ANNEXURE-J

LIST OF EXPERIMENTAL SETUP LAB WISE

DEPARTMENT OF ELECTRONICS & COMMUNICATION

LIST OF EXPERIMENTS : COMMUNICATION LAB

1. Plot operating characteristic of P.N Junction diode.
2. Plot operating characteristics of Renner diode.
3. Plot operating characteristics of Transistor in C.E Configuration.
4. Determine Hybrid Parameters of Transistor.
5. Study Half wave & Full wave rectifier and determine various parameters.
6. Study static and Dynamic characteristics of FET.
7. Study the effect of temperature variation on fixed bias transistor configuration.
8. Study potential divider biasing.
9. Study the effect of Feedback on band width and Gaing of C.E amplifier.
10. Find current gain and voltage gain and REc. Couple amplifier.
11. Study frequency Response of C.E amplifier.
12. Design colpitts/ Phass shift/ Haltley/ Weinbridge oscillats.
13. Design and study class-A, Class-B Power complifier.
14. Design series voltage Regulator and find its regulation.
15. Design A regulated power supply using K regulator.

LAB CONDUCTED

	SEMESTER	BRANCH	LAB
1.	2^{nd}	I.T	Basic Electronic Lab
2.	3^{rd}	I.T	Electronic-II
3.	4^{th}- 5^{th}	E&CE	Electronic-I, Electronic-II
4.	3^{rd}-4^{th}	CSE	Electronic-I, Electronic-II
5.	4^{th}-5^{th}	Electrical Engg.	Electronic-I, Electronic-II

LIST OF EXPERIMENTS : LINEAR INTEGRATED CIRCUITS LAB

1. Study of Op-Amp as Differentiator / integrator.
2. Study of Op-Amp as comparator & Schmittrigges.
3. Study of Op-Amp as Triangular Wave Generator.

4. Study of Op-Amp as A/D & D/A converter.
5. Design of Monostable and Astable Multivibrator using 555 chip.
6. Study of Op- Amp as Rectifier.
7. Study of Op-amp as Clipper.

LIST OF EXPERIMENTS : ANALOG LAB

1. Generation and Detective of Amplitude Modulated wave.
2. Generation and Detective of Frequency Modulated wave.
3. Generation and Detective of Pulse Amplitude modulation/ Pulse width modulation/ pulse point.
4. Generation and Detective of pulse code modulation.
5. Geneartion and Detection of ASL/FSK/PSk.
6. Study of frequency response of IF transformer.
7. Study of Superhytrodyne Recover.
8. Study of various control of television.
9. Study of sample and Hold circuits.
10. Study of E______Detection and connection techniques.
11. Study of Stereo Cassette Recorder.

LAB CONDUCTED

	SEMESTER	BRANCH
1.	4^{th}- 5^{th}	E&CE
2.	5^{th}	Electrical lab
3.	4^{th}	I.T

LIST OF EXPERIMENTS : DIGITAL ELECTRONICS LAB

1. Verification by Truth Tables, Validity of logical Gate AND, OR NOT, NAND, NOR, EXOR, EXNOR GATES.
2. Implementation of Boolean Expression using AND, OR, NOT, NAND & NOR LOGIC.
3. To study Digital comparator circuits.
4. To Implement half adder, half subtractor, full adder, full subtractor using different Ics
5. Implementation of Cultiplexer, Demultiplexer, Decoder & Encoder.
6. Design of BCD TO SEVEN-SEGMENT Display using logical gate Ics.
7. Study AND verification by truth table of SR, JK, MSJK, D&T Flip Flops.
8. DESIGN VARIOUS Asynchronous counter using FLOP Flops & Gate.
9. Design various synchronous counter using FLIP Flops & Gates.
10. Design and Test Non –sequential counter and study of shift registers

LIST OF EXPERIMENTS : PULSE CIRCUITS LAB

1. Study of RC circuit (High & Low Pass) and their response to various signals.
2. Design of Monostable and Astable multivibrator using 555 chip for different pulse width.
3. Study of Op-Amp using 741 chip as
    a) Adder or Summing amplifier.
    b) Subtractor or difference amplifier.
    c) Voltage Follower.
    d) Differentiator/INTEGRATOR.
4. Study of Diode clipping circuit (both series and shunt) and to observe the output wave from ON CRO.
5. Study of simple clamper circuits.
6. Study of OP-Amp
    a) Comparator
    b) D/A and A/P converter.

LIST OF EXPERIMENTS : MICROWAVE ENGINEERING LAB

1. Study the characteristics of the Reflex Klystron tube.
2. Study the VI characteristics of a Gunn Diode.
3. Study of the following characteristics of Gunn Diode.
    a) Output power and frequency as a function of Bias voltage.
    b) Square wave modulation through PIN diode.
4. Study the function of Multi Hole Directional coupler.
5. Study the working Magic TEE.
6. Determine the frequency and wave length in rectangular wave guide working on TE 10 MODE.
7. Determine the standing wave ratio and reflection co-efficient.
8. Measure an unknown impedance with smith chart.
9. Measure the Poles Pattern & the gain of a wave guide Horn Anteena.

LIST OF EXPERIMENTS : CONDUCTED IN EMI LAB

1. Study of front panel controls of CRO.
2. Measurement of (i) Phase Anle (ii) Frequency using Lissauous Pattern on CRO.
3. Study of Digital storage oscilloscope and its use for testing and measurements.
4. Testing of component and measurement of voltage and frequency using CRO.
5. In facing of Digital storage oscilloscope with PC using software.
6. Study of Analog Multimeter.
7. Study of Digital Multimeter.
8. Study of LCR meter.
9. Study liner variable Differential transformer.
10. Measurement of Displacement using LVDT (20mm).
11. Measurement of water level using water level sensor.
12. Pressure measurement using pressure cell.
13. Temperature measurement using temperature measurement transducer.
14. Measurement of strain by strain measurement tutor using strain Canti lever.
15. Study of Distortion meter.

LIST OF EXPERIMENTS : ELECTRONIC WORK SHOP

1. To study the Resistors & capacitors of different types.
2. To study the transformer diodes IC's and transistors.
3. To study soldng fluxes, soldering and soldering techniques.
4. To assemble a Half/ full wave bridge rectifier circuit with capacitor filter.
5. To assemble the common emitter circuits.
6. To study the 555 timer as an astable multivibrator.
7. To assemble the phase shift oscillator using operation amplifier.
8. To assemble the J&K Flip Flop using NAND gates comprising of IC's on a bread.

LIST OF EXPERIMENTS : 8086 MICROPROCESSOR LAB

1. To multiply two 16 bit numbers to; give a 32 bit result.
2. To divide a 16 bit number by 8 bit number.
3. To transfer a block of data from one set of memory location to another.
4. To find the largest in a given series of data.
5. To find the smallest number in a given series of data.
6. To multiply two 8 bit numbers using repetitive addition method.
7. To blink 8 LED, interfaced to 8086 through 8355 in I/D mapped I/D mode, on and off continuously.
8. To rotate a stepper motar connected to 8086 through 8255 in
    a) Clock-wise direction.
    b) Anti-clockwise direction

LIST OF EXPERIMENTS : 8085 MICROPROCESSOR LAB

1. To add two 8 bit numbers stored at memory locations and store the result.
2. To clear a block of memory locations.
3. To find the sum of a series of data.
4. To find the largest number in a given string of data.
5. To find the smallest in a given string of data.
6. To copy a block of data from one set of memory location of another.
7. To multiply two 8 bit Nos, using repetitive addition method.
8. To convert a hexadecimal number into ASCIT.
9. To convert an ASCIT number into hexadecimal number.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING COLLEGE

LIST OF PRACTICALS LABWISE

SUBJECT : COMPUTER PROGRAMMING LAB
CODE: COM 210

1. DOS Commands (Internal & External)
2. Flow Charts
3. Basic Programming
    - i. Simple Programs
    - ii. Programs using loops, control structures
    - iii. Programs using strings, arrays, functions & subroutines.
4. Fortran Programming
    - i. Simple programs
    - ii. Programs using loops, control structures
    - iii. Programs using strings, arrays, functions & subroutines

COURSE NO: COM-303 Course Scheme
COURSE TITLE: NUMERICAL METHODS WITH FORTRAN PROGRAMMING (LAB.)

Implementation of following Numerical Methods using FORTRAN 77.

- Bisection Method
- Secant Method
- Newton Raphon Method
- Newton’s Forward & Backward Method
- Newton’s Divided Difference Method
- Gauss Elimination Method
- Gauss-Jordan Method
- Numerical Differentiation
- Runge-Kutta Method
- Euler’s Method
- Taylor Series Method
- Simpson’s Method (1/3rd, 3/8th)
- Langrange’s Interpolation

COURSE NO: COM-403
COURSE TITLE: DIGITAL ELECTRONICS LAB

List of experiments:

- Verification by truth tables validity of AND, OR, NAND, NOR & EXOR gates.
- Paramerters of 7400 Nand gates.
- Implementations of Boolean expressions using AND/OR/NOT/NAND & NOR logic.
- Study of TTL logic gates (AND, OR, NOT, NAND, NOR etc.) & to measure worst
- case voltages & currents, determination of fan-in and fan-out capacity of any one
- gate.
- To implement half adder/half substractor, full adder full substractor using different
- IC’s.
- To study Arithematic logic unit & verify its truth table.
- Implementation of multiplexer, demultiplexer, decoder & encoder.
- Design of BCD to seven-segment display using logical gates/IC.
- To study SR, JK, MAJK, D&T flip flops.
- To design various counters using flip flops/gates or IC’S
- To design & test non-sequential counter & study of shift registers, ring counter.

COURSE NO: COM-404
COURSE TITLE: COMPUTER LANGUAGE LAB
Programming in C & Pascal

- Write a program to find roots of quadratic equation if roots are real.
- Write a program to read n numbers and print the lowest/highest number.
- Write a program to read a number and
o Find sum of its digits.
o Find average of digits.
o Count even and odd digits in a number.
o Check for palindrome.
- Write a program to find sum of the following series:
o x + x2 + x3 + x4 +……….. +xn
o 1 + !2 + !4 + !6 + ……………………. +!n
o Cosine series
o Fibonacci series
- Write a program to perform following operations on array:
o Searching
o Sorting
o Insertion/Deletion
o Merging
- Write a program to perform following matrix operations:
o Addition
o Multiplication
o Transpose
o To check for: unit matrix, diagonal matrix, upper matrix, lower matrix
- To perform following operations on Files:
o Create/Read a file
o Search for a record
o Add new records
o Modify records

Semester 5th

COURSE NO: COM-507
COURSE TITLE: DIGITAL ELECTRONICS LAB.
List of experiments:

- To design a Combinational Circuit which can add or subtract two 4-bit binary numbers
- To design a Sequential Circuit which produces the 2's Compliment of an input binary number.
- Design and implement an asynchronous sequential circuit using JK-Flip Flop which acts as Mod-12 counter.
- To study the Signature Analyzer.
- To study PLA and PAL.
- Design a Sequential Circuit to generate some character.

COURSE NO: COM-508
COURSE TITLE: COMMUNICATION ENGINEERING LAB

List of experiments:
- To study operation of Tuned RF amplifier and plot the frequency response.
- To find the modulation index of an AM Wave.
- To find the demodulation of an AM Wave,and also find the modulating frequency.
- To study the frequency response of the intermediate frequency transforms (IFT).
- To study the frequency modulation.
- To study the sample and hold circuit.
- Hardware realization of ASK modulator and demodulator.

COURSE NO: COM-509
COURSE TITLE: FSD WITH COBOL LAB.

List of experiments:
- WAP in Cobol to find Sum of two nos.
- WAP in Cobol to print a message.
- WAP in Cobol to find the factorial of a no.
- WAP in Cobol to generate Fibonacci series.
- WAP in Cobol to
  - add records into a file.
  - read records from a file.
  - delete records from a file.
  - modify the records into a file.
- WAP in Cobol to sort a file.
- WAP in Cobol to merge two files into one file.
- WAP in Cobol to find largest of five nos.
- WAP in Cobol to sort n nos. in ascending order.
- Example of Sequential file processing with variable and fixed length records.
- An Example of handling indexed sequential files.
- WAP in Cobol on conversion of Centigrade into Fahrenheit.

COURSE NO: COM-510
COURSE TITLE: ELECTRICAL MEASUREMENT LAB.

List of experiments:
- Measurement of R,L and C by using RLC bridge instrument.
- Measurement of resistance by using:
  - Wheatstone bridge
  - Kelvin's double bridge.
- Study of various types of multimeters.
- Demonstration of MC, MI and dynamometer type instruments.
- Measurement of self inductance, mutual inductance and coupling coefficient of:
  - Transformer Windings
  - Air cored Coils
- Extension of range of Ammeter, Voltmeter and Wattmeter using Shunt Series resistance and instr. Transformers.
- Calibration of Single Phase energy meter by:
  - Direct Loading;
  - Phantom Loading at various points
- Calibration of 3 Phase energy meter using standard watt meter.
- Measurement of Capacitance using Schering bridge.
- Measurement of Power Factor at Consumer terminals

- Measurement of Maximum KVA demand of a Consumer.
- Measurement of Frequency using Weinsbridge.
- Measurement of insulation resistance of cable by Megger or Insulation tester.

Semester 6th

COURSE NO: COM-607
COURSE TITLE: MP 8085-Lab.

- Clear a block of memory location
- Add two numbers stored at memory locations & store the result.
- Find the sum of series of data
- Find the largest number in a given series of data.
- Find the smallest number in a given series of data.
- Copy block of data from one set of memory location to another.
- Multiply two 8-bit numbers using repetitive addition method.
- Convert the hexadecimal number into ASCII
- Convert an ASCII number into hexadecimal number.

COURSE NO: COM-608
COURSE TITLE: DBMS LAB

List of experiments:

- Queries in SQL (Structured Query Language)
- Data Defination Language (DDL) e.g. CREATE TABLE
- Data Manipulation Language (DML) e.g. INSERT, SELECT, ORDER BY, DELETE, ALTER, UPDATE, DROP.
  - o Arithmetic & Logical Operations on Tables
  - o Range Searching
  - o Pattern Matching
  - o Sub Queries
- Data Control Language (DCL) e.g. COMMIT, ROLLBACK.

Semester 7th

COURSE NO: COM-705
COURSE TITLE: PROJECT
The students are required to do case study for their major project of 8th semester. The project must be an enhancement of some existing system or implementation of some new system.

COURSE NO: COM-708
COURSE TITLE: MP 8086LAB.

List of experiments:

- To multiply two 16 bit nos to give a 32 bit result.
- To divide a 16 bit number by 8 bit number.
- To transfer a block of data from one set of memory location to another.
- To find largest no. in a given series of data.
- To find the smallest no. in a given series of data.

- To multiply two 8 bit nos. using repetitive addition method.
- To blink 8 LEDS interface to 8086 through 8255 in I/O mapped I/O mode, on and off continuously.
- To rotate a stepper motor connected to 8086 through 8255 in a clock wise and in an anti-clock wise direction.

COURSE NO: COM-709
COURSE TITLE: Computer Graphics Lab

List of experiments:

- WAP for generating a line using
  - o DDA (Digital Differential Analyzer) method.
  - o BRESSENHAM Method.
- WAP for generating a Circle using
  - o Polynomial Method.
  - o Trigonometric Method.
  - o BRESSENHAM Method.
- WAP for Scaling, Rotating, Transformation & Reflecting an Object.
- WAP for sailing of a boat.
- WAP to Generate a Star.
- WAP for filling up of a polygon.
- WAP to clip a polygon.
- WAP to generate the Indian Flag.

Semester 8th

COURSE NO: COM-805
COURSE TITLE: Project

The students are required to make a Literature Survey for their major project and also involve themselves in the initial work of design /fabrication of Hardware Job or software Development job in connection with the same. For this every group is provided with three hours lab every day. The development work is performed in the college lab under the supervision of lecturer, i.e, the project guide.

LIST OF PRACTICAL

DEPARTMENT OF APPLIED ELECTRONICS
&
INSTRUMENTATION ENGINEERING

TRANSDUCER LAB.

Course No.: AEI -407 **Course Title: Transducer Lab.**
Max. Marks: 30

LIST OF EXPERIMENTS

At least eight of the following experiments are to be performed.

1. To study the strain gauge characteristics.
2. To study the characteristics and weight measurement by load cell
3. To study the constructional details of LVDT and its application in thickness measurement.
4. To study the flow measurement by differential pressure type transducer.
5. To study the characteristics of LDR, thermostat and thermocouples.
6. To study the testing and calibration of T,J,K,R and S thermocouples.
7. To study the voltage – intensity characteristics of a photo – transistor
8. To study the ramp response characteristics of filled in system thermometer.
9. To study step response of RTD and thermocouple.
10. To study force and torque transducers.
11. To study the characteristics of photoelectric tachometer.
12. To study the working details of electrical pressure probes.
13. To study Hal Effect Transducer.
14. To study the characteristics of Accelerometer Model.
15. To study the characteristics of Angular potentiometer transducer model.

SOFTWARE LAB

Course No.: AEI-408 **Course Title: Programming Lab.**
Max. Marks: 50

LIST OF EXPERIMENTS

To write following programs in C/C++

1. Using basic statements like control statements, looping statements, Various I/O statements & various data structures
2. Creating classes in C++ for understanding of basic OOPS features
3. Representing concepts of data hiding, function overloading & operator Overloading
4. Using memory management features & various constructors & Destructors
5. Representing inheritance, virtual classes & polymorphism.
6. Writing generic functions.
7. File handling programs.

INDUSTRIAL INSTRUMENTATION

Course No.: AEI-608 **Course Title: Industrial Instrumentation Lab**
Max. Marks: 60

LIST OF EXPERIMENTS

1. Discharge coefficient of orifice plate.
2. Calibration of pressure gauge.
3. Calibration of thermocouple.
4. Calibration of RTD.
5. UV-Visible Spectrophotometer.
6. IR Spectrophotometer.
7. Level transmitter.
8. pH meter standardization and measurement pH values of solutions.
9. Conductivity meter calibration and measurements of conductivity of test solutions.
10. EM flowmeter and ultrasonic flowmeter.
11. Ratio control in combustion laboratory unit.
12. AC/DC meter calibrator.

BIO-MEDICAL INSTRUMENTATION LAB

Course No.: AEI-707 **Course Title: Bio-Medical Instrumentation Lab**
Max. Marks : 50

LIST OF EXPERIMENTS

1. To Study the abnormalities (Tachypnea, Apnea) present in Human Respiratory System.
2. To measure respiration rate of subject (Human body)
3. To measure the heart rate of human body.
4. to observe ECG waveforms of subject (human body) using leads of standard bi-polar leads of configuration.
5. To measure the abnormalities (Tachycardia, Brody-cardio) present in cardiovascular system.

Dept. of I.T.

List of Practicals 3rd Sem

Course Code: IT-304

Course Title: PASCAL PROGRAMMING

1. Working with Integrated Development Environment (IDE).
2. W.A.P that will find area of a right angled triangle.

   or

   W.A.P that will display a message " Welcome To Pascal" on the screen.
3. W.A.P that will find sum and average of three numbers.

   or

W.A.P that will find sum, difference, product and division of two numbers.

4. W.A.P to find greatest of two numbers.

5. W.A.P to accept two numbers from keyboard. If first number is greatest than second then subtract two numbers else add them.

6. W.A.P to find greatest of 3 nos. using nested if.

or

W.A.P to generate series of even and odd numbers u p to N.

7. W.A.P to generate Fibonacci series.

8. W.A.P to check whether number entered is 0, -ve or +ve.

or

W.A.P to accept numbers from user until a negative number is given. Find Sum and Average of given numbers.

9. W.A.P to calculate sum of digits of a 4 digit number.

Or

W.A.P to calculate sum of digits of a given number.

10. W.A.P to display

```
1
1 2
1 2 3
. . . . . .
1 2 3 4 5 6 7 8 9
```

11. W.A.P to display

```
1
2 2
3 3 3
. . . .
9 9 9 9 9 9 9 9 9
```

12. W.A.P to take in 20 elements in an array.

13. W.A.P to add and multiply two matrices.

14. W.A.P to sort a given array using Bubble Sort.

Or

W.A.P to sort a list of names.

15. W.A.P to search a given number from a list of given numbers.

Or

W.A.P to find greatest of four numbers using function.

16. W.A.P to find the sum of diagonal of a matrix.

Or

W.A.P to maintain the personal details of all the students of your group.

17. W.A.P to find transpose of a matrix.

or

W.A.P to add, subtract and multiply two matrices.

18. W.A.P to find greatest and smallest no. from a 1-D array.

Or

W.A.P to find whether a character string is a palindrome.

17. W.A.P to find roots of a quad. equation .

Or

W.A.P to find roots of a Non-linear equation using Bisection and Newton Raphson Method.

20. W.A.P to evaluate 1+3+5+------+N.

Or

W.A.P to sort a given array using Selection Sort

Course Code: IT-305

Course Title: COMPUTER ORGANISATION LAB

1. W.A.P to compare two strings.

Or

W.A.P to sort three nos.

2. W.A.P to read two numbers, add them and display the result.
3. W.A.P to read two numbers, multiply them and display the result.

4. W.A.P to find the average of n numbers in an array.
5. W.A.P to convert lowercase alphabet into uppercase.
6. W.A.P to find average of n numbers using subroutine.
7. W.A.P to compute the factorial of a given number.
8. W.A.P to print the reverse of a string.
9. W.A.P to clear the screen using subroutine.

   Or

   W.A.P to check weather two nos. are equal or not.

10. W.A.P to calculate the number of characters in a given string.

    Or

    WAP in assembly language to print the sum of first 30 nos. or first ‘n’ nos.

Course Code: IT-306

Course Title: FIT LAB

1. HARDWARE LAB

   Study of all the internet components of a computer system (C.P.U, RAM, ROM, I/O PORT, Processor, Bus, Chips, Hard disk, Floppydisk and Drive etc.) and their connections / installation.

2. NETWARE LAB

   i) What is Netware.

   ii) Who is Who in Netware.

   iii) Netware Commands.

   iv) Hardware installation.

   v) Software installation.

   vi) Networking the system (Ethernet, Token Ring, ARCnet).

   vii) Cable type.

   viii) Setting up loginScript and user group.

   ix) Adding security features.

   x) Printing Data in Network.

   xi) Managing Netware Console (Shutting down Netware etc.

3. VISUAL INTRODUCTION TO WINDOWS.

i) Starting, Shutting down Windows.

ii) Study of Desktop, Menu, Icons, Tools, and their access/ function.

iii) Microsoft Office 97 (Word, Excel, Powerpoint).

Course Code: ECE-306

Title: ELECTRONICS LAB

1. To study the characterstics of P-n junction;
2. To study Half Wave, Full Wave, Bridge Wave rectifers;
3. To study the CE and CB Characterstics and find input and output impedence;
4. To study the JKFET Characterstics;
5. To implement the Operational Amplifier as a Comparator;
6. To implement the Operational Amplifier as a Summer and Subtractor;
7. To implement the Operational Amplifier as a Schmitt Trigger;
8. To study the Monostable multivibrator using IC 555 timer;
9. To study the astable multivibrator using IC 555 timer;
10. To implement a voltage regulatory circuit using Zener Diode;
11. To study the Biasing Techniques.

List of Practicals 4th Sem

Course code: IT-406
Course Title: System Software

Implement the following using C program.

1. Introductions :
   A. simple examples
   B. decision control statements/looping

2. Functions:
   A. Call by value/ call by reference.
   B. Recursive functions
   C. Passing an array elements to a function

3. Structure/ Unions
    A. Definition
    B. Array of structure
    C. Array within structure
    D. Passing structure elements to a function
    E. Passing an entire structure to a function

4. Pointers
    A. introduction
    B. distinguish between ‘&’ and ‘*’
    C. pointer to pointer
    D. function returning pointers
    E. dynamic memory allocation function (malloc /calloc /free)

5. File handling.

<u>Course Code:- IT- 407</u>

<u>Course Title:- Data Structure Lab.</u>

1. Familiarity with Turbo C IDE (Integrated Development Environment).

2. C Programs on

    a. Control Statements(alternation)

    b. Control Statements(Repetition)

    c. Arrays

    d. Functions

    e. Structures

    f. Pointers

3. Write a program to search an element from a list of elements using:

    a. Binary Search

    b. Linear Search

4. Write a program to Sort a list of elements using:

    a. Bubble Sort

    b. Selection Sort

    c. Insertion Sort

    d. Merge Sort

    e. Quick Sort

5. Write a program to

    a. Create a Linked List

    b. Insert a node in Liked List at specific location

    c. Delete a desired a Node.

6. Write a program to

    a. Create a doubly linked list

    b. Insert a Node at a desired place.

    c. Delete a desired Node.

7. Write a program to implement a Stack using

    a. Arrays

    b. Push an element on Stack

    c. Pop an element from it

8. Write a program to implement a Stack using

    a. Linked List

    b. Push an element on Stack

    c. Pop an element from it.

9. Write a program to

    a. Create a Queue.

    b. Insert an element in Queue.

    c. Delete an element from it.

10. Write a program to create a Binary Tree

<u>Course Code:- IT- 408</u>

<u>Course Title:- Mini Projects (Systems Analysis & Design).</u>

Q-1 Case Study of Library Automation System

The case Study will be done with the help of Data Flow Diagrams, Pseudo Codes, RDBMS (Access, Oracle) & Front End (Visual Basic & Java)

Course Code:- ECE-405

Course Title:- Data Communication Lab

Q-1 To find the amplitude modulated waveform and to calculate the modulation index.

Q-2 To find the frequency modulated waveform and plot the FM wave for different carrier frequency.

Q-3 To find the S- curve of a FM modulator.

Q-4 To study the transmitter and receiver of a PCM and plot the no. of Bits Transmitted & received.

Q-5 To observe the output waveform of a PAM with the help of a CRO and plot the amplitude & frequency of the modulating, carrier & modulated Signal.

Q-6 To observe the output waveform of a PWM with the help of a CRO and plot the amplitude & frequency of the modulating, carrier & modulated Signal.

Q-7 To observe the output waveform of a PPM with the help of a CRO and plot the amplitude & frequency of the modulating, carrier & modulated Signal.

Q-8 To study the method of error detection and its correction.

Q-9 To observe & plot the output waveform of a ASK.

Q-10 To observe & plot the output waveform of a FSK.

List of Practicals 5th Sem

Course Code:- IT-507

Course Title:- Operating System Lab

* Do Using Assembly / C Programming

1. Scheduling Algorithm
2. First Come First Serve (FIFS)
3. Shortest Job First (SJF)
4. Round Robin Scheduling
5. First Fit Memory Management Technique
6. Best - Fit
7. banker's Algorithm for Deadlock Evidence
8. Paging
9. Segmentation
10. Disk Scheduling algorithm
11. Changing attributes of files

Course Code:- IT-508

Course Title :- Database Lab

1.SQL COMMANDS

A) Data Definition language (DDL)

1. Creating Tables
2. Creating Tables with data from another table
3. Dropping table
4. Altering Definition of a table
5. Using Constraints
6. Dropping a Column
7. Creating Views
8. Inline Views
9. Dropping a view
10. Materialized view

B)Data Manipulation Language (DML)

1. Inserving values into a table
2. Updating columns into a table
3. Deleting rows from table
4. manipulating base tables through views
5. Querying a table
    a) Conditional retrieval of rows
    b) Ordering result of a query
    c) Grouping result of a query

6. Querying Multiple Tables

   a) Equi Joins

   b) Cartesian Joins

   c) Outer Joins

   d) Self Joins

   e) Union Operator

   f) Intersect Operator

   g) Minus Operator

   h) Nesied Queries

C) Transation Control Language

1. Database security & Priveledges
2. Grant Command
3. Revoke
4. Commit
5. Rollback

D) PLSQL

1. PLSQL block structures
2. SQL with PL/SQl
3. Writing PL/SQL Code
4. Cursor Management In PL/SQL
5. Exception Handling in PL/SQL
6. Subprocess in PL/SQl
7. a) Procedure b) Function
8. Stored Packages

9.Trigger

10.Working with objects

E Working with method

F Working with Large objects

G Using Collection

H Data portioning & parallel & parallel processing

Course Code:- IT-509

Course Title:- Microprocessor Lab

* Above experiments are to be done on MASM & 8086 Trainer Kit

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1. WAP in Assembly Language 8085 to add two 8 bit number
2. WAP in Assembly Language 8086 for 8 bit addition
3. WAP in Assembly Language 8086 for 16 bit addition
4. WAP in Assembly Language 8086 to divide a given number
5. Interface of relay kit with CPU
6. Communicator through Rs 232 C Cable
7. Interface of LED's & seven segment display together
8. WAP in assembly Language to find whether number is even or odd
9. WAP in assembly language to convert from HEX. To BCD

   Or

   WAP in assembly language to convert from BCD To HEX.

   Or

   WAP to find the length of the string & show it.

10. Study of different motherboards having processors like 286,386,486
11. Study of different signals from parallel ports of CPU
12. Status reading of different signals from printer
13. To study arithmetic logic unit of a processor

Course Code:- IT-510

Course Title :- Computer Networks Lab

1. Study of any network operating system
2. Study of various Protocols
3. Study of various Network Topologies
4. Installation of Network Operating System
5. Administration of NOS
6. Implementation & Administration of Network
7. Study of bridges, switches, Hubs, Routers, Gateways etc.
8. Concept of fault Tolerence in network
9. Study of Client / server environment

List of Practicals 6^{th} Sem

Course Code:- IT- 607

Course Title:- Operating System – II Lab

1. Installation of Network OS

    a) Software Installation

    b) Services Installation

    c) Protocol Installation

    d) (Server)

i. (Information Server) / web

ii. (Backup Server)

iii. (Standalone Server)

iv. (Member Server)

    e) WorkStation

i. Win NT

ii. Win 95

2. Administration

    i. User Management
    ii. File management
    iii. Device Management

3. Fault Tolerance

    i. Mirrioring
    ii. RAID

4. Back Up

   Installation of CTD

   a) Administration

5. Groupware

Course Code:- IT-608

Course Title:- Computer Graphics Lab

Software Requirement: C or C++ Complier

Hardware Requirement: P-IV with complete Multimedia

1. WAP to generate a line using DDA.

2. WAP to generate line using Bresenham line algorithm.

3. WAP to move a pixel along the screen.

   Or

   WAP to generate Circle

4. WAP to generate Morque of your name.

   or

   WAP to generate square

5. WAP to translate a square.

   Or

   WAP to animate a square

6. WAP for rotation of a triangle.

7. WAP for rotation of a rectangle.

   Or

   WAP to generate rectangle

8. WAP for rotation of a triangle using homogenous coordinates.

Or

WAP to generate bar-chart

9. WAP to draw a menu bar.

Or

WAP to generate ellipse

10. WAP to set the viewport.

Or

WAP to generate triangle

or

WAP to create a marker

11. WAP to fill a line

or

WAP to generate pie- chart

12. to generate multiple figures

or

WAP for menu driven options

Course Code:- IT-609

Course :- Simulation and Modelling

1. W.A.P. to model a DEMULTIPLEXER

2. . W.A.P. to model a MULTIPLEXER

3. Simulation Of PURE PURSUIT problem using C as a simulation language

4. Simulation of Random Number Generation function

5. Simulation Of a Chemical Reactor using C as a simulation language

6. Simulation Of a Single Sever System for studying the queuing Problem using C as a simulation language

7. Simulation Of a Two Sever System for studying the queuing Problem using C as a simulation language

8. Study Of GPSS

a) Block Symbols

i. GENERATE

ii. TERMINATE

iii. ADVANCE

iv. SEIZE

v. RELEASE

vi. ENTER

vii. LEAVE

viii. QUEUE

ix. DEPART

x. ASSIGN

xi. MARK

xii. SAVE VALUE

xiii. TRANSFER

xiv. TEST

xv. TABULATE

Course Code:- IT-610

Course Title :- Internet Lab

1) Study of internet surfing of internet services

2) Brief introduction of Hyper text markup Language

3) Using different options of internet browser

4) Entering URL Reload, print & finding text in webpages

5) Clearing Cache files, Add, remove & edit favorites

6) Use of search engines & search query

7) Complete study & programming of HTML to create webpages

8) Creating an e-mal account sending & receiving of e-mail messages & attachment

9) Understanding rules of Online

10) Practicals of various communication tools such as chatting, Voicemail, Videoconferencing

Rules & precautions to provide security to your website

List of Practicals 7th Sem

Course Code:- IT- 706

Course Title:- Software Engineering Lab

1.Case studies of real time applications

2. Designing database & front ends for small applications

3. Preparation of

I. Test plans

a) SRS

b) Unit test plans

c) System test cases

d) Application Test Plans

4. Prepare report on analysis & design for simple application with respect to concepts of software engineering.

Course Code:- IT-707

Course Title:- Database Application Design

1) Review of SQL Command

i. Create

ii. Insert

iii. Delete

iv. Alter

v. Update

vi. Drop

vii. Union

viii. Intersection

ix. Join

x. Some aggregate functions

xi. Grant/ Rollback /Commit

xii. Revoke

2) Normal forms for relation schemes

3) Sub queries

4) PL/SQL (Cursors). All conditional statements & loops

5) Revision of views

6) Procedure

7) Database Triggers

8) Security in QBE & security in statistical database

9) Concurrent operators in Database

10) Distributed Database System like management of deadlock

11) Database Administration

Course Code:- IT-708

Course Title:- Object Oriented Programming & Methodology

Implement following using C++

1) Classes & objects / Inline function

2) Constructor

3) Default Constructor

4) Palemeterized Constructor

5) Copy Construction

6) Destructor

7) Single Inheritance / Abstract class

8) Multilevel Inheritance

9) Multiple Inheritance

10) Hybrid Inheritance

11) Virtual Base Class

12) Virtual function

13) Polymorphism

14) Concept of files

Course No. : Eng 110

Course Title : Workshop Theory and Practice

Course Content

Introduction of Workshop as a fundamental fabrication unit. Information regarding various materials of construction i.e. Ferrous and Non-Ferrous metals; Wood, Plastics etc. Basic fabrication processes i.e. Castings, Mechanical working. Welding and Machining.

Wood working and pattern making practice. Information about wood. Hand tools and wood working machines. Various methods of joining of wood parts for the fabrication of patterns. Pattern materials and allowances; pattern construction procedures. reservation of Patterns.

Moulding and casting practice. Sand moulding. Natural Foundry sand; Synthetic sand. Preparation of moulding sands. Mould making procedures. Cast iron and Aluminum melting in crucible and pouring. Extraction of Castings.

Cold and Hot working process. Basic tools and equipment used in mechanical working. Forging; Furnaces operation. Smith forging operations.

Books Recommend:

1. Campbell : Manufacturing Processes and Material
2. P.N.Rao : Manufacturing Processes (Tata McGraw Hill)
3. Hajri&Chowdri : Workshop Technology Vol. I (Media Promoters & Pub)
4. B.S. Raghuwanshi : Workshop Technology Vol I (Dhanpat Rai & Co.)
5. V.Kapoor : Workshop Practice manual (Dhanpat Rai & Co.)
6. R.K.Kapur, P.K.Sapra : Manufacturing Technology-I (Vikas Publishing house, Delhi)

Shop Practice

Unit I: Pattern Making

(i) Bearing Block Pattern

(ii) Bench Vice Pattern (Sliding Jaw)

Unit ll: Moulding & Casting

Moulding & Castings of pattern at Unit I

Unit III: Hand Forging of

(i) Hexagonal Headed bolt and nut from cylindrical rod.

(ii) Cubical block from a cylindrical section.

SUBJECT: ENGINEERING PHYSICS LAB - I

Course No. : Eng 107

List of Experiments

1. To plot a graph between the distance of knife edges from the centre of gravity and the Time Period of a Compound Pendulum. Find from the graph:

i. (a). Acceleration due to gravity

ii. (b). The radius of the gyration & moment of inertia of the bar about an axis through the centre of gravity.

2. To find the frequency of A.C mains using an Electrical Vibrator.
3. To determine focal length of a convex mirror using a convex lens.
4. To determine focal length of a concave lens using a concave mirror.
5. To find the angle of given prism using a spectrometer.
6. To find the despersive power of a given prism using a spectrometer.
7. To find refractive Index of a given liquid using a hollow prism/glass prism.
8. To find the wavelength of Sodium Light by Newton's rings apparatus.

SUBJECT: ENGINEERING CHEMISTRY LAB - I

Course No. : Eng 108

List of Experiments

1. Estimate the strength of a given sample of $KMnO_4$ solution in gm/l. Prepare a standard solution of 0.05 N Mohr's Salt.
2. Estimate the volumetrically the strength of a given Ferrous ammonium sulphate solution. You are provided with N/20 $K_2Cr_2O_7$ solution.
3. To determine
   a) Phenolphthalein alkalinity;
   b) Methylorange alkalinity of a given sample of water.
4. To determine free chlorine in a given sample of water.
5. To determine the coefficient of viscosity of the given liquid at room temperature using Ostwald's Viscometer.
6. To determine the surface tension of the given liquid at room temperature using stalagmometer.
7. To determine the rate constant and order of reaction for the hydrolysis of an ester (ethylacetate) in pressure of 0.5 N HCl.
8. To determine the velocity constant of hydrolysis of ethylacetate by sodium hydroxide.
9. To study the Kinetics of chemical reaction between sodium thiosulphate and hydrochloric acid.
10. To determine volumetrically percentage of copper in a sample of CuSo4. You are provided with 0.05 N sodium thiosulphate solutions.

<u>SUBJECT: ENGINEERING MECHANICS LAB</u>

Course No. : Eng 109

1. To find the Mechanical Advantage, velocity ratio and percentage – efficiency of a single purchase winch crab
2. To find the Mechanical Advantage, velocity ratio and percentage – efficiency of a double purchase winch crab
3. To find the Mechanical Advantage, velocity ratio and percentage – efficiency of a worm and worm-wheel.
4. To verify parallelogram law of the forces using force board apparatus.
5. To find the coefficient of friction between two surfaces i.e. glass and wood on an inclined plane
6. To find the coefficient of friction between the two surfaces i.e. glass and steel roller on an inclined plane.
7. To find reactions at supports in case of a Simply Supported Beam
8. To verify Lami's theorem using Jib Crane apparatus.
8. To find the moment of Inertia in case of a Fly- Wheel.

Course No. : Eng 206

Course Title : Machine Drawing

Machine Drawing - I

1. I. S. Code for Machine Drawing
2. Types of section and recommended scale, dimensioning and sectioning of machine elements.
3. Drawing and Sketching of machine elements in Orthographic projections.
4. Different types of joints. Threaded fasteners, joints for rods and plates.
5. Pipe joints, including expansion pint.
6. Shaft pulleys, fast and loose pulley etc.
7. Simple assemblies : Shaft couplings and clutches, Redostal Bearing including Hanger Bearings, pivot bearing and swirel bearing.

Note : Four questions, one major and three minor questions.

<u>References:</u>

1. P.S.Gill : M/C DRAWING
2. Pariliuson : M/C DRAWING Vol - I
3. Siddeshwar and Kannaih : M/C DRAWING
4. N. D. Bhat : M/C DRAWING

Course No. : Eng 207

Course Title : Workshop theory and Practice

Course Content:

welding as a fabrication process, We'dability, Welding application and general safety precautions, welding processes Gas welding (Oxy-Acetylene). Manual Metal Arc Welding. Type of welded joints, gas welding equipment Gas welding procedures, Arc welding equipment. Arc initiation and Manual Arc Welding Practice.

Sheet metal technology, basic tools and equipment, forming of sheet *metal* joints, practice of making regular geometrical and transitional shapes in sheet metal. Assembly and fitting of machine elements under required grade of fit Basic tools and equipments used in fitting operation Basic grades of fitting. Use of neasuring instruments micrometer, vernier calliper. Hight and depth guages, since bars etc.

Functional exposure and demonstration of basic machine tools-Lathe, Shaper, Drilling M/C, Surface Grander, Milling M/C etc.

Books:

1. Campbell - Manufacturing Processes and Materials
2. P. N. Rao, - Maunfacturing processes
3. R. S. Parmar - Wilding Technology (Little / Khanna)

4. Hajra and Chowdry - Workshop Technology

Shop Practice:

Unit-1	Welding	1.	Single V- flat welds (gas & arc).
		2.	Circular weld (arc and gas fillet).
Unit - II	Sheet Metal	1.	Funnel making
		2.	T-Joint (square pipe)
		3.	Transition piece in between square and circular sections.
Unit - III	Fitting	1.	Fitting of a square in square hole.
		2.	Dove-Tail fitting,
Unit- IV	Machine	1.	Study of various Machine Tools

SUBJECT: ENG. PHYSICS LAB

<u>Course No.: ENG 208</u>

Course Title : Engineering Physics Lab-II

<u>List of Experiments:</u>

1. To find the wavelength of Sodium light using Fresnel's biprisim.
2. To determine the wavelength of Sodium light using plane diffraction grating.
3. To determine the specific rotation of sugar using Laurent's half shade Polarimeter.
4. To determine the specific resistance of Copper with the help of Kelvin's double bridge.
5. To find the co-efficient of self-induction of a coil by Anderson's method by using head phone.
6. To determine the value of e/m for electron by long solenoid (Helical method)
7. To determine electric charge by Milikan's method.
8. To draw the V-I characteristics of a P-N junction diode.
9. To study common base characteristics of a P-N-P junction transistor.
10. To study common emitter characteristics of a P-N-P transistor.
11. To find the diameter of a thin wire using He-Ne gas laser.
12. To find the wavelength of He-Ne gas laser

SUBJECT: ENG. CHEMISTRY LAB-II

CODE: ENG 209

<u>List of Experiments:</u>

1. Detection of elements in a given Organic compound. (Three experiments)
2. Identification of an organic compound by analyzing it for its elements, functional groups, derivatives, confirmatory tests and melting points.

3. Identification of compound to be done:

i. Amines (a) Aniline

ii. Amides (a) Urea (b) Benzamide (c) Acetamide.

iii. Carboxylic Acids (a) Oxalic Acid (b) Benzoic Acid (c) Salicylic Acid.

iv. Phenols (a) Phenol (b) b-naphthol

v. Carbohydrates (a) Glucoses

4. Preparation of following organic compounds:
   - i. Preparation of Glucosazone
   - ii. Preparation of Acetanilide
   - iii. Preparation of Iodoform.

5. Determination of melting points using electric melting point Apparatus.
6. Determination of Boiling point of a liquid using Thiele's tube.
7. Determination of hardness of water by EDTA method.
8. Determination of hardness of water by soap titration method.

SUBJECT: COMPUTER PROGRAMMING LAB

Course No: ENG-210

1 DOS Commands (Internal & External)

2. Flow Charts
3. Basic Programming
   - i. Simple Programs
   - ii. Programs using loops, control structures
   - iii. Programs using strings, arrays, functions & subroutines.
4. Fortran Programming
   - i. Simple programs
   - ii. Programs using loops, control structures
   - iii. Programs using strings, arrays, functions & subroutines

Code. : M-301

Course Title : ENGINEERING THERMODYNAMICS LABORATORY

1. To study the p-v diagram of real gases in compression with Ideal gases.
2. To study steam Boilers and their accessories.
3. To find out the Dryness fraction of steam using Throttling Calorimeter.
4. To find the C.O.P of Refrigerator and Heat pump.
5. To find out the efficiency of Steam Nozzle.
6. To find out the work done by an I.C engine.

Code. :M- 302

Course Title : FLUID MECHANICS LABORATORY

1. To find the metacentric height of the floating pantoon.
2. To verify the Bernoulli's equation.
3. To find out the co-efficient of discharge using Venturimeter, Orficemeter and Pitot tube.
4. To study the regimes of flow using Reynolds apparatus.
5. To find out the viscosity of a fluid using Redwood viscometer.
6. To find out the friction factor of a pipe and compare the resistance to flow in various pipes.
7. Discharge through notches.
8. To find out losses in pipes

Code. : M-304

Course Title : MECHANICS OF SOLID LABORATORY

1. To conduct the tensile test on M.S specimen and draw the load diagram using a U.T.M
2. To conduct the compression test and draw the compression diagram using a U.T.M
3. To conduct bending test for various loading.]
4. To find the hardness od specimen using:-

i) Rockwell Hardness Tester.
   ii) Brinell Hardness Tester.
   iii) Vickers Hardness Tester.

5. To conduct Izod and Charpy tests on a notched M.S Specimen.
6. To conduct Torison test on different specimens.

Code. : M-306

Course Title : THEORY OF MACHINES
LABORATORY - I

1. Study various types of cams and followers.
2. Study of various types of gear trains.
3. Study of various types of governors.
4. Study of gearbox.
5. Study of quick return mechanism.
6. Study of Whitwoth-quick returns mechanism.

Code. : M- 307

Course Title : WORKSHOP PRACTICE-I

1. To discuss the working mechanism of machine tools namely:- Centre Lathe, Shaper, Planer, Drilling Machine and the operation performed on these machine tools.
2. Drilling Machine and the operations performed on the machine tools.
3. Cutting tools employed with their tool holders.
4. Practical exercises on:-
   a) Straight turning, taper turning, facing , grooving, parting, threading etc., selection of feed, depth of cuts and cutting speeds.
   b) Surfacing on a shaper and planer, cutting of inclined surfaces, ‘V’ grooves (External and Internal)
   c) Drillings of holes (Through and Blind). Use of different types of drills for different operations.
   d) Use of gauges and instruments for inspection in the above operations.

Course No. : EE-410

Course Title : ELECTRICAL ENGINEERING Lab

1. Verification of “Kirchoff’s Voltage Law”.
2. Verification of “Kirchoff’s Current Law”.
3. Verification of Thevenin’s Theorem.
4. Verification of Superposition Theorem.
5. Series Resonance.
6. To study a single-phase transformer, its voltage ratio and turns ratio relationship.
7. To study various parts of induction motor.
8. To study the torque/speed characteristics of D.C series motor using various field tapping.

Course No. : M-401

Course Title : HEAT TRANSFER LAB

1. To find the thermal conductivity of a given insulating powder
2. To study thermal conductivity of liquids by guarded hot plate method.
3. To determine the Emissivity of a test plate.
4. To determine the Stefan Boltzman constant and study the effect of hemisphere temperature on it at different temperatures.
5. Determination of temperature distribution across the width of the composite wall & over the thermal conductance.
6. Determination of Thermal Conductivity of a poor conducting material.
7. To study the temperature distribution along the length of fin in both free & forced convection.
8. To determine average surface heat transfer coefficient for a pipe, losing heat by forced convection.
9. To calculate the following for both parallel & counter flow arrangements.
   a) To find the rate of heat transfer.
   b) To calculate the L.M.T.D
   c) Overall Heat Transfer Coefficient.

Course No. : M-402

Course Title : METALLURGY & MATERIAL SCIENCES LAB

1. Determination of tensile strength of a given steel sample.
2. Hardness testing of
   a) Ferrous
   b) Non-Ferrous alloy

   With the available methods such as;
   i) Brinell Hardness Testing.
   ii) Rockwell Hardness Testing.
   iii) Vickers Hardness Testing.
3. Impact Testing of a given steel sample(both Izod and Charpy Tests).
4. Preparation of Specimens of micro-structural studies.
5. Study of microstructure of steel and cast iron under:
   i) Optical microscope.

Course No. : M-404

Course Title : THEORY OF MACHINES-II - Lab

1. To find the Gyroscopic effect of a rotating disc.
2. To determine:
   i) Static balancing of system using steel balls.
   ii) Dynamics balancing of a simple rotating mass system.
   iii) Effect of unbalance in a rotating mass system
3. Observation of the pressure profile of various conditions of load & speed.
   i) Plotting the Cartesian & Polar pressure curves.
   ii) Plotting the theoretical sommerfield.
4. Slip & Creep measurement.

   To measure co-efficient of friction between pulley material & different belt materials.
5. For all types of governors:
   a) Determination of characteristics curve of sleeve position against speed of spindle.
   b) Portal & Proell Governor:- Effect of varying mass of sleeve.
   c) Hartnell Governor:- Effect of varying initial spring compression.

6. Generation of involutes gear teeth profile on board model.
7. To study the phenomenon of whirling of shafts.
8. To study journals bearings.
9. To study the Corrolli's component of acceleration.
10. To determine the holding torque in Eppicyclic gear train (Internal & External).

Course No. : M-405

Course Title : AUTOMOTIVE MECHANICS LAB

1. To study:-
   a) 4 – Stroke Petrol/Diesel Engine.
   b) 2 – Stroke Petrol/Diesel Engine.
2. To study different types of Bearings:-
   a) Ball Bearing.
   b) Cylindrical Roller Bearing.
   c) Taper Roller Bearing.
   d) Needle Roller Bearing.
3. To study different types of Carburetor.
4. To study fuel pump.
5. To study different types of clutches:
   a) Single Plate Clutch.
   b) Diaphragm Clutch.
6. To study Gearbox.
7. To study different types of Brake Assembly.

a) Disc

b) Drum

8. To study the power transmission in an Automobile.

a) Universal Joint.

b) Propeller Shaft.

c) Differential Gear Box.

9. To study the suspension system of an Automobile.

a) Leaf Spring.

b) Coil Spring.

Course No. : M-505

Course Title : APPLIED THEORMODYNAMICS LAB-I

1. Study and Analysis of various types of boilers.
2. Heat balance in boilers.
3. Combustion analysis by Orsat Apparatus.
4. Experiments on Steam Nozzles.
5. Study and Performance of Steam turbine.

Course No. : M-506

Course Title : FLUID MACHINERY LAB-I

Study and Analysis of:-

Pelton Wheel.

Francis Turbine.

Kaplan Turbine.

Performance and Analysis of:-

Positive Displacement pumps.

Rotodynamic pumps.

Course No. : M-507

Course Title : WORKSHOP PRACTICE-II

UNIT-I

To Study the working mechanism of the machine tools namely:

Capstan and Turret lathes, Milling machine and Grinding machine, Operation performed on these machines. Cutting tools employed i.e., S.P Tools, Cutters of different forms. Grinding wheels of different shapes including their holders.

Practical operations and working exercise on: Capstan Lathe, Selection of tooling, Process planning chart examination, Machine of a spindle with multiple operations on Capstan/Turret Lathe.

Exercise on face milling and peripheral milling, Use of dividing head for gear cutting operations, Both surface and cylindrical grinding.

Course No. : ECE-518

Course Title : ELECTRONICS LAB

Study of Rectifier circuits:

Half Wave & Full Wave Centre tap.

Bridge rectifier & to observe the rectified waveform on CRO with or without using capacitor filter circuit.

Study of Zener Diode as constant voltage source.

Study of Common Emitter Amplifier.

Verification of truth table of different digital ICs.

Study of Flip Flops (JK & SR).

Study of Counters.

Study of Op-amps using 741 chip as

Adder

Subtractor

Inverter

Comparator.

Study of SCR characteristics.

Course No. : M-601

Course Title : APPLIED THEORMODYNAMICS Lab-II

a) Study of multi-cylinder Petrol engine.

b) Heat balance of the engine.

c) A/F ratio variation with load.

d) Morse test.

e) Valve timing diagram.

1. Study and performance of two-stroke engine.
2. Determination of Calorific Value of gaseous fuel.
3. Study of domestic refrigerator, room air-conditioner & Central Air-conditioning unit.
4. Study and performance of ice plant.
5. To find the C O P of a refrigerator unit on a refrigeration tutor.
6. To find volumetric efficiency & Isothermal efficiency of an air compressor and to draw various performance
7. Characteristics curves.

Course No. : M-602

Course Title : FLUID MACHINERY LAB-II

1. Study of Gas Turbine Plant.
2. Study of performance.
3. Study of effect of wall friction on flow parameters in constant area duct.
4. Study of shock waves in converging & diverging nozzles.

Course No. : M-603

Course Title : INDUSTRIAL ENGINEERING LAB-I

Micrometer study using Gantt. Chart.

Study of different types of process charts.

Calculation of observed Normal and Standard time for an operation using stop watch by:-

a) Continuous timing. b) Snap-back timing.

To study the process capability of a machine.

Study and use of Therblings in describing an operation and for motion economy.

Course No. : M-604

Course Title : PRODUCTION ENGINEERING LAB

1. Working mechanism of an automat
2. Working mechanism of NC Machine tools. Part programming for a job on NC Lathe/NC Drilling/Milling Machine.
3. Estimation of torque and power on drilling, milling and a central lathe.
4. To study the measuring tools and inspection tools i.e. comparators, gauges of different forms and their use, surface finish and its measurement.
5. To find out the accuracy of a machine product.

NOTE:-

Experiment to be conducted in a Production Engineering Lab and Metallurgy Lab.

Course No. : M-606

Course Title : ELECTRONICS MEASUREMENTS & INSTRUMENTATION LAB

1. To measure the harmonic distortion in output of function generator.
2. To study the working of Analog Multimeter as Voltmeter, Ammeter and Ohmmeter.
3. To study the working of Digital Multimeter as Voltmeter, Ammeter and Ohmmeter.
4. To study the working of Digital frequency counter.
5. To measure strain using Strain Simulators.
6. Measurement of temperature with various types of temperature sensors.
7. To study the constructional details of LVDT.
8. Measure of Linear Displacement using LVDT.
9. Measurement of frequency and phase of input signal in CRO using:
   i) Lissagious Pattern
   ii) Dual trace facility on Oscilloscope
10. Study of Vertical Amplifier; Horizontal Amplifier and time base characteristics of CRO.

Course No. : M-701

Course Title : CAD, CNC AND ROBOTICS lab.

1. Study of the CAD workstation on various components including the various types of input and output devices.
2. Study of the drafting like Auto CAD (Release 14 or latest version) and the Microsoft VIRTUAL DRAW/DESIGNER/RENDEREER and
3. Simple exercises of drawing through the same packages-two dimensional drafting and three dimensional modeling.
4. Working mechanism of NC machine tools, Part programming for a job on NC/CNC lathe, drilling and milling machine.
5. Working mechanism of an Automat.
6. Exercise on manual part-programming for CNC machines like turning center and the end mill Cutter, Use of various codes.
7. Simulation of the cutting process and determination of the tool-path graphics using simulation packages fort he above cutting processes.

LIST OF EXPERIMENTS IN ELECTRICAL ENGINEERING DEPARTMENT

COURSE TITLE : ELECTRICAL WORKSHOP.

COURSE CODE:- EE-303

1. Familiarization with the safety precaution &electrical signs/symbols.

2. Study of various tools used by an electrician.

3. Study of different wires and cable.

4. To make a T-joint of 1/18 S.W.P wire.

5. To make a T-joint of 3/20 S.W.G P.V.C wire.

6. To make a T-joint OF 7/20 S.W.G P.V.C wire.

7. To make a simple twist straight joint of 1/18 S.W.P P.V.C wire.

8. To make a simple twist straight joint of 3/20 S.W.P P.V.C wire.

9. To make a married joint of 7/20 S.W.G P.V.C wire.

10. To make a joint of P.V.C cable using thimbles.

11. Study of various method of earthing and measurement of earth resistance using earth tester.

12. Study of various types of wiring system accessories.

13. Control of fluorescent tube circuit.

14. Power and ordinary lighting circuit suitable for domestic wiring.

15 cost estimation for wiring of a single storied building
.

16. Familiarization with various electronics components, resistor, capacitor, transistors, diodes, IC'S transformers.

17. Assembly of single phase full wave bridge rectifier circuits with capacitor filter.

18. Assembling the CE amplifier circuit.

19. Assembling the following circuits comprising on its on abread board.
   (a) timer ckt. Using IC 555
   (b) phase shift oscillator using OP amp.
   (c) J.K Flip Flop using NAND gate.

LIST OF EXPERIMENTS IN ELECTRICAL ENGINEERING DEPARTMENT

COURSE TITLE :BASIC ELECTRICAL ENGG.LAB.

COURSE CODE:- EE-304

1. Verification of kirchoff's theorem.

2. Verification of superposition theorem.

3. Verification of reciprocity theorem.

4. Verification of thevenin's theorem.

5. Verification of maximum power transfer theorem.

6. Measurement of current in various branches of RLC series –parllel circuit and verification of same by calculation.

7. Study of voltage-current relationship of a series RLC circuit & obtaining series resonance,bandwidth,quality factor.

8. Single phase power measurement by using wattmeter.

9. Study of 3-phase A.C circuits with :-
(a) star connected load (b) delta connected load.

10. study of a single phase transformer determination of voltage ratio,turns ratio and polarity test.

11. Open circuit and short circuit test for a single phase transformer determination of regulation and efficiency.

12. Determination of power factor of RLC A.C circuits.

13. To observe the B-H loop of ferro-magnectic core material on CRO

14.To observe the wave shape of an alternating supply on CRO and to measure its phase,frequency,timeperiod and amplitude.

COURSE TITLE:-ELECTRONICS-1 lab

COURSE CODE:- ECE-403

1. Operating characteristic of a P-N Diode/Zener Diode

2. Half wave/full wave rectification using semi conductor diode.

3. Operating characteristics of a PNP/NPN transistor.

4. Determination of hybrid parameters for a given transistor.

5. Transistor ckt. as an amplifier

6. Frequency response of a common emitter amplifier

7. Classification of amplifier – class (A) amplifier

8. Classification of amplifier – class (B) amplifier

9. Classification of amplifier – class (C) amplifier.

LIST OF EXPERIMENTS IN ELECTRICAL ENGINEERING DEPARTMENT

COURSE TITLE : ELECTRICAL MACHINE .LAB.

COURSE CODE:- EE-406

1. To study the cut-section model of D.C shunt motor.
2. To study the dc motor starter.
3. To determine the operating characteristics of dc shunt generator.
4. To determine the operating characteristics of dc series generator
.
5. To determine the no-load characteristics of dc shunt generator.
6. Speed control of dc series/shunt motor.
7. To determine the no load ,full load, &efficiency of a given single phase transformer
8. To determine the operating characteristics of d.c compound generator.
9. Swimburn's test on d.c motor.

LIST OF EXPERIMENTS IN ELECTRICAL ENGINEERING DEPARTMENT

COURSE TITLE : ELECTRICAL MEASUREMENT .LAB

COURSE CODE:- EE-407

1. Measurement of resistant using voltmeter ammeter method.
2. Measurement of resistant using Wheat stone bridge.
3. Measurement of resistant using Kelvin Double Bridge.
4. Measurement of resistant, inductance & capacitance using LCR-Q meter.
5. Measurement of Self Inductance of coil using Anderson Bridge.
6. Measurement of capacitance using Schering Bridge.
7. Measurement of Power, power factor and its improvement.
8 Extension range of ammeter & voltmeter using shunt & series resistance.
9. Demonstration of moving coil, moving iron & dynamometer type instrument

LIST OF EXPERIMENTS IN ELECTRICAL ENGINEERING DEPARTMENT

COURSE TITLE : CONTROL SYSTEM LAB

COURSE CODE:- EE-408

1. Transient response of second order control system comprising RLC finding maximum overshoot, resistance, setting time, damping ratio factor, natural underdamped frequency.

2 .Frequency response of second order system comprising RLC and draw the bode plot system phase plot and magnitude plot.

3. Frequency response of second order system comprising RLC and draw the bode ,phase and magnitude plot.

4 To find the torque speed, torque voltage characteristic of a servo motor and determined its transfer function.

5. Study of synchronous transmitter, receiver and control transformer, voltage angular wave forms.

6. To study the operation characteristic of a small stepper5 motor.

7. Study of phase lag and phase lead net works.

8. To simulate a second and higher order system on an analog simulator and find its transient response to stop ramp and other input functions.

9.Synchro as error detector and torque transmitting device.

10. Study of a demonstration servo system (both open &close loop) comprising error detector, amplifier, and a motor cum load having a techo feed back.

<u>LIST OF EXPERIMENT CONDUCTED IN POWER ELECTRONIC LAB-7</u>

COURSE NO:-EE-607

COURSE TITLE: - POWER ELECTRONICS.

1 Study of SCR Characteristics

2 Study of Drain characteristics of MOSFET (a) Depletion & Enhancement mode.

3 Study of TRIAC characteristics

4 To study the (a) static characteristics of Diac (b) Dynamic characteristic of Diac.

5 Study of (a) characteristic UJT (b) Operation of UJT as a relaxation oscillator
.

6 Study of (a) R-firing ckt. (b) RC half wave firing ckt.(c) RC Full wave firing ckt

7 Study of Turning on of SCR using Gate trigging.

8 Study of ac phase control using TRIAC & DIAC

9 Study of (a) half wave phase control using SCR ckt. (b) Full wave phase control Using UJT and pulse transformer.

10 Study of (a) resonant commutation (B) Auxiliary commutation (c)Self commutation

11 Study of (a) complementary commutation (b) external pulse commutation

12 Study of Morgan chopper ckt
.
13 Study the speed control of dc motor in open lope configuration using SCR

14 Study of parallel inverter ckt.

15 Study of (a) static ac ckt. Breaker (b) static dc ckt. Breaker.

16 Study of speed control of Dc motor using Diac and Triac

17 Study of Jones chopper ckt

18 Study of Half controlled converter using SCR with RL load

19 Study of Single phase inverter control using IGBT & MOSFET Modulex.

20 Study of Series inverter ckt.

<u>LIST OF EXPERIMENT CONDUCTED IN </u>POWER SYSTEM LAB

COURSE NO:- EE-609

COURSE TITLE POWER SYSTEM

1 Study of induction disc type over current relay

2 To plot the time current characteristics of an over current relay

3 To plot the operating characteristics of percentage differential relay

4 To plot the operating characteristics of static over current relay

5 To plot the operating characteristics of a given MCB

6 To plot the operating characteristics of an impendence / mho type of distance relay

7 To Study the various parts of a Buchholz relay

8 To Study the various parts of a given air ckt. Breaker

9 To Study the various parts of a given oil ckt. Breaker

10 To study the grounding system provided in the lab.

LIST OF EXPERIMENTS IN ELECTRICAL ENGINEERING DEPARTMENT

COURSE NO: EE-709

COURSE TITLE: POWER SYSTEM-11

1 Study of induction disc type over current relay

2 To plot the time current characteristics of an over current relay

3 To plot the operating characteristics of percentage differential relay

4 To plot the operating characteristics of static over current relay

5 To plot the operating characteristics of a given MCB

6 To plot the operating characteristics of an impendence / mho type of distance relay

7 To Study the various parts of a Buchholz relay

8 To Study the various parts of a given air ckt. Breaker

9 To Study the various parts of a given oil ckt. Breaker

10 To study the grounding system provided in the lab.

LIST OF EXPERIMENTS IN ELECTRICAL ENGINEERING DEPARTMENT

COURSE NO: EE-806

COURSE TITLE: POWER SYSTEM-111

1. Load Flow analysis of a given power system by G S Technique.
2. Load Flow analysis of a given power system by N R Technique.
3. Fault analysis of a given power system.

DEPARTMENT OF APPLIED PHYSICS

SUBJECT : ENGINEERING PHYSICS LAB - I

List of Experiments

1. To plot a graph between the distance of knife edges from the centre of gravity and the Time Period of a Compound Pendulum. Find from the graph:
   (a). Acceleration due to gravity
   (b). The radius of the gyration & moment of inertia of the bar about an axis through the centre of gravity.
   To find the frequency of A.C mains using an Electrical Vibrator.
   To determine focal length of a convex mirror using a convex lens.
   To determine focal length of a concave lens using a concave mirror.
   To find the angle of given prism using a spectrometer.
   To find the dispersive power of a given prism using a spectrometer.
2. To find refractive Index of a given liquid using a hollow prism.
3. To find the wavelength of Sodium Light by Newton's rings apparatus.

LIST OF EXPERIMENTS (1st semester Non-I.T)

EXPERIMENT No	AIM
1.	A partially rusted iron nail weighing 0.95 gm was boiled in excess of dilute sulphuric acid. The reaction mixture was then cooled to room temperature, filtered and made upto one litre. Determine the percentage of corrosion of the iron nail. You are provided with 0.05 N $KMnO_4$ solution.
2.	To determine the number of moles of crystallization in hydrated $FeSo_4$. X gms of which is dissolved in 250 ml of solution. You are provided with $N/10 K_2Cr_2o_7$ solution.
3.	Determine volumetrically the percentage of a sample of common salt. X grams of which are dissolved per litre. Your are provided with 0.05N $AgNO_3$ solution.
4.	To study the 1^{st} order kinetics between ethyl acetate and dilute HCL.
5.	To study the kinetics of hydrolysis of ethyl acetate in presence of a base (NaOH).

6. To determine the alkalinity of a given sample of water.

7. To determine the presence of free chlorine in a sample of water.

8. To determine the density of given liquid at room temperature using Pyknometer/Specific gravity bottle.

9. To determine the surface tension of a given liquid at room temperature using Stalagmometer.

10. To determine the viscosity of the given liquid at room temperature using Ostwald's Viscometer

<u>LIST OF EXPERIMENTS (1st semester I.T)</u>

EXPERIMENT No	AIM
1.	A partially rusted iron nail weighing0.95 gm was boiled in excess of dilute sulphuric acid. The mixture was then cooled to room temperature, filtered and made upto one litre. Determine the percentage of corrosion of the iron nail. You are provided with 0.05 N $KMnO_4$ solution.
2.	One litre of solution. You are provided with 0.1NaoH solution and 0.1N KMnO4.
3.	To prepare a pure and dry sample of Aspirin.
4.	To prepare a pure and dry sample of Acetanilide.
5.	To prepare a pure and dry sample of P-nitro acetanilide.
6.	To identify the Non-Nitrogenous functional groups I the given organic compound.
7.	To identify the Nitrogenous functional groups I the given organic compound.
8.	To find out the viscosity of sugar solution at different concentration using Ostwald's viscometer and to determine the density of sugar solution by using Pyknometer.
9.	To determine the strength of NaOH solution by titration against HCL solution conduct to metrically. You are provided with 0.1 N HCL solutions.
10.	To find out the partition coefficient of Benzoic acid between Benzene and water at room temperature.
11.	To separate the mixture of organic compound using thin layer Chromatography