

BLOCK 3 Electro chemistry and corrosion

Unit 1: Types of conductors

Unit 2: Industrial applications of Electrochemistry

Unit 3: Electrochemical theory

Unit 4: Electroplating

BLOCK 4 Orgonic coatings

Unit 1: Paint

Unit 2: Varnish

Unit 3: Adhesives

Unit 4: Lubricants

BLOCK 5 Colloids and Ceramics

Unit 1: Colloidal solution

Unit 2: Brownian Movement

Unit 3: Water purification

Unit 4: Ceramics

SUBJECT: Computer Application Lab

Practicals

Windows

1.a. Starting a program, running a program.

b. Starting the Windows in safe mode

c. Running multiple Programs and switching between windows.

d. Moving the windows, and the task bar.

e. Startup to MS-DOS prompt.

2.a. Creating and removing a folder.

b. Making the taskbar wider, arranging icons on the Desktop.

c. Displaying and hiding the taskbar clock.

d. Controlling the size of start menu options.

e. Creating shortcuts.

3.a. Installing a screen saver.

b. Assigning Wallpaper to Desktop.

c. Adding a program to the start menu.

d. Recovering files and folders from Recycle bin.

e. Customizing the mouse settings.

4 a. Expanding and collapsing a folder.

b. Recognizing file types using icons.

c. Running a program from explorer.

d. Renaming a file or folder.

e. Selecting two or more files for an operation.

5.a. Displaying the properties for a file or folder.

b. Using cut and paste operations to copy a file.

c. Using copy and paste operations to copy a file.

d. Moving and copying files with mouse.

e. Sorting a folder.

6.a. Finding a file or folder, by name.

b. Defragmenting the disk using disk defragmenter.

c. Compressing a file using WinZip.

d. Controlling the speaker volume.

e. Recording and saving an audio file.

MS Word

a. Prepare a newsletter with borders, two columns text, header and footer and a graphic image and spell check the document.

b. Create a table to show the paradigm of the verb “eat” in all 12 tenses

Tense		Present	Past	Future
Simple	He	Eats	Ate	Will eat
	I	Eat	Ate	Will eat
	You/They	Eat	Ate	Will eat
Continuous	He	Is eating	Was eating	Will be eating
	I	Am eating	Was eating	Will be eating
	You/They	Are eating	Was eating	Will be eating
Perfect	He	Has eaten	Had eaten	Will have eaten
	I	Have eaten	Had eaten	Will have eaten
	You/They	Have eaten	Had eaten	Will have eaten
Perfect continuous	He	Has been eating	Had been eating	Will have been eating
	I	Have been eating	Had been eating	Will have been eating
	You/They	Have been eating	Had been eating	Will have been eating

c. Prepare your Bio-data/Resume

d. Do the mail merge operation for sending applications to many companies with your resume

MS EXCEL

1.Create a worksheet in Excel for a company:

a. Copy, Move and Merge the cells

b. Adding Comments

c.Adding, Deleting the cells, Rows and Columns

d. Hiding and Unhiding the columns, Rows and gridlines.

2.Using formula and functions prepare worksheet for storing subject marks of ten students

and perform the following:

a. Calculate the student wise total and average

b. Calculate the subject wise total and average

c. Calculate the overall percentage and also individual percentage of the student.

3. Create Bar Graph and Pie Chart for various data

MS Power Point

a. Create a simple presentation with atleast 5 slides to introduce your friend and include sounds in slides.

b. Create a presentation with 5 slides for the essay Astrologer's Day by R.K Narayanan

Internet

a. Creating an E-Mail account.

b. Sending an E-Mail to a known Address

c. Viewing an E-Mail received from your friend/relative.

d. Printing an E-Mail received

e. Use of Attachment Facility

f. Use of Address Book Facility

g. Use of Sent Folder

h. Use of Save Draft Folder

i. Use of Trash Folder

j. Browse a given web-site address.

k.Search a Particular topic through a Search engine.

SUBJECT: Workshop Practice lab I

Fitting

1. Fittion

2. V - Joint

3. L - Joint

4. T - Joint

5. Half round joint

6. Dovetail Joint

7. U – Joint

8. Hexagonal – Joint

9. Step - Joint

10.Drilling and Tapping M8

11.Drilling and Tapping M10

Wiring

1. Single lamp controlled by single switch.

2. Two Lamps controlled by Two independent switches.

3. Stair case Wiring

4. Fluorescent lamp circuit.

5. Circuit diagram of a fan

6. Circuit diagram of an iron box

7. Circuit diagram of a mixie

8. Soldering practice

Sheet Metal

1. Hemming

2. Seaming

3. Tray

4. Cylinder

5. Cone

6. Hopper

7. Dust Pan

8. Funnel

SEMESTER : II

SUBJECT: Applied Mathematics - II

BLOCK 1 Vector Algebra

Unit 1: Introduction

Unit 2: Vector Properties

Unit 3: Product of Vectors

Unit 4: Application of Vectors

BLOCK 2 Integral Calculus

Unit 1: Integration

Unit 2: Standard Integrals

Unit 3: Integration by parts

Unit 4: Bernoulli's Theorem and Applications

BLOCK 3 Differentiation

Unit 1: Velocity and Acceleration

Unit 2: Tangents and Normals

Unit 3: Maxima and Minima

Unit 4: Partial differentiation

BLOCK 4 Application of Integration

Unit 1: Definite Integral.

Unit 2: Area and Volume

Unit 3: Solution of differential equations

Unit 4: Second order differential equation with constant coefficients

BLOCK 5 Probability Distributions

Unit 1: Continuous random variable

Unit 2: Discrete random variable

Unit 3: Discrete Distributions (Binomial, Poisson)

Unit 4: Continuous Distribution

SUBJECT: Applied Mathematics – II

BLOCK 1 Vector Algebra

Unit 1: Introduction

Unit 2: Vector Properties

Unit 3: Product of Vectors

Unit 4: Application of Vectors

BLOCK 2 Integral Calculus

Unit 1: Integration

Unit 2: Standard Integrals

Unit 3: Integration by parts

Unit 4: Bernoulli's Theorem and Applications

BLOCK 3 Differentiation

Unit 1: Velocity and Acceleration

Unit 2: Tangents and Normals

Unit 3: Maxima and Minima

Unit 4: Partial differentiation

BLOCK 4 Application of Integration

Unit 1: Definite Integral.

Unit 2: Area and Volume

Unit 3: Solution of differential equations

Unit 4: Second order differential equation with constant coefficients

BLOCK 5 Probability Distributions

Unit 1: Continuous random variable

Unit 2: Discrete random variable

Unit 3: Discrete Distributions (Binomial, Poisson)

Unit 4: Continuous Distribution

SUBJECT: Engineering Physics – II

BLOCK 1 Heat

Unit 1: Heat - Kinetic Theory of Gases:

Unit 2: Specific Heat

Unit 3: Isothermal Changes

Unit 4: Adiabatic Changes

BLOCK 2 Gases & Non Conversional Energy

Unit 1: Liquefaction of Gases

Unit 2: Joule Thomson Effect & Linde's process

Unit 3: Renewable and Non-renewable sources

Unit 4: Alternate sources of Energy-

BLOCK 3 Light & Magnetism

Unit 1: Optical Instruments

Unit 2: Lasers

Unit 3: Basic definitions of Magnetism

Unit 4: Hysteresis Loop

BLOCK 4 Electricity

Unit 1: Basic laws

Unit 2: Force on a moving charge

Unit 3: Measuring Instruments

Unit 4: Heating Effect of Electric Current

BLOCK 5 Dielectric effect & Electronics

Unit 1: Chemical Effect of Electric Current

Unit 2: Capacitor

Unit 3: Semiconductors , PN Junction & Transistors

Unit 4: Logic Gates

SUBJECT: Engineering Chemistry – II

BLOCK 1 Nuclear Chemistry

Unit 1: Radio activity and definitions

Unit 2: Half life period & Nuclear fission & fusion

Unit 3: Applications of radio active isotopes

Unit 4: Abrasives

BLOCK 2 Fuels and Refractories

Unit 1: Fuels - classification

Unit 2: Solid and Liquid Fuels

Unit 3: Gas Fuels

Unit 4: Refractories

BLOCK 3 Water Treatment

Unit 1: Water Treatment Methods

Unit 2: EDTA Method

Unit 3: Water -purification

Unit 4: Lime and manufacturing process

BLOCK 4 Plastics and Rubber

Unit 1: Thermoplastics,

Unit 2: Thermo set plastics

Unit 3: Natural rubber-

Unit 4: Synthetic rubber

BLOCK 5 Metallurgy

Unit 1: Tungsten &Titanium

Unit 2: Powder metallurgy

Unit 3: Purpose of alloying

Unit 4: Non ferrous alloys

SUBJECT: Engineering Graphics

BLOCK 1 Drawing Office Practice

Unit 1: Basics of Engg Drawing

Unit 2: Dimensioning

Unit 3: Scales

Unit 4: Geometrical Constructions, conics and geometrical curves

BLOCK 2 Projection

Unit 1: Orthographic Projection

Unit 2: Projection of simple solids

Unit 3: Section of Solids

Unit 4: Half & Full Sectioning

BLOCK 3 Pictorial drawings

Unit 1: Introduction

Unit 2: Isometric Drawings

Unit 3: Conversion of orthographic views

BLOCK 4 Development of Surfaces:

Unit 1: Cube, Cylinder

Unit 2: Prism

Unit 3: Pyramids

Unit 4: Tee and Elbow

BLOCK 5 AutoCAD

Unit 1: Introduction

Unit 2: AutoCAD commands

Unit 3: Drawing -line, circle, arc, polygon,

Unit 4: Drawing - ellipse, rectangle

SUBJECT: Engineering Physics Lab

List of Experiments

1 VERNIER CALIPERS - To find the volumes of the solid cylinder and hollow cylinder using vernier callipers.

2 SCREW GAUGE – To find the thickness of (a) glass plate (b) given sphere using screw gauge. Hence calculate the volume of the glass plate and the sphere.

3 SIMPLE PENDULUM – To find the acceleration due to gravity in the laboratory, using simple pendulum. Calculate the acceleration due to gravity, by L–T^2 graph.

4 CONCURRENT FORCES -To verify the parallelogram law of forces and Lami's theorem.

5 COPLANAR – PARALLEL FORCES – To verify the conditions of the Co-planar parallel forces.

6 TORSION PENDULUM – To find the rigidity modulus of the thin wire and moment of inertia of the disc by using symmetric masses.

7 COMPARISON OF VISCOSITIES – To compare the coefficient of viscosities of two liquids by capillary flow method.

8 VISCOSITY OF A HIGHLY VISCOUS LIQUID – To find the coefficient of viscosity of a highly viscous liquid.

9 SURFACE TENSION:To find the surface tension of the given liquid by capillary rise method

10 YOUNG'S MODULUS – To find the young's modulus of the material of the given metre scale.

11 SPECTROMETER – 1. To find the angle of the prism.

12 SPECTROMETER – 2. To find the refractive index of the material of the prism.

13 DEFLECTION MAGNETOMETER – To compare the magnetic moments of two given magnets by (a) Equal distance method and (b) Null method.

14 SONO METER – To find the frequency of the given tuning fork.

15 JOULE'S CALORIMETER – To determine the specific heat capacity of the given liquid.

16 COPPER VOLTAMETER – To determine electro – chemical – equivalent of copper.

17 OHM'S LAW – To determine the resistance of two given coils of wire using Ohm's law. Also verify the laws of resistances.

18 POTENTIO METER – To compare the e.m.fs of two given cells.

19 PN JUNCTION DIODE – For the given semiconductor diode draw (a) Forward bias (b) Reverse bias characteristic curves.

20 SOLAR CELLS – V. I. Characteristics.

SUBJECT: Applied Chemistry Lab

List of Experiments

1.Qualitative Analysis

Acid radicals : Chloride, Carbonate, Sulphate, Nitrate

Basic radicals: Lead, Cadmium, Copper, Aluminium, Zinc, Calcium, Magnesium, Ammonium

Identification of acid and basic radicals in

1. Lime Stone (Calcium Carbonate)
2. Pollutant (Lead nitrate or Cadmium Carbonate)
3. Fertilizer(Ammonium sulphate)
4. Electrolyte(Ammonium Chloride)
5. Fungicide(Copper sulphate)
6. Coagulant(Aluminium Sulphate)
7. Mordant(Zinc Sulphate)
8. Gypsum(Calcium Sulphate)
9. Epsum(Magnesium Sulphate)

10. Analysis of an Effluent (containing pollutants like Lead, Cadmium, Zinc, Copper).Students may be given above four pollutants , in four separate test tubes in solution form and asked to report metallic pollutants with procedure (Basic Radical Analysis Procedure) and their harmful effects.

2. VOLUMETRIC ANALYSIS (DOUBLE TITRATIONS)

ACIDIMETRYAND ALKALIMETRY

1. Estimation of Hydrochloric acid

2. Estimation of Sodium Hydroxide

3. Estimation of Sodium Carbonate

4. Comparison of Strengths of two bases

PERMANGANIMETRY

5. Estimation of Ferrous Ammonium Sulphate

6. Estimation of Ferrous Sulphate

7. Comparison of Potassium Permanganate.

WATER ANALYSIS

8. Estimation of Total Hardness by EDTA method.

9. Calculation of pH of four sample solutions and calculation of H+ Ion concentration for a particular sample solution.

SEMESTER : III

SUBJECT: ELECTRICAL CIRCUITS & INSTRUMENTATION

BLOCK 1 D.C. CIRCUITS AND THEOREMS

Unit 1: Ohm's Law, KVL, KCL & Simple Problems

Unit 2: Series and Parallel Circuits

Unit 3: Thevenin's, Norton's Theorem

Unit 4: Superposition & Maximum power Theorem

BLOCK 2 A.C. CIRCUITS AND RESONANCE

Unit 1: Inductance and Capacitance

Unit 2: Reactance, Susceptance, Conductance, Impedance and Admittance

Unit 3: Series and Parallel RL, RC and RLC circuits

Unit 4: Three phase supply & star and delta connection

BLOCK 3 TRANSFORMERS AND MACHINES

Unit 1: EMF equation of transformers

Unit 2: Core and Cu losses & OC, SC tests

Unit 3: D.C Generator & Motor working principle & Types

Unit 4: Capacitor start induction motor – stepper motor – uses

BLOCK 4 MEASURING INSTRUMENTS AND CRO

Unit 1: Basic force for indicating instrument

Unit 2: Permanent magnet & moving coil Instruments & DC meters

Unit 3: Multi meter for DC & AC Parameters and Bridges

Unit 4: CRO Working Principle, Block Diagram, Types and applications

BLOCK 5 RECORDERS, TRANSDUCERS & DIGITAL TEST INSTRUMENTS

Unit 1: X-Y & Strip Chart Recorder Introduction and Classification

Unit 2: Strain Gauge-Construction, Types and Application

Unit 3: Capacitive, Inductive, Displacement Transducers and LVDTs

Unit 4: DVM – Operation, Blocks & Digital Multimeter and PC acquisition system

SUBJECT: Electronic Devices

BLOCK 1 Components and Diodes

Unit 1: Resistor

Unit 2: Diode

Unit 3: Rectifiers

Unit 4: Filters

BLOCK 2 Bipolar Junction Transistors

Unit 1: Transistor Biasing

Unit 2: Transistor Configuration

Unit 3: RC Coupled Amplifier

Unit 4: Feedback Amplifiers

BLOCK 3 Transistor Oscillators and FET, UJT

Unit 1: Oscillator

Unit 2: FET

Unit 3: FET Amplifiers and choppers

Unit 4: UJT

BLOCK 4 Thyristors

Unit 1: SCR

Unit 2: DIAC

Unit 3: TRIAC

Unit 4: MOSFET and IGBT

BLOCK 5 Opto Electronic Devices and Wave shaping Circuits

Unit 1: LDR, LED and LCD

Unit 2: Opto Coupler, Interrupter

Unit 3: Clipping and Clamping Circuits

Unit 4: Multivibrators

SUBJECT: C- Programming

BLOCK 1 Programming Introduction

Unit 1: Keywords, Constants, Variables and Data types

Unit 2: Operations and Expressions

Unit 3: I/O Statements

Unit 4: Functions

BLOCK 2 Conditional and Branching Statements

Unit 1: Simple If statement

Unit 2: Decision making statements

Unit 3: Branching

Unit 4: Looping

BLOCK 3 Arrays & Characters

Unit 1: Arrays

Unit 2: Handling of Characters

Unit 3: Handling of Character Strings

Unit 4: Functions

BLOCK 4 Special Types

Unit 1: Structures

Unit 2: Unions

Unit 3: Macro Substitution

Unit 4: Complier Controlled Directives

BLOCK 5 Pointer and File management

Unit 1: Introduction to Pointers

Unit 2: Pointers for Various Data Types

Unit 3: Introduction to File management and file inclusion

Unit 4: Different File I/O functions and statements

SUBJECT: Microprocessor

BLOCK 1 Introduction

Unit 1: Evolution of Microprocessors

Unit 2: Advantages of Microprocessors

Unit 3: Various MPU Families (SSI, LSI, VLSI, SLSI)

BLOCK 2 8085

Unit 1: Introduction

Unit 2: Architecture of 8085

Unit 3: Block and Pin Diagram of 80851 and it's functions

Unit 4: BUS Details

BLOCK 3 8085 Programming

Unit 1: Instruction formats & Addressing Modes

Unit 2: Instruction Set and It's Cycle

Unit 3: Timing Diagrams and Status Signals

Unit 4: Simple Programs

BLOCK 4 8085 Interfacing

Unit 1: Memory mapping

Unit 2: Interrupts

Unit 3: I/O Peripheral Interfacing

BLOCK 5 16 bit Microprocessor

Unit 1: Introduction to 8086

Unit 2: Architecture of 8086

Unit 3: Block and Pin Diagram of 8086 and it's functions

Unit 4: BUS Details

SUBJECT: ELECTRONIC DEVICES Lab

LIST OF EXPERIMENTS

1. VI Characteristics of PN JN Diode

2. VI Characteristics of Zener diode.

3. HW, FWwith and without filter.

4. Bridge Rectifier with and without filters.

5. VI characteristics of Regulator.

6. Input/output characteristics of CE Transistor.

7. Frequency response of RC coupled amplifier.

8. Emitter follower.

9. Negative fECdback amplifier.

10. RC phase shift oscillator.

11. Hartley and Colpitts oscillator.

12. JFET characteristics.

13. Common source amplifier.

14. UJT characteristics.

15. UJT relaxation oscillator.

16. SCR characteristics.

17. DIAC and TRIAC characteristics.

18. Clipper, clamper and voltage doubler.

19. LDR, Photo diode and Photo transistor characteristics.

20. Solar cell and opto coupler.

SUBJECT: ELECTRICAL CIRCUITS & INSTRUMENTATION Lab

LIST OF EXPERIMENTS

1. Verification of Ohm's Law

2. Verification of Kirchoff's Voltage and current Law

3. Verification of Superposition theorem

4. Verification of Thevenin's theorem

5. Verification of Norton's Theorem

6. Verification of maximum Power transfer theorem

7. To Conduct OC and SC test to determine the efficiency of transformer

8. To Calibrate of ammeter and Voltmeter

9. To Construct and test the performance of Wheatstone bridge

10. To Construct and test the performance of Wien bridge

11. To Construct RLC bridge to measure R , L and C

12. To measure the amplitude and frequency using dual trace CRO

13. To measure frequency and phase angle using CRO by Lissajous Figure

14. To Construct and test the performance of photoelectric transducer

15. To measure displacement using LVDT

16. To measure the strain using load cell

17. To measure the strain using strain gauge

18. To measure the temperature using thermistor

SEMESTER : IV

SUBJECT: LINEAR and DIGITAL ICs

BLOCK 1 Linear IC

Unit 1: OP Amp

Unit 2: Timer Circuits

Unit 3: Multivibrators

Unit 4: Voltage Regulators

BLOCK 2 Boolean algebra

Unit 1: Number Systems

Unit 2: Basic Laws and Theorems

Unit 3: Basic Logic Gates

Unit 4: Karnaugh Maps

BLOCK 3 Combinational logic

Unit 1: Arithmetic Circuits

Unit 2: Adders

Unit 3: Encoders and Decoders

Unit 4: IC Families (TTL,CMOS, LS)

BLOCK 4 Sequential logic

Unit 1: Flip Flops

Unit 2: Counters

Unit 3: State Diagram

Unit 4: Shift Registers

BLOCK 5 D/A, A/D and Memory

Unit 1: D/A Converter

Unit 2: R-2R ladder Network

Unit 3: A/D Converters

Unit 4: Memories

SUBJECT: Computer Hardware and Networking

BLOCK 1 Mainboards and Processors

Unit 1: Introduction to Computers

Unit 2: Mainboard and Chipsets

Unit 3: Interface Bus Standards

Unit 4: Processors

BLOCK 2 Peripherals

Unit 1: Input Devices

Unit 2: Output Devices

Unit 3: Storage Devices (HDD)

Unit 4: Removable Storage Devices (CD/DVD, FDD)

BLOCK 3 I/O Ports and External Peripherals

Unit 1: Video Capture and Sound Card

Unit 2: Serial and Parallel Ports and Power Supply Unit

Unit 3: Modem, Digital Cameras

Unit 4: Printer and Scanners

BLOCK 4 PC assembling and testing

Unit 1: PC assembly

Unit 2: CMOS Setup

Unit 3: POST

Unit 4: Diagnostic Software and Anti Virus

BLOCK 5 Computer Network and Installation

Unit 1: Network Basics

Unit 2: LAN

Unit 3: Media and Hardware

Unit 4: Network Administration

SUBJECT: OBJECT ORIENTED PROGRAMMING

BLOCK 1 Introduction to OOPs

Unit 1: Limitation of Procedural Languages

Unit 2: Object Oriented approach

Unit 3: Analogy; Approach to Organisation

Unit 4: characteristics of Object Oriented Languages

BLOCK 2 Encapsulation

Unit 1: Introduction

Unit 2: Types of Encapsulation

Unit 3: Objects

Unit 4: Classes

BLOCK 3 Data abstraction

Unit 1: Introduction

Unit 2: Types of Data Abstraction

Unit 3: Binding

Unit 4: Types of Binding

BLOCK 4 Inheritance

Unit 1: Introduction

Unit 2: Types of Inheritence

Unit 3: Characteristics

Unit 4: Programs

BLOCK 5 Polymorphism

Unit 1: Introduction

Unit 2: Types of Polymorphism

Unit 3: Over Loading

Unit 4: Application of OOPS

SUBJECT: IC Lab

LIST EXPERIMENTS

1. Construct and test a) Inverting Amplifier and b)Non inverting amplifier using Op- --Amp.

2. Construct and test a) Scale changer circuit b) Summer circuit using Op.Amp.

3. Construct and test a) Differentiator circuit b) Integrator circuit using Op. Amp.

4. Construct and test a Astable Multivibrator using IC 555 and test its performance.

5. Construct and test aMonostable Multivibrator using IC 555 and test its performance.

6. Verify the truth table for the following gates AND, OR, NOT, NAND, NOR, EX-OR USING74XX Ics.

7. Construct other gates using NAND gates.

8. Construct a Half Adder using 7408, 7432, 7486, Ics and verify its truth table.

9. Construct Full Adder and verify the truth table using 74XX Ics.

10. Construct Half Subtractor and verify its truth table using 74XX Ics.

11. Construct Full Subtractor and verify its truth table using 74XX Ics.

12. Construct and verify the truth table of RS,D and JKM FFS.

13. Construct a 4 bit BCD counter using 7473 Ics and observe the output waveform.

14. Construct a Decade counter using 7473 Ics and observe the output waveform.

15. Construct and verify the performance of a 1 digit counter using 7490, 7447, 7475 and seven segment LEDs.

16. Construct a 4 bit weighted Resistor D/A converter and test its performance.

17. Construct a 4 bit r-2R Ladder D/A converter and test its performance.

18. Verify the operation of ADC.

SUBJECT: INDUSTRIAL ELECTRONICS LAB

LIST EXPERIMENTS

1. Determine the phase control characteristics of SCR.

2. Construct and test commutation circuits of SCR.

3. Construct and test a single phase inverter.

4. Construct and test a MOSFET based PWM chopper circuit.

5. Construct and test a multiple pulse sine wave inverter.

6. Construct and test an IC based buck converter using PWM.

7. Write and implement a simple ladder logic program using digital inputs and outputs for PLC.

8. Write the implement a simple ladder logic program using timer and counter with branching and subroutines with PLC.

9. Write and implement a simple ladder logic program for interfacing a lift control with PLC.

10. Write and implement a simple ladder logic program for interfacing a conveyor

control with PLC.

11. Write and implement a program for CNC lathe involving linerar position, circular interpolation and repeat cycle.

12. Write and implement a program for CNC milling for a simple component involving linear position and interpolation.

SEMESTER - V

SUBJECT: VLSI

BLOCK 1 NUMBER SYSTEM & LOGIC GATES

Unit 1: Number Systems

Unit 2: Unsigned and Signed Binary Numbers

Unit 3: Alphanumeric Codes & Error Correction and Detection

Unit 4: Basic Gates & CMOS Gates, Three State Gates

BLOCK 2 COMBINATIONAL & SEQUENTIAL LOGIC DESIGN

Unit 1: Designing Combinational Circuits , Karnaugh Maps

Unit 2: Adders, Subtractors, Comparators, MUX and Encoders

Unit 3: Storage Elements, Flip-Flops,Registers & Sequential Circuits design

Unit 4: State Machines, Mealy and Moore Machines, Static RAM

BLOCK 3 PROGRAMMABLE LOGIC DEVICES

Unit 1: ROM, NOR Imp

Unit 2: Distributed and Array Programmability, ROM variants

Unit 3: Flash, PAL and PLA

Unit 4: 3 State Outputs, Macro cells & Programmable Registers

BLOCK 4 VHDL PROGRAMMING

Unit 1: Intro to VHDL, Entity, Architectures, Concurrent Signal,

Unit 2: Events, Structural Designs, Sequential Behavior, Process

Unit 3: Sequential, Architecture, Configuration Statements

Unit 4: Behavioral Modelling, Sequential Processing, Subprograms and Packages

BLOCK 5 CPLD & FPGA ARCHITECTURE

Unit 1: CPLDs and FPGAs & Generic PLD Architecture

Unit 2: Complex Programmable Logic Devices

Unit 3: CPLD Architecture Description & Cool Runner CPLDs

Unit 4: Generic FPGA Architecture & Spartan-3 FPGAs

SUBJECT: MICROCONTROLLER

BLOCK 1 ARCHITECTURE OF 8051

Unit 1: Evolution of MPU

Unit 2: MPU Vs Microcontrollers

Unit 3: Architecture, Block Diagram and Pin Details of 8051

Unit 4: Functions of Blocks and Pins

BLOCK 2 SFR

Unit 1: ALU and Special Functional Registers (SFR) Blocks

Unit 2: PC,PSW, Memory Mapping

Unit 3: I/O Ports, Timers and Interrupts

Unit 4: Clock, Serial Port, Instruction Set & it's Cycle

BLOCK 3 INSTRUCTION SET AND PROGRAMMING

Unit 1: Assembling and running an 8051 program

Unit 2: Addressing Modes, Data Transfer, Arithmetic & Logical Inst

Unit 3: Rotate and Branching Instructions

Unit 4: Call, Delay, PC Instructions

BLOCK 4 I/O, TIMER, INTERRUPT & SERIAL Programming

Unit 1: I/O & Memory Programming

Unit 2: Timer Programming

Unit 3: Serial Programming

Unit 4: Interrupt Configuration for Internal and External & Programing

BLOCK 5 INTERFACING EXTERNAL DEVICE WITH 8051

Unit 1: Memory Interfacing

Unit 2: 8255, ADC/ DAC Interfacing

Unit 3: Relays & Opto Isolators, Sensors Interfacing

Unit 4: Seven Segment, LCD, Stepper Motor PWM RTC Interfacing

SUBJECT: COMMUNICATION ENGINECRING

BLOCK 1 NETWORKS, ANTENNA AND PROPAGATION

Unit 1: N/w Characteristics, Z_{oc}, Z_{sc} of T &JI N/w, Z_{i1}, Z_{i2} of T & L N/w

Unit 2: Equalisers, Attenuators, Filters, TX Line

Unit 3: Antennas

Unit 4: Wave Propagation

BLOCK 2 AMPLITUDE MODULATION

Unit 1: Modulation

Unit 2: Amplitude modulation

Unit 3: AM Transmitter

Unit 4: AM Receiver

BLOCK 3 ANGLE AND PULSE MODULATION

Unit 1: FM

Unit 2: FM Transmitters & Receivers

Unit 3: PM

Unit 4: Pulse Modulation

BLOCK 4 AUDIO SYSTEMS

Unit 1: Microphones

Unit 2: Loud speakers

Unit 3: Audio recording

Unit 4: Audio reproduction

BLOCK 5 TELEGRAPH AND TV FUNDAMENTALS

Unit 1: Telegraphy

Unit 2: Monochrome Television

Unit 3: Colour TV

Unit 4: Principles of Handy cam, LCD projector, CCTV and cable TV

SUBJECT: ROBOTICS

BLOCK 1 BASIC CONFIGURATION OF ROBOTICS AND ITS WORKING

Unit 1: Introduction & basic Configuration

Unit 2: Components & Blocks, SCARA

Unit 3: Classification & Characteristics of Robot

Unit 4: Rotations and Conversions of various motions

BLOCK 2 ROBOT CONTROLLER, SERVO SYSTEM

Unit 1: Level of Controller, Open & Closed Loop Controller

Unit 2: MPU based controller, path & Point Control

Unit 3: Sensor based controller & Programming

Unit 4: Drives and Devices for Controllers

BLOCK 3 ROBOT MOTION ANALYSIS

Unit 1: Robot motion analysis, kinematics, dynamics

Unit 2: Gripper design & Types

Unit 3: Transducers & Sensors

Unit 4: MDI & Computer Control

BLOCK 4 ROBOT PROGRAMMING

Unit 1: Robot programming

Unit 2: Lead through methods and Textual robot languages

Unit 3: Motion specification - motion interpolation

Unit 4: Robot language structure, Basic commands, Artificial intelligence and robotics

BLOCK 5 ROBOT APPLICATION IN MANUFACTURING AND AUTO ELECTRONICS

Unit 1: Material handling, Assembly finishing

Unit 2: Characteristics & Selection stages

Unit 3: Fuel Tank, Water Level, Temp, Pressure Sensors

Unit 4: Speed, Heat, Pressure& Door Lock Warning Systems

SUBJECT: VLSI Lab

LIST EXPERIMENTS

1. Write simple VHDL Codes for

a. Addition,

b. Subtraction

c. Multiplication

d. Division and implement on FPGA kit.

2. Write a VHDL Code for

a. 8 Bit Digital output using LEDs

b. 8 Bit Digital inputs using

3. Write VHDL Code for 4 x 4 matrix keypad interface.

4. Write a VHDL Code for

a. Relay interface

b. Buzzer Interface

5. Write a VHDL code for 7 Segment LED display interface

6. Write a VHDL code for Stepper motor interface

7. Write a VHDL code for Traffic light control

8. Write a VHDL code for 4 bit binary counter an study all signals using simulation software

9. Write a VHDL code for LCD display to display a text message.

10. Write a VHDL code to generator PW M signals for DC Motor control

11. Write a VHDL code & implement on FPGA kit for MUX & DEMUX

12. Write a VHDL Program & implement on FPGA kit for Encoder, Decoder & Shift

SUBJECT: COMMUNICATION LAB

LIST EXPERIMENTS

1. To construct a transistor video amplifier and to find its frequency response

characteristics.

2. To construct a sync separator circuit and test its performance.

3. To construct a sample and hold circuit and trace the waveforms.

4. PSK modulation – Trace the output waveform.

5. PSK demodulation – Trace the output waveform.

6. Setting up a fiber optic analog link.

7. Setting up a fiber optic digital link.

8. To measure the bending loss and propagation loss in fiber optics.

9. TDM of signals

10. Analog transmitter and receiver.

11. FSK transmitter and receiver.

12. ASK modulation - Trace the output waveform.

13. PWM modulation - Trace the output waveform.

14. To find Deflection sensitivity of CRT.

15. To measure the output at various points in sound section.

16. To measure the output at various points in video section.

17. To measure the output at various points in picture tube deflection section.

18. Assembling and testing of Yagi antenna.

SEMESTER - VI

SUBJECT: EMBEDDED SYSTEMS

BLOCK 1 Introduction to Embedded System and LPC 2148 ARM Controller

Unit 1: Introduction, Types & Features of Embedded Systems

Unit 2: LPC 2148 Architecture & Blocks, ARM 7 TDMI-S, Debug & Emulation

Unit 3: Memory map, CPU Registers, Modes of operation

Unit 4: SFR, Instruction Set, Arithmetic Programming in Assembly level

BLOCK 2 Embedded C basics, GPIO (Slow), Timer and Interrupt

Unit 1: Embedded C basics – GPIO (Slow) register map

Unit 2: 8 Bit LED & Switches, Buzzer, Relays, Stepper Motor Interfacing

Unit 3: Timer / Counter Programming

Unit 4: Interrupt Programming

BLOCK 3 PWM, ADC, DAC and RTC

Unit 1: PWM Features & programming

Unit 2: ADC & Temp sensor Interfacing Programming

Unit 3: DAC Interfacing Programming

Unit 4: Real Time Clock

BLOCK 4 I^2C, UART

Unit 1: Start, Stop, ACK, Restart, NACK signals

Unit 2: I^2C feature in LPC 2148 & Block Diagram

Unit 3: Interfacing I^2C based I/O expander PCF 8574

Unit 4: UART

BLOCK 5 RTOS and µC OS II

Unit 1: Foreground/Background systems, Function of OS & Introduction to RTOS

Unit 2: Resources Processing, Tasks, TCB

Unit 3: Schedulers & Introduction to µC OS

Unit 4: Various Functions of µC OS

SUBJECT: COMMUNICATION ENGG - II

BLOCK 1 RADAR AND NAVIGATIONAL AIDS

Unit 1: Radar Systems & Applications

Unit 2: Radio navigation, Compass, telemetry, Landing System

Unit 3: Telephony Public, Private N/w, ISDN, Cordless, Video Phones

Unit 4: FAX

BLOCK 2 DIGITAL COMMUNICATION

Unit 1: Intro to Digital Commn. System & it's advantages

Unit 2: Digital Codes

Unit 3: Digital Modulation techniques

Unit 4: Data Sets & Interconnections

BLOCK 3 OPTICAL COMMUNICATION

Unit 1: Optical communication system Blocks & Advantages

Unit 2: Ray Theory, Fibers

Unit 3: Losses , Optical Sources, Detectors, Connectors

Unit 4: OFC, Couplers, Applications of Optical Systems

BLOCK 4 SATELLITE COMMUNICATION

Unit 1: Satellite system, Kepler's I,II,II laws, orbits

Unit 2: Space segment-

Unit 3: Earth segment

Unit 4: Satellite services

BLOCK 5 MOBILE COMMUNICATION

Unit 1: Evolution Cellular telephone & fundamental concepts

Unit 2: Frequency reuse & Interference

Unit 3: Satellite multiple access techniques

Unit 4: Digital cellular system & GSM

SUBJECT: TELEVISION ENGINECRING

BLOCK 1 TV FUNDAMENTALS

Unit 1: Blocks in TV

Unit 2: Functions of various Blocks & Scanning and Synchronization

Unit 3: Composite Video Signal, TV Standards

Unit 4: Mixing of colours, Chrominance & Luminance

BLOCK 2 CAMERA AND PICTURE TUBES

Unit 1: Camera Tube Blocks, Functions and Construction

Unit 2: CCD Image Sensors

Unit 3: Colour TV Camera Tube

Unit 4: Functions and Operations of Picture Tube

BLOCK 3 TELEVISION TRANSMITTER

Unit 1: IF Modulation

Unit 2: Visual Modulator & CIN Diplexer

Unit 3: Block Diagram of Colour TV Tx

Unit 4: PAL

BLOCK 4 TELEVISION RECEIVERS

Unit 1: Block diagrams of monochrome TV receiver & functions

Unit 2: RF Tuner & Types, AGC Block, Frequency Compensation IC TA 7611 &LA 1190

Unit 3: Block diagram of PAL color receiver

Unit 4: block diagrams of PAL chroma Decoder IC TA7699 and IC TA 7680

BLOCK 5 VARIOUS DISPLAYs & MODERN TV SYSTEMS

Unit 1: FLAT Pannel, Plasma, IR Remote Control Blocks

Unit 2: Remote IC M 50463p 50142p MN15287

Unit 3: Cable TV System

Unit 4: VCD, DVD systems

SUBJECT: EMBEDDED SYSTEMS LAB

LIST EXPERIMENTS

1. Write Assembly language programs for

a) Addition, b) Subtraction, c) Multiplication, d) Division

Write the Programs in Embedded C for the following experiments

2. 8 bit LED and switch Interface

3. Buzzer, Relay and Stepper Motor Interface

4. Time delay program using built in Timer / Counter feature

5. External interrupt

6. Displaying a number in a seven segment display

7. 4 x 4 Matrix Keyboard

8. Multi digit Seven segment display

9. Displaying a message in a 2 line x 16 Characters LCD display

10. ADC and Temperature sensor LM 35 Interface

11. I2C Interface – 7 Segment display

12. I2C Interface – Serial ECPROM

13. Transmission from Kit and reception from PC using Serial Port

14. Generation of PWM Signal

RTOS based experiments

1. Blinking two different LEDs

2. Displaying two different messages in LCD display in two lines

3. Sending messages to mailbox by one task and reading the message from mailbox by another task

4. Sending message to PC through serial port by three different tasks on priority basis

5. Reading temperature from LM 35 interface and plot the temperature Vs Time graph using Graphics LCD – Study Experiment.

Project work