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**Total** 2250 90

*Project report – 200 marks; Viva voce- 50 Marks
List of Group Elective papers (Colleges can choose any one of the Group papers as electives)

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<td>GROUP B</td>
<td>GROUP C</td>
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<td>Web Technologies</td>
<td>Electronic Test Instruments</td>
<td>Basic VLSI Design</td>
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<td>Relational Data Base Management Systems</td>
<td>Analytical Instrumentation</td>
<td>ASIC Design</td>
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<td>LINUX and Shell Programming</td>
<td>Virtual Instrumentation</td>
<td>VLSI Design Using Verilog</td>
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<td>RDBMS and LINUX Lab</td>
<td>Instrumentation Lab</td>
<td>VLSI System Design Lab</td>
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SEM – I

Core Paper – I

**INSTRUMENTATION AND CONTROL SYSTEMS**

**Subject Description**: This course presents the concept of Instrumentation and basic principles involved in the control systems. It contains the different types of transducers and digital instruments.

**Goals**: To enable the students to learn the fundamentals of Instrumentation and control systems and its application scenarios.

**Objectives**: After successful completion of the course, the students should have

- Understood Instrumentation, digital meters and measurements.
- Understood the concept of Control systems and its usage in Instrumentation.
- Learnt the compensation techniques in the Control systems

**Contents**:

**UNIT I  DIGITAL INSTRUMENTS**


**UNIT II  TRANSDUCER AND MEASUREMENT**

TRANSDUCER: Resistive transducer- Inductive transducer – Capacitive transducer – Load cell- Piezoelectric – Photo electric transducers – Temperature transducer.

UNIT III CONCEPTS OF CONTROL SYSTEM

UNIT IV TIME RESPONSE ANALYSIS & STABILITY IN TIME AND FREQUENCY DOMAIN

UNIT V COMPENSATION TECHNIQUES
Principles of PI, PD and PID compensation – Cascade and feedback compensation, lag, lead, lag-lead Compensation. Design of cascade compensators – Using Bodes’s plot.

TEXT BOOKS
3. “Automatic Control Systems” S.N.VERMA, Khanna Publisher, 1999

SEM – I Core Paper – II

MEMS AND POWER ELECTRONICS

Subject Description: This course presents the overview and working principles of MEMS, fabrication and Microsystems design, AC voltage controller, D.C choppers, Inverters and Power supplies.

Goals : To enable the students to learn the techniques and working principles of microsystems and to study the different types of Power electronic circuits and their applications.

Objectives : After successful completion of the course, the students should have
Understood the concept of Microsystem fabrication & design
Understood Power electronic devices, circuits and its applications.
Contents:

UNIT I: OVERVIEW AND WORKING PRINCIPLES OF MEMS

UNIT II: FABRICATION & MICROSYSTEM DESIGN

UNIT III: POWER ELECTRONIC DEVICES & CIRCUITS
Review of operations: SCR, TRIAC, DIAC, IGBT, Power Diodes, MOSFET and UJT.

UNIT IV: AC VOLTAGE CONTROLLER AND DC CHOPPERS

UNIT V: INVERTERS AND POWER SUPPLIES

TEXT BOOKS
8051 MICROCONTROLLER WITH C PROGRAMMING

Subject Description : This subject presents the architecture, Programming in ALP & C and real world applications of the 8051 microcontroller.

Goals : To enable the students to learn the instruction set, programming, and interfacing concepts of microcontroller.

Objectives : On successful completion of the course the students should have :
Developed the programming skills in 8051ALP & C
Understood the concept of 8051 microcontroller based system design

Contents :

UNIT I : OVERVIEW AND INSTRUCTION SET
Microcontrollers and embedded processors – microcontrollers for embedded systems – overview of 8051 family – 8051 instruction set and registers

UNIT II : ASSEMBLY PROGRAMMING ADDRESSING MODES

UNIT III : ARITHMETIC AND LOGICAL OPERATIONS IN ALP & C
Arithmetic instructions and programs – unsigned addition and subtraction – unsigned multiplication and division – logic instructions and programs – single bit instructions and programming

Programming with C : Data types – time delay programming – I/O programming – logic operations – arithmetic operations

UNIT IV : 8051 INTERRUPTS & PERIPHERALS
Basic registers of timer – programming of 8051 timer – counter programming – 8051 serial communication – 8051 connection to RS232 – 8051 serial communication programming – programming timer interrupts – 8051 interrupts – programming external hardware interrupts – programming with serial communication interrupts – peripheral and interrupt programming in C

UNIT V : REAL WORLD APPLICATIONS
LCD Interfacing – keyboard interfacing – parallel and serial ADC interfacing – DAC interfacing – sensor interfacing and signal conditioning – RTC interfacing – relays and optoisolator interfacing – stepper motor interfacing - DC motor interfacing and PWM

TEXT BOOK

Subjects Description: This course presents the telecommunication transmission system, digital switching system, transmission networks, and fiber optic communications.

Goals: To enable the students to learn telecommunication switching systems and fiber optic communication systems.

Objectives: After successful completion of the course, the students should have
Understood the concept of telecommunication switching system
Understood the concept of optical fiber communication systems.

Contents:

UNIT I: TELECOMMUNICATION AND TRANSMISSION SYSTEMS

UNIT II: DIGITAL SWITCHING SYSTEM

UNIT III: CALL PROCESSING & SIGNALING TECHNIQUES

UNIT IV: TELEPHONE AND TRANSMISSION NETWORK ORGANIZATION

UNIT V: OPTICAL FIBER COMMUNICATION
A basic fiber optic system – Frequencies – Fiber optic Cables – Refraction – Numerical Aperture – Graded index cables – Single mode – Multi mode – Cable Constructions – Cable

TEXT BOOKS
1. “Telecommunication Switching and Networks” by P. Gnanasivam, PHI, 2004

SEM – II
Core Paper – V

SIGNALS AND SYSTEMS

Subject Description: This course presents the basic principles of signals & systems, transforms and its properties, sampling of CT and DT signals.

Goals: To enable the students to learn the basic principles, operations and concepts of signals and systems.

Objectives: After successful completion of the course, the students should have
Understood the concept of signals and systems.
Learnt the applications of transforms and its properties.
Learnt the Sampling of CT and DT signals.

Contents:

UNIT I: INTRODUCTION
Continuous Time (CT) and Discrete Time (DT) signals – classification of CT and DT signals – Basic CT and DT signals – Signal Operations – Representation of signals by impulses

UNIT II: CONTINUES TIME & DISCRETE TIME SYSTEMS

UNIT III: FOURIER SERIES REPRESENTATION OF PERIODIC SIGNALS

UNIT IV: FOURIER ANALYSIS OF DT SIGNALS AND SYSTEMS
UNIT V: SAMPLING, LAPLACE TRANSFORM & Z TRANSFORMS

**Sampling:** Introduction – sampling theorem – reconstruction of a signal from its samples using interpolation – Aliasing – DT processing of a CT signal – sampling of DT signals

**Laplace Transform:** Introduction – Laplace transform – region of convergence for LT – Inverse Laplace Transform – properties of Laplace transform

**Z Transform:** Introduction – z-transform – region of convergence for z-transform – Inverse z-Transform – properties of z-Transform

**TEXT BOOK**


**REFERENCES:**

**SEM – II Core Paper – VI**

**WIRELESS COMMUNICATIONS AND NETWORKS**

**Subject Description:** This course presents the encoding techniques, coding methods, satellite communication, cellular communication and wireless LANs.

**Goals:** To enable the students to learn the technology of wireless communication and networks.

**Objectives:** After successful completion of the course, the students should have

- Understood the concept of encoding techniques.
- Understood the concept of satellite and cellular networks.
- Learnt wireless LAN technology.

**Contents:**

**UNIT I: TECHNOLOGY AND SIGNAL ENCODING TECHNIQUES**


**UNIT II: CODING AND ERROR CONTROL**

UNIT III: SATELLITE COMMUNICATION

UNIT IV: CELLULAR WIRELESS NETWORKS

UNIT V: WIRELESS LANS

TEXT BOOKS
1. “WIRELESS COMMUNICATIONS AND NETWORKS” by WILLIAM STALLINGS – 2002 – PEARSON EDUCATION ASIA

EMBEDDED SYSTEMS AND REAL TIME OPERATING SYSTEMS

Subject Description : This subject presents the architecture & Programming of PIC16F877 microcontroller, and Micro C/OS-II RTOS functions.

Goals : To enable the students to learn the instruction set, programming, and interfacing concepts of PIC16F877 microcontroller and RTOS based system design.

Objectives :
On successful completion of the course the students should have :
Developed the programming skills in PIC16F877 microcontroller.
Understood the concept the RTOS.
Understood the concept embedded system design

Contents :

UNIT I: INTRODUCTION TO EMBEDDED SYSTEMS
Definition and classification – Overview of microprocessor, Microcontroller, and DSP – exemplary high performance processors – CISC and RISC architecture – hardware unit in an
embedded system- software embedded into a system – exemplary applications – embedded systems on a chip and in VLSI circuit

**UNIT II: PIC 16F87X MICROCONTROLLERS**  

**UNIT III: PERIPHERAL FEATURES OF 16F87X MICROCONTROLLERS**  

**UNIT IV: REAL TIME OPERATING SYSTEMS**  

**UNIT V: RTOS Programming Tools: Micro C/OS-II and Vxworks**  

**TEXT BOOKS**  

**SEM – II**  
**Core Paper – VIII**

**COMPUTER COMMUNICATION AND NETWORKS**

**Subject Description:** This subject presents data communication, various standards in networks with architectures and protocols.

**Goals:** To enable the students to learn the computer networks for today’s needs.
Objectives: After successful completion of the course, the students should have
Understood the concept of data communication
Developed their skills in networking

Contents:
UNIT I: DATA COMMUNICATION
Introduction – Basic terms and concepts – Line configurations – Topology – Transmission media
– MODEM: Standard and types – Analog and Digital transmission: Encoding and modulating –
Channel capacity - Base band and Broad band - Transmission impairments – Multiplexing –
Error Detection and control: CRC.

UNIT II: STANDARD ARCHITECTURE AND PROTOCOLS
Layered Architecture – OSI model – functions of layers – Data link control protocols – ARQ-
Stop and wait, Sliding window, Go back N and Selective repeat – Asynchronous protocol: X Modem, Y Modem, Kermit – Synchronous protocol: BSC, SDLC, HDLC- TCP/IP model,
SMTP, HTTP and FTP.

UNIT III: NETWORK STANDARDS
Ring – Token bus – FDDI – ALOHA, Wireless LAN Technology, Hub, Bridge, Router,
Concept and standards.

UNIT IV: ISDN
Introduction: Services – IDN – Channels – User interfaces – ISDN layers – Broad band ISDN –
Frame relay – ATM: concept and architecture – ISDN Protocol: Physical layer protocol, D-
channel Data link layer and layer 3 protocols, Network signaling systems, SS7 protocol.

UNIT V: UPPER OSI LAYERS
Session layer protocols, Presentation layer – Encryption / Decryption, Data security, Encryption/
Decryption, Authentication, Data compression, Application Layer Protocols – MHS, File
Transfer, Virtual Terminal, CMIP.

TEXT BOOK
1. “DATA COMMUNICATION AND NETWORKING” BEHROUS. A.FOROUZAN, 2ND
EDITION, TATA MCGRAW HILL, 2000.

REFERENCE BOOKS
1. “ISDN – Concepts, Facilities and Services” GARY C. KESSLAR and PETER
SOUTHWICK, MCGRAW HILL, 3RD EDITION, 1997.
2000
3. “Computer Networks” ANDREW S.TANENBAUM, 3rd edition, PRENTICE HALL OF
INDIA, 1996.
PRACTICAL – I

ELECTRONICS & COMMUNICATION SYSTEMS LABORATORY

ELECTRONICS lab
1. V to I & I to V Converters
2. Load cell & Instrumentation amplifier
3. Displacement & Angular displacement measurement
4. Inductive & capacitive pick up measurement
5. Voltage/Current measurement using Hall effect sensors
6. Flow measurement
7. Frequency response of first order low pass filter
8. Frequency response of second order systems
9. Frequency response of Peaking amplifier
10. Thermistor control of quench oil temperature
11. Strip tension controller
12. Position control systems – open loop – closed loop
13. SCR, DIAC & TRIAC Characteristics
14. UJT characteristics & UJT as a saw tooth wave generator
15. Firing angle control using Thyristors
16. Commutation Techniques (any two)
17. Single phase inverter & converter (20W)
18. Switching Regulators

COMMUNICATION SYSTEMS lab
1. LED Characteristics at 850 nm & 1300 nm
2. PIN diode & Laser Diode characteristics
3. Analog fiber optic transmitter & receiver
4. Digital fiber optic transmitter & receiver
5. Radiation pattern of Dipole & Yagi-Uda antennas
6. Radiation pattern of Loop & Array antennas
7. Generation and Detection of PAM & PWM
8. Generation and Detection of PCM
9. IR Transmitter & Receiver
10. ASK & FSK Transmitter and Receiver
11. PSK, QPSK & DPSK
12. Delta and Adaptive delta modulation
13. Study of GPS and GSM Modules
14. Impedance and power measurement by Smith chart
15. Radiation Pattern by Horn antenna
16. Alignment of Satellite receiver
17. Gunn Diode oscillator
18. Reflex Klystron characteristics using microwave bench
PRACTICAL – II

EMBEDDED SYSTEMS AND REAL TIME OPERATING SYSTEMS LABORATORY

1. Writing and testing programs involving arithmetic, logical and BIT oriented intr.
2. Programming using interrupts
3. Programs for measuring frequency using input capture and output compare mode
4. Square wave generation using ports
5. Key interfacing
6. LED Interfacing
7. Seven segment display interfacing
8. Solid state relay interfacing using interrupts
9. Traffic light control system
10. ADC interface
11. DAC interface
12. Stepper motor interface
13. Timer/Counter operation
14. Serial port interfacing using RS232C
15. Digital clock
16. Object counter
17. Water level controller
18. Flow measurement
19. Temperature measurement
20. DC motor driving via H bridge
21. LCD interface
22. PWM generation
23. PIC to PIC communication using I2 C bus
24. Semaphore & flag related functions
25. Queue & Mailbox related functions
26. Memory related functions
27. Embedded system for an adaptive cruise control system in a car
28. Embedded system for a smart card

SEM – III

DIGITAL SIGNAL PROCESSING

Subject Description: This course presents the basic principles of processing of digital signals and its applications, design of discrete filters and its concepts.

Goals: To develop the students to learn the new techniques, solutions and a demand for knowledgeable communication professionals who have a firm grasp of the background theory and technologies.

Objectives: After successful completion of the course, the students should have
Understood essential grounding in signal processing
Learnt the uses of DSP in satellite and communication technologies.
Recognized the future trends in DSP

Contents:

UNIT I: STRUCTURES FOR DISCRETE TIME SYSTEMS
Introduction – block diagram and signal flow graph representation of Linear co-efficient
difference equation – basic structure for IIR system – basic network structures for FIR systems –
Lattice structures – zero input cycles in fixed point realization of IIR digital filters

UNIT II: COMPUTATION OF DISCRETE FOURIER TRANSFORM
Introduction – efficient computation of DFT – Decimation in Time FFT algorithms – Decimation
in Frequency algorithms – implementation of FFT algorithms – FFT algorithms for composite N

UNIT III: FILTER DESIGN TECHNIQUES
Introduction – design of discrete time IIR filters from continuous time filters – frequency
transformation of low pass IIR filters – design of FIR filters by windowing – comments on IIR
and FIR digital filters

UNIT IV: ANALYSIS OF FINITE WORD LENGTH EFFECTS
Introduction – quantization process and errors – analysis of co-efficient quantization effects –
analysis of co-efficient quantization effects in FIR filters – A/D conversion noise analysis – low
sensitivity digital filters – limit cycle in IIR filters – round of errors in FFT algorithms

UNIT V: DIGITAL SIGNAL PROCESSOR
TMS320C50 family overview – key features – architectural overview – functional block diagram
– internal memory organization – CALU – system control – PLU – interrupts – addressing
modes – Instruction set

TEXT BOOKS
2. John G.Proakis, Dimitris G. Manolakis, D.Sharma, “Digital signal processing principles,
5. TMS 320C5X users guide, Texas instruments, 1993.
6. TMS320C67x/C67x+ DSP CPU and Instruction Set - Reference Guide.
DIGITAL IMAGE PROCESSING

Subject Description: This course presents the fundamentals of Digital Image Processing and image transforms, image enhancement and image encoding, analysis and computer version.

Goals: To enable the students to learn the basic principles of Image processing and analysis and computer vision of image.

Objectives: After successful completion of the course, the students should have Understood essential grounding in “Image processing” Learnt the uses and wide range of application scenarios.

Contents:

UNIT I: DIGITAL IMAGE FUNDAMENTALS

UNIT II: IMAGE TRANSFORMS

UNIT III: IMAGE ENHANCEMENT

UNIT IV: IMAGE ENCODING
Objective and subjective fidelity criteria – basic encoding process – the mapping – the quantizer – the coder – differential – encoding – contour encoding – run length encoding - image encoding – relative to fidelity criterion – differential pulse code modulation.

UNIT V: IMAGE ANALYSIS AND COMPUTER VISION
Typical computer vision system – image analysis techniques – spatial feature extraction – amplitude and histogram features - transforms features – edge detection – gradient operators –
boundary extraction – edge linking – boundary representation – boundary matching – shape representation.

TEXT BOOK


SEM – III

VLSI DESIGN AND VHDL PROGRAMMING

Subject Description: This course presents the fundamentals of IC fabrication and VHDL Programming.

Goals : To develop the students to learn the basic steps involved in the IC fabrication and modeling techniques using VHDL.

Objectives : After successful completion of the course, the students should have
- Understood the concept of IC fabrication technology.
- Developed the programming skills in VHDL
- Learnt the Design of FPGA’s and CPLD.

Contents:

UNIT I: INTRODUCTION AND BASIC CONCEPT OF VHDL

UNIT II: BEHAVIORAL MODELING TECHNIQUES OF VHDL

UNIT III: DATA FLOW & STRUCTURAL MODELING TECHNIQUES OF VHDL
UNIT IV: ADVANCED FEATURES IN VHDL

UNIT V: DESIGN OF FPGA’S AND CPLD

TEXT BOOKS
UNIT IV : NANOELECTRONICS AND INTEGRATED SYSTEMS


UNIT V : NANODEVICES AND APPLICATIONS


REFERENCES:


SEM – III

Core Practical – III

PRACTICAL – III

DSP and DIP LABORATORY

USING TMS320C5X/TMS320C54XX/TMS320C67XX/MATLAB

1. Study of addressing Modes of DSP using simple examples
2. Arithmetic operations
3. DFT computations
4. FFT Computations
5. Convolution of two discrete signals
6. Correlation of two discrete signals
7. Quantization noise
8. Waveform generation
9. Solving differential equations
10. Solving z-transform
11. Voice storing & Retrieval
12. FIR Filter design
13. IIR filter design
14. Generation of signals
15. Amplitude Modulation & FFT response
16. Impulse, Step, Exponential & Ramp functions
17. Frequency sampling method
18. Image Sampling – Zooming & Shrinking Operations
20. 2-D Discrete Fourier Transform and Walsh Transform
21. Image Contrast Enhancement by Histogram Equalization Technique
22. Spatial Image Filtering: Low pass and high pass filtering

SEM – III

PRACTICAL – IV
VLSI LABORATORY

1. Design and implementation of logic gates
2. Design and implementation of half adder & full adder
3. Design and implementation of half subtractor & full subtractor
4. Design and implementation of Encoder & decoder
5. Design and implementation of 4 bit & 8 bit multiplexer
6. Design and implementation of flip flops
7. Design and implementation of up/down counters
8. Design and implementation of shift register
9. Design and implementation of ALU
10. Design and simulation of Programmable Logic Array
11. Design and simulation of Traffic light Controller
12. Design and simulation of Real time clock
13. USART Implementation
14. State machine – Eg. Moore model

GROUP A ELECTIVE

PAPER I : WEB TECHNOLOGIES

Subject Description: This course presents the concept of internet, web technology and security issues.
Goals: To enable the students to learn web technology for information management.
Objectives: After successful completion of the course, the students should have
Understood the concept of internet
Understood the concept of web technologies.
Developed the skills for information management.
Contents:

UNIT I
Internet topology Internal Architecture of an ISP – IP Address – Basics of TCP – Features of
TCP – UDP.

UNIT II
DNS – Email – FTP – HTTP – TELNET- Electronic commerce and Web technology –

UNIT III
Maintaining state information - Transaction Management: Transaction Processing monitors –

UNIT IV
Security Socket Layer (SSL) – Credit card Processing Models – Secure Electronic Transaction –

UNIT V

TEXT BOOK

REFERENCES

GROUP A ELECTIVE SEM - II

PAPER II : RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Subject Description: This course presents the background of SQL, object relational Databases, and application of RDBMS.

Goals: To enable the students to learn the concept of Database management, Information systems, and its applications.

Objectives: After successful completion of the course, the students should have
Understood the concept of RDBMS
Developed the skills in Database management

Contents:
UNIT I : INTRODUCTION
Purpose of Database systems- View of Data-Data Models-Database Languages-Transaction Management-Storage Management Database Administrator- Database Users-System Structure.

UNIT II : ORACLE TABLES
DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table.
UNIT-III: WORKING WITH TABLE: DATA MANAGEMENT AND RETRIEVAL

UNIT-IV: MULTIPLE TABLES:

UNIT V: CONTROL STRUCTURES AND EMBEDDED SQL

TEXT BOOK

Reference Books:
1. Alexis Leon and Mathews Leon,”Database Management Systems”Vikas pub

GROUP A ELECTIVE SEM - III
PAPER III: LINUX & SHELL PROGRAMMING
UNIT I: WELCOME TO LINUX
Overview of LINUX-Additional Features in LINUX. The LINUX Operating System: Logging In-Working with the shell.

UNIT II: LINUX SYSTEM START UP & SHUTDOWN

UNIT III: FILE FILTERS
File Related Commands-Introduction to Piping –Some other means of joining commands- awk commands.

UNIT IV: SHELL PROGRAMMING

UNIT V: THE VIM EDITOR
Introduction to Vim features-Command Mode: Moving the cursor-Deleting & changing text - Input mode. Computing C & C++ Programs under LINUX: Introduction to C Compiler-
Computing a Multi source C Program-How main is executed on LINUX-Compiling single source C++ Program

Text Book
1. Mark G. Sobell, "A Programming Guide to LINUX Commands, Editors and shell programming", Pearson Education (Unit I, 2nd Half Unit IV, 1st half Unit V)
2. N.B. Venkateswarlu, "Introduction to LINUX: Installation and Programming" BS Publications (Unit II, III, 1st half Unit IV, 2nd Half Unit V)

GROUP A ELECTIVE: SEM - IV

PRACTICAL: RDBMS AND LINUX LABORATORY

RDBMS LABORATORY
1. Creating Tables and writing simple Queries using
   a) Comparison Operators, b) Logical Operators, c) Set Operators, d) Sorting and Grouping
2. Creation of Reports using Column format
3. Writing Queries using built in functions
4. Updating and altering tables using SQL.
5. Creation of Students Information table and write PL/SQL Block find the Total, Average marks and Results.
6. Write a PL/SQL block to prepare the Electricity Bill.
7. Splitting the table: Write a PL/SQL block to split the students information table into two, one with the Passed and other failed.
8. Joining the Tables-Write a PL/SQL Block to join two tables, First table contain Roll Number, Name, Total and Second Table contains the Roll. No and Address.
9. Create a Database Trigger to check the data validity of Record.
10. Recursive Functions write a Recursive Function to find a) Factorial of N b) Fibonacci Series with N terms.
11. Write a Recursive function to create as sequence of Roll nos using sequence.
12. Write a Database Trigger to implement the Master Detail Relationship.
13. Front and tools.
14. High level programming language extension
15. Menu Design.
16. Data definition, Manipulation of base tables and views.
LINUX LABORATORY
1. Write a Shell script to Wish the User according to Present Time.(i.e GOOD MORNING,GOOD AFTERNOON etc)

2. Write a shell program to print the sum of all digits

3. Write a shell program which informs as soon as a specified user whose name is given along the command line is logged into the system

4. Write a shell program to print the following series

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
6 6 6 6 6 6
```

5. Write a shell program which takes a source file name & directories names as command line arguments & print the message.

6. Write a shell script which removes empty files from PWD & changes other file time stamps to current time

7. Write a shell program which reads a digit & prints its BCD code

8. Write a shell program which reads a filename along the command line & prints frequency of the occurrence of words

9. Write shell script to see current date time username & current directories.

10. Write script to determine whether given file exist or not, file name is supplied as command line argument, also check for sufficient number of command line argument

GROUP B ELECTIVE SEM – I

PAPER I : ELECTRONIC TEST INSTRUMENTS

UNIT I ANALOG METERS
D.C,A.C voltmeters, ammeters, multimeter,power meter,Q-meter,true RMS meter, vector impedance meter, vector voltmeter, component measuring instrument.

UNIT II SIGNAL SOURCES
Sine wave generator-Frequency synthesized sine wave generator-Sweep frequency generator, pulse and square wave generator-Function generator-Wave analyzer-Applications-Harmonic distortion analyzer-Spectrum analyzer-Applications- Audio Frequency generator-Noise generator.
UNIT III OSCILLOSCOPES
General purpose oscilloscope-Screens for CRT graticules-Vertical & horizontal deflection systems- Time base operation, triggers – sweep control, z axis input – Delay line-Multiple trace-Dual beam & dual trace- Probes-Oscilloscope techniques-special oscilloscopes-Storage oscilloscope-sampling oscilloscope-digital CRO.

UNIT IV DIGITAL INSTRUMENTS

UNIT V DISPLAY AND RECORDING DEVICES
Bar graph display-Segmental and dot matrix display-X-Y recorders, magnetic tape recorders-Digital recording-Data loggers-Interference and screening-Electrostatic and electromagnetic interference & earth loops.

TEXT BOOKS

REFERENCE BOOKS

GROUP B ELECTIVE

PAPER II : ANALYTICAL INSTRUMENTATION

Unit 1: Colorimetry And Spectrophotometry
Special methods of analysis- Beer-Lambert law-colorimeters - UV-ViS spectrophotometers-Single and double beam instruments-Sources and detectors-IR Spectrophotometers-Typ e-
ATTENUATED TOTAL REFLECTANCE FLAME PHOTOMETERS- ATOMIC ABSORPTION SPECTROPHOTOMETERS-SOURCES AND DETECTORS-FTIR SPECTROPHOTOMETERS-FLAME EMISSION PHOTOMETERS.

UNIT 2: CHROMATOGRAPHY

DIFFERENT TECHNIQUES- GAS CHROMATOGRAPHY- DETECTORS- LIQUID CHROMATOGRAPHS- APPLICATIONS-
HIGH PRESSURE LIQUID CHROMATOGRAPHS-APPLICATIONS.

UNIT 3: INDUSTRIAL GAS ANALYZERS AND POLLUTION MONITORING INSTRUMENTS

TYPES OF GAS ANALYZERS- OXYGEN, NO2 AND H2S TYPES, IR ANALYZERS, THERMAL CONDUCTIVITY
ANALYZERS, ANALYSIS BASED ON IONIZATION OF GASES. AIR POLLUTION DUE TO CARBON MONOXIDE,
HYDROCARBONS, NITROGEN OXIDES, SULPHUR DIOXIDE ESTIMATIONS-DUST AND SMOKE MEASUREMENTS.

UNIT 4: pH METERS AND DISSOLVE COMPONENT ANALYZERS

PRINCIPLE OF pH MEASUREMENT, GLASS ELECTRODES, HYDROGEN ELECTRODES, REFERENCE ELECTRODES,
SELECTIVE ION ELECTRODES, AMMONIA ELECTRODES, BIOSensors, DISSOLVED OXYGEN ANALYZER-SODIUM
ANALYZER-SILICON ANALYZER.

UNIT 5: RADIO CHEMICAL AND MAGNETIC RESONANCE TECHNIQUES

NUCLEAR RADIATIONS – DETECTORS - GM COUNTER - PROPORTIONAL COUNTER - SOLID STATE DETECTOR -
GAMMA CAMERAS - X-RAY SPECTROSCOPY - DETECTORS- DIFRACTOMETERS -ABSORPTION METERS -
DETECTORS NMR-BASIC PRINCIPLES-NMR SPECTROMETER-APPLICATIONS. MASS SPECTROMETERS -
DIFFERENT TYPES - APPLICATIONS.

TEXT BOOKS:

REFERENCES:
GROUP B SEM – III

PAPER III: VIRTUAL INSTRUMENTATION

UNIT I: INTRODUCTION
General functional description of a digital instrument - Block diagram of a Virtual Instrument - Physical quantities and Analog interfaces - Hardware and Software - User interfaces - Advantages of Virtual instruments over conventional instruments - Architecture of a Virtual instrument and its relation to the operating system.

UNIT II: SOFTWARE OVERVIEW
LabVIEW - Graphical user interfaces - Controls and Indicators - 'G' programming - Labels and Text - Shape, Size and Color - Owned and free labels - Data type, Format, Precision and representation - Data types - Data flow programming - Editing - Debugging and Running a Virtual instrument - Graphical programming palettes and tools - Front panel objects - Functions and Libraries.

UNIT III: PROGRAMMING STRUCTURE
FOR loops, WHILE loops, CASE structure, formula nodes, Sequence structures - Arrays and Clusters - Array operations - Bundle - Bundle/Unbundle by name, graphs and charts - String and file I/O - High level and Low level file I/O's - Attribute modes Local and Global variables.

UNIT IV: HARDWARE ASPECTS
Installing hardware, Installing drivers - Configuring the hardware - Addressing the hardware in LabVIEW - Digital and Analog I/O function - Data Acquisition - Buffered I/O - Real time Data Acquisition.

UNIT V: LABVIEW APPLICATIONS
IMAQ - Motion Control: General Applications - Feedback devices, Motor Drives - Instrument Connectivity - GPIB, Serial Communication - General, GPIB Hardware & Software specifications - PXI / PC1: Controller and Chassis Configuration and Installation.

TEXT BOOKS:

REFERENCES:
GROUP B  ELECTIVE          SEM – IV

PRACTICAL : INSTRUMENTATION LAB

Any Five of the following
1. Simple fault finding of pH meters and Identification different type pH electrodes.
2. Displacement measurement using LVDT
3. Design of V-F and F-V converter
4. Instrumentation amplifier
5. Study of Strain gauges.
6. Thermocouple Compensation.
7. Thermistor Linearization transmitter design.
8. Pressure Calibration.
10. Signal conditioning circuit for optical encoder.

Any Five of the following using Lab View
1. Creating a simple VI to place a Digital Control
2. Navigation and Editing
3. VI to make a Degree C to Degree F Converter
4. Converting VI in to Sub VI
5. Write a programme to count Modulus 32 and display the values in decimal, octal decimal and Binary.
6. Built a VI using while loop that displays random numbers in to three wave form charts. (Strip, scope & Sweep)
7. Data Acquisition using Lab VIEW
8. Development of Temperature Measurement using Lab VIEW
10. Development of Virtual Instrument for Audio Signal Spectrum Analyser using Lab VIEW
GROUP C ELECTIVE : SEM – I

UNIT I: INTRODUCTION TO MOS TECHNOLOGY

UNIT II: MOS AND BI CMOS CIRCUIT DESIGN PROCESSES

UNIT III: BASIC CIRCUIT CONCEPTS

UNIT IV: SCALING OF MOS CIRCUITS
Scaling models and scaling and scaling factors – Scaling factors for device parameter – Some discussion on and limitations of scaling

UNIT V: SUBSYSTEM DESIGN AND LAYOUT
Some architectural issues Switch logic – Gate (Restoring) Logic – Examples of structured design (Combinational logic) – Some Clocked sequential circuits – Other System considerations.

Text Book:

GROUP C ELECTIVE: Sem –II

UNIT I: INTRODUCTION TO ASIC
UNIT II: PROGRAMMABLE ASICS, PROGRAMMABLE ASIC LOGIC CELLS AND PROGRAMMABLE ASIC I/O CELLS


UNIT III: PROGRAMMABLE ASIC INTERCONNECT, PROGRAMMABLE ASIC DESIGN SOFTWARE AND LOW LEVEL DESIGN ENTRY


UNIT IV: ASIC CONSTRUCTION, FLOOR PLANNING, PLACEMENT AND ROUTING


UNIT V: BASICS OF MICRO WIND


Text Books:

GROUP C ELECTIVE:  Sem –III

PAPER III: VLSI DESIGN USING VERILOG

UNIT – I:

UNIT – II:
Always Statement – If Statement – Inferring Latches From If Statement – Case Statement: Casex – Casez – Inferring Latches From Cases Statement – Full Case – Parallel Case – Non Constant As Case Item Loop Statement – Functions – Tasks – Using Values X And Z – Value X And Value Z
UNIT – III:

UNIT – IV:

UNIT – V:

Text Books:

GROUP C ELECTIVE: SEM - IV

PRACTICAL: VLSI SYSTEM DESIGN LAB
1. Synchronous counter
2. Asynchronous counter
3. Clock divider and generator
4. FIFO Design
5. Multiplexer design
6. Encoder
7. Decoder
8. Comparator
9. Latches and flip flops
10. ALU Design
11. Parity generator
12. UART Module
13. SPI module
14. Memory module
15. Sequence detector