STATE COUNCIL FOR TECHNICAL EDUCATION AND VOCATIONAL TRAINING, ODISHA

TEACHING AND EVALUATION SCHEME FOR 4th Semester (AI & ML)(wef 2023-24)

Subject Number	Subject Code	Subject	Periods/week			Evaluation Scheme			
			L	T	P	Internal Assessment/ Sessional	EndSem Exams	Exams (Hours)	Total
		Theory							
Th.1		Operating System	04		-	20	80	03	100
Th.2		Data Communication and Computer Network	04		-	20	80	03	100
Th.3		Microprocessor & Microcontroller	05		-	20	80	03	100
Th.4		Database Management System	04			20	80	03	100
		Total	*17*			*80*	*320*	*-*	*400*
		Practical							
Pr.1		Operating System Lab	-	-	03	25	25	03	50
Pr.2		Networking Lab	-	-	06	50	50	03	100
Pr.3		Microprocessor Microcontroller Lab			04	25	25	03	50
Pr.4		Database Management System Lab	-	-	04	50	50	03	100
Pr.5		Technical Seminar			02	50			50
		Student Centered Activities(SCA)		-	03	-	-		
		Total	*-*	*-*	*23*	*200*	*150*	*-*	*350*
		Grand Total	**17**		**22**	**280**	**470**	**-**	**750**

Abbreviations: L-Lecturer, T-Tutorial, P-Practical . Each class is of minimum 55 minutes duration.

Minimum Pass Mark in each Theory subject is 35% and in each Practical subject is 50% and in Aggregate is 40%

SCA shall comprise of Extension Lectures/ Personality Development/ Environmental issues /Quiz /Hobbies/ Field visits/ cultural activities/Library studies/Classes on MOOCS/SWAYAMetc. ,Seminar and SCA shall be conducted in a section.

There shall be 1 Internal Assessment done for each of the Theory Subject. Sessional Marks shall be total of the performance of individual different jobs/ experiments in a subject throughout the semester.

Th.1-OPERATING SYSTEM

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60 Periods	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

A. Topic wise distribution of periods

Sl. No.	Topics	Periods
1	INTRODUCTION	03
2	PROCESS MANAGEMENT	10
3	MEMORY MANAGEMENT	10
4	DEVICE MANAGEMENT	10
5	DEAD LOCKS	10
6	FILE MANAGEMENT	10
7	SYSTEM PROGRAMMING	07
	TOTAL	**60**

B. Rationale:
The course provides the students with an understanding of Human computer interface existing in computer system and the basic concepts of Operating System and its working. The students will gather knowledge about efficient utilization of the resources to obtain optimization processing.

C. Objective:
After completion of this course the student will be able to**:**
- Understand the concept and function of operating system.

- Understand notion of a process and all computation.

- To introduce the critical – section problem whose solutions can be used to ensure the consistency of the shared data.

- Understand the concept of deadlock, its avoidance prevention and recovery.

- To provide a detailed description of various memory management techniques.

- To describe the benefits of a virtual memory system.

- To explain the function of file system.

- To describe the details of implementing local file systems and directory structures.

- Understand the brief idea of Systems Programming.

D. DETAIL CONTENTS:

1. INTRODUCTION
1.1   Objectives and Explain functions of operating system.
1.2   Evolution   of Operating system
1.3   Structure of operating system.

2. PROCESS MANAGEMENT
2.1   Process concept, process control, interacting processes, inter process messages.
2.2   Implementation issues of Processes.
2.3   Process scheduling, job scheduling.
2.4   Process synchronization, semaphore.
2.5   Principle of concurrency, types of scheduling.

3. MEMORY MANAGEMENT

3.1   Memory allocation Techniques
- Contiguous memory allocation
- non contiguous memory allocation

3.2   Swapping
3.3   Paging
        Segmentation, virtual memory using paging,

3.4   Demand paging, page fault handling.

4.   DEVICE MANAGEMENT
4.1   Techniques for Device Management
- Dedicated,
- shared and
- virtual.

4.2   Device allocation considerations I/O traffic control & I/O Schedule, I/O Device handlers.
4.3   SPOOLING.
5.   DEAD LOCKS
5.1   Concept of deadlock.
5.2   System Model
5.3   Dead Lock Detection
5.4   Resources allocation Graph
5.5   Methods of Deadlock handling
5.6   Recovery &Prevention, Explain Bankers Algorithm & Safety Algorithm
6.   FILE MANAGEMENT
6.1   File organization, Directory & file structure, sharing of files
6.2   File access methods, file systems, reliability
6.3   Allocation of disk space
6.4   File protection, secondary storage management.

7.0 SYSTEM PROGRAMMING   7.1
Concept of system programming and show difference from Application Complier:
7.2 Compiler , functions of compiler.
7.3 Compare compiler and interpreter.
7.4 Seven phases of compiler, brief description of each phase.

Coverage of Syllabus upto Internal Exams (I.A.)
Chapter 1,2,3,4

Books recommended:-

Sl.No	Name of Authors	Title of the Book	Name of the publisher
1	Donovan	Operating System	TMH
2	Silverschz& Galvin,	Operating System	PHI
3	Er.Rajiv Chopra	Operating System	S.CHAND

TH-2 DATA COMMUNICATION & COMPUTER NETWORK
(Common to CSE/IT/AIML)

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60 Periods	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

A.   **Topic wise distribution of periods**

Sl. No.	Topics	Periods
1	NETWORK& PROTOCOL	08
2	DATA TRANSMISSION & MEDIA	08
3	DATA ENCODING	08
4	DATA COMMUNICATION & DATA LINK CONTROL	08
5	SWITCHING & ROUTING	10
6	LAN TECHNOLOGY	10
7	TCP/IP	08
	TOTAL	**60**

B. RATIONALE: Now a days the growth of data communication technology has become very fast in development of various application areas. This subject will expose the learner to have an idea about the architecture computer network and different protocols to be followed to communicate. Further they will have an idea about different mode of communication.

C. OBJECTIVE: After completion of this course the student will be able to**:**

- Know the concepts of Data Communication, networking, protocols, and networking models
- Know the various transmission Medias
- Understand the concepts of switching
- Understand various Error detection and correction methods
- Know about data flow and error control
- Know about data link control
- Understand multiple access
- Learn the concepts of wired LANs and Ethernet
- Compare various connecting devices
- Know the concepts of network layer, logical addressing, IP, Forwarding and routing
- Understand brief concept on TCP/IP

D.CORSE CONTENTS:

1. Network& Protocol

1.1 Data Communication
1.2 Networks
1.3 Protocol & Architecture, Standards, OSI, TCP/IP

2. Data Transmission & Media

2.1 Data transmission Concepts and Terminology
2.2 Analog and Digital Data transmission
2.3 Transmission impairments, Channel capacity
2.4 Transmission media, Guided Transmission, Wireless Transmission

3. Data Encoding

3.1 Data encoding,
3.2 Digital data digital signals,
3.3 Digital data analog signals
3.4 Analog data digital signals
3.5 Analog data analog signals

4. Data Communication & Data link control

4.1 Asynchronous and Synchronous Transmission
4.1 Error Detection
4.3 Line configuration
4.4 Flow Control,
4.5 Error Control
4.6 Multiplexing
4.7 FDM synchronous TDM
4.8 Statistical TDM

4   Switching & Routing

5.1 Circuit Switching networks
5.2 Packet Switching principles
4.3 X.25
4.4 Routing in Packet switching
4.5 Congestion
4.6 Effects of congestion, congestion control
4.7 Traffic Management
4.8 Congestion Control in Packet Switching Network.

6. LAN Technology

6.1. Topology and Transmission Media
6.2 LAN protocol architecture
6.3. Medium Access control
6.4 Bridges, Hub, Switch
6.5 Ethernet (CSMA/CD), Fiber Channel
6.6 Wireless LAN Technology..

7. TCP/IP

7.1 TCP/IP Protocol Suite
7.2 Basic Protocol functions
7.3 Principles of Internetworking
7.3 Internet Protocol operations
7.4 Internet Protocol

Coverage of Syllabus upto Internal Exams (I.A.)
Chapter 1,2,3,4

Books recommended:-

Sl.No	Name of Authors	Title of the Book	Name of the publisher
01	W.Stallings	Data Communication &Computer Networks	PHI
02	M.Bhatia	Introduction to Comp. Network	Unv. S. Press
03	Forouzen	Data Communication & Network	TMH

Th.3- MICROPROCESSOR & MICROCONTROLLER
(Common ETC, AE&I, CSE & IT, AIML)

Theory	5 Periods per week	Internal Assessment	20 Marks
Total Periods	75 Periods	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

A. Chapter wise Distribution of periods with Total periods

Sl.No.	Topics	Periods
1.	Microprocessor(Architecture and Programming-8 bit-8085)	15
2.	Instruction Set and Assembly Language Programming(8 bit)	15
3.	TIMING DIAGRAMS	07
4.	Microprocessor Based System Development Aids	11
5.	Microprocessor (Architecture and Programming-16 bit-8086)	12
6.	Microcontroller (Architecture and Programming-8 bit)	15
	TOTAL	75

B. Rationale:

The Microprocessor control has taken predominance over other types of control quite some time past. Starting from Electrical Power plant to consumer electronics this tiny chip finds extensive uses. As such Microprocessors have made pervading influence on our lives. This field is developing so rapid that it is difficult to keep track with the changes. Under this subjects Architecture and instruction sets of 8 bit and 16 bit processor have been discussed. Some applications have been included through the interfacing chips. Microcontroller (MC) may be called computer on the chip since it has basic features of a microprocessor with internal ROM, RAM, Parallel and serial ports within a single chip. Or we can say microprocessor with memory and ports is called as a microcontroller. Microcontroller is a programmable digital processor with necessary peripherals. Both microcontrollers and microprocessors are complex sequential digital circuits meant to carry out job according to the program / instructions. Sometimes analog input/output interface makes a part of microcontroller circuit of mixed mode(both analog and digital nature).

C. Objective:

After completion of this course the student will be able to:

1. The students will able to differential between 8085 microprocessor &types of Bus.
2. Describe the Architecture & pin diagram of 8085 microprocessor.
3. Comprehend different instructions of 8085 microprocessor &addressing modes.
4. Write instructions under different addressing modes.
5. Discuss assembler & basic assembler directives.
6. Describe types of assembly language programs and write programs.
7. Explain the timing diagrams of different instructions.
8. State the functions of the interfacing chips like 8255, etc.
9. Explain the delay subroutine &calculate the delay by using one, two or three registers.
10. Explain ADC & DAC?&use of ADC & DAC modules
11. Write a program for traffic light control &stepper motor control.
12. Know about 16-bit microprocessor.

D. Detailed Contents:

Unit-1:Microprocessor (Architecture and Programming-8 bit-8085)

1.1 Introduction to Microprocessor and Microcomputer & distinguish between them.
1.2 Concept of Address bus, data bus, control bus & System Bus
1.3 General Bus structureBlockdiagram.
1.4 Basic Architecture of 8085 (8 bit) Microprocessor
1.5 Signal Description (Pin diagram) of 8085 Microprocessor
1.6 Register Organizations,Distinguish between SPR & GPR, Timing & Control Module,
1.7 Stack, Stack pointer & Stack top.
1.8 Interrupts:-8085 Interrupts, Masking of Interrupt(SIM,RIM)

Unit-2:   Instruction Set and Assembly Language Programming

2.1 Addressing data & Differentiate between one-byte, two-byte &three-byte instructions with examples.
2.2 Addressing modes in instructions with suitable examples.
2.3 Instruction Set of 8085(Data Transfer, Arithmetic, Logical, Branching, Stack& I/O , Machine Control)
2.4 Simple Assembly Language Programming of 8085
    2.4.1 Simple Addition & Subtraction
    2.4.2 Logic Operations (AND, OR, Complement 1's & 2's) & Masking of bits
    2.4.3 Counters & Time delay (Single Register, Register Pair, More than Two Register)
    2.4.4 Looping, Counting & Indexing (Call/JMP etc).
    2.4.5 Stack & Subroutinesprogrames.
    2.4.6 Code conversion, BCD Arithmetic & 16 Bit data Operation, Block Transfer.
    2.4.7 Compare between two numbers
    2.4.8 Array Handling (Largest number & smallest number in the array)
2.5 Memory & I/O Addressing,

Unit-3:   TIMING DIAGRAMS.

1.1 Define opcode, operand, T-State, Fetch cycle, Machine Cycle, Instruction cycle & discuss the concept of timing diagram.
1.2 Draw timing diagram for memory read, memory write, I/O read, I/O write machine cycle.
1.3 Draw a neat sketch for the timing diagram for 8085 instruction (MOV,MVI,LDA instruction).

Unit-4 Microprocessor Based System Development Aids

4.1 Concept of interfacing
4.2 Define Mapping &Data transfer mechanisms - Memory mapping & I/O Mapping
4.3 Concept of Memory Interfacing:- Interfacing EPROM & RAM Memories
4.4 Concept of Address decoding for I/O devices
4.5 Programmable Peripheral Interface: 8255
4.6 ADC & DAC with Interfacing.
4.7 Interfacing Seven Segment Displays
4.8 Generate square waves on all lines of 8255
4.9 Design Interface a traffic light control system using 8255.
4.10   Design interface for stepper motor control using 8255.

Unit-5 Microprocessor (Architecture and Programming-16 bit-8086)

5.1 Register Organisation of 8086

5.2 Internal architecture of 8086
5.3 Signal Description of 8086
5.4 General Bus Operation& Physical Memory Organisation
5.5 Minimum Mode &Timings,
5.6 Maximum Mode &Timings,
5.7 Interrupts and Interrupt Service Routines, Interrupt Cycle, Non-Maskable Interrupt, Maskable Interrupt
5.8 8086 Instruction Set & Programming: Addressing Modes, Instruction Set, Assembler Directives and Operators,
5.9 Simple Assembly language programming using 8086 instructions.

Unit-6 Microcontroller (Architecture and Programming-8 bit):-
6.1 Distinguish between Microprocessor & Microcontroller
6.2 8 bit & 16 bit microcontroller
6.3 CISC & RISC processor
6.4 Architectureof8051Microcontroller
6.5 Signal Descriptionof8051Microcontrollers
6.6 Memory Organisation-RAM structure, SFR
6.7 Registers,timers,interruptsof8051Microcontrollers
6.8 Addressing Modes of 8051
6.9 Simple 8051 Assembly Language Programming Arithmetic& Logic Instructions , JUMP, LOOP, CALL Instructions, I/O Port Programming
6.10 Interrupts, Timer & Counters
6.11 Serial Communication
6.12 Microcontroller Interrupts and Interfacing to 8255

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Coverage of Syllabus upto Internal Exams (I.A.)
Chapter 1,2,3,4

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Books Recommended
1. *Microprocessor architecture, programming & application with 8085 by R.S. Gaonkar, PenramInternational Publishing. (India) Pvt. Ltd.*
2. *The 8051 Microcontroller & Embedded Systems by Mazidi & Mazidi, - Pearson publication*
3. *Advanced Microprocessor and Peripherals (Architecture, Programming & Interfacing) by A.K. Roy & K.M. Bhurchandi, - TMH Publication*
4. *Microprocessor & Microcontroller by N.SenthliKumar,M.Sarvanan,S.Jeevananthan,S K Shah- OXFORD*
5. *Microprocessor & Microcontroller by R.S. Kaler, IKI Publishing*
6. *Microprocessor & its application by B.Ram,Dhanpat rai*
7. *Microcontroller, Theory and application by Ajaya V. Deshmukh. TMH*

Th.4-DATABASE MANAGEMENT SYSTEM
COMMON TO (CSE/IT/AIML)

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60 Periods	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

A. Topic wise distribution of periods

Sl. No.	Topics	Periods
1	BASIC CONCPETS OF DBMS	05
2	DATA MODELS	08
3	RELATIONAL DATABASE	06
4	NORMALIZATION IN RELATIONAL SYSTEM	08
5	STRUCTURED QUERY LANGUAGE	09
6	TRANSACTION PROCESSING CONCEPTS	08
7	CONCURRENCY CONTROL CONCEPTS	08
8	SECURITY AND INTEGRITY	08
	TOTAL	60

B. RATIONALE: Databases are wonderful learning tools because they embody so much of the learning process. It is the vital component of modern information system which needs to store and process large volume of data. It gives an idea about accessing of data and shared by different application programs. The architecture of the database is simple to understand.

C. OBJECTIVE: After completion of this course the student will be able to**:**
- Understand the database concepts, their benefits and advantages
- Understand the Database architecture
- Understand the concepts of E-R diagrams & E-R modeling
- Understand relational algebra
- Comprehend the different aspects of SQL
- Understand the concepts of normalization
- Understand the concepts of transaction processing
- Understand the techniques of concurrency control
- Comprehend the concepts & techniques of backup & recovery of database.
- Understand how to maintain security and integrity in database.

D.COURSE CONTENTS:

1.0 BASIC CONCPETS OF DBMS

1.1 Purpose of database Systems
1.2 Explain Data abstraction
1.3 Database users
1.4 Data definition language
1.5 Data Dictionary

2.0 DATA MODELS

2.1 Data independence
2.2 Entity relationship models
2.3 Entity sets and Relationship sets 2.4 Explain Attributes
2.5 Mapping constraints

2.6 E-R Diagram
2.7 Relational model
2.8 Hierarchical model
2.9 Network model

3.0 RELATIONAL DATABASE

3.1 Relational algebra
3.2 Different operators select, project, join , simple Examples

4.0 NORMALIZATION IN RELATIONAL SYSTEM

4.1 Functional Dependencies
4.2 Lossless join
4.3 Importance of normalization
4.4 Compare First second and third normal forms 4.5 Explain BCNF

5.0 STRUCTURED QUERY LANGUAGE

5.1 Elementary idea of Query language
5.2 Queries in SQL
5.3 Simple queries to create, update, insert in SQL

6.0 TRANSACTION PROCESSING CONCEPTS

6.1 Idea about transaction processing
6.2 Transaction & system concept
6.3 Desirable properties of transaction
6.4 Schedules and recoverability

7.0 CONCURRENCY CONTROL CONCEPTS
7.1 Basic concepts,
7.2 Locks, Live Lock, Dead Lock,
7.3 Serializability (only fundamentals)

8.0 SECURITY AND INTEGRITY

8.1 Authorization and views
8.2 Security constraints
8.3 Integrity Constraints 8.4 Discuss Encryption

Coverage of Syllabus upto Internal Exams (I.A.)
Chapter 1,2,3,4
Books Recommended:-

Sl.No	Name of Authors	Title of the Book	Name of the publisher
01	Rog,Cornel	Database System Concepts	Cengage Learning
02	Prateek Bhatia	Data Base System	Kalyani Publications
03	A. Silberschatz, H.F. Korth	Database System Concepts	TMH Publication
04	C.J. Date	An Introduction to Database Systems	Norosa Publication

Pr.1-OPERATING SYSTEM LAB

Total Periods	60	Maximum Marks	50 Marks
Lab. Periods:	4 Periods /week	Term Works	25 Marks
Examination	3hours	End Semester Examination	25Marks

A. LIST OF PRACTICALS:-

1.   Write a Shell script to print the command line arguments in reverse order.

2.   Write a Shell script to check whether the given number is palindrome or not.

3.   Write a Shell script to sort the given array elements in ascending order using bubble sort.

4.   Write a Shell script to perform sequential search on a given array elements.

5.   Write a Shell script to perform binary search on a given array elements.

6.   Write a Shell script to accept any two file names and check their file permissions.

7.   Write a Shell script to read a path name, create each element in that path e.g: a/b/c i.e., 'a' is directory in the current working directory, under 'a' create 'b', under 'b' create 'c'.

8.   Write a Shell script to illustrate the case-statement.

9.   Write a Shell script to accept the file name as arguments and create another shell script, which recreates these files with its original contents.

10.   Write a Shell script to demonstrate Terminal locking.

11.   Write a Shell script to accept the valid login name, if the login name is valid then print its home directory else an appropriate message.

12.   Write a Shell script to read a file name and change the existing file permissions.

13.   Write a Shell script to print current month calendar and to replace the current day number by '*' or '**' respectively.

14.   Write a Shell Script to display a menu consisting of options to display disk space, the current users logged in, total memory usage, etc. (using functions.)

15.   Write a C-program to fork a child process and execute the given Linux commands.

16.   Write a C-program to fork a child process, print owner process ID and its parent process ID.

17.   Write a C-program to prompt the user for the name of the environment variable, check its validity and print an appropriate message.

18.   Write a C-program to READ details of N students such as student name, reg number, semester and age. Find the eldest of them and display his details.

Books Recommended:-

Sl.No	Name of Authors	Title of the Book	Name of the publisher
1	Sumitabha Das, 4th Edition,	"UNIX – Concepts and Applications",	Tata McGraw Hill, 2006.
3	Yashvant Kanetkar	Unix Sell Programming 1st edition	BPB Publication

Pr.2 NETWORKING LAB

Total Periods	90	Maximum Marks	100 Marks
Lab. Periods:	6 Periods /week	Term Works	50 Marks
Examination	3hours	End Semester Examination	50Marks

A. LIST OF PRACTICALS:-

1. Recognize the physical topology and cabling (coaxial, OFC, UTP, STP) of a network.
2. Recognition and use of various types of connectors RJ-45, RJ-11,BNC and SCST
3. Making of cross cable and straight cable
4. Install and configure a network interface card in a workstation.
5. Identify the IP address of a workstation and the class of the address and configure the IP Address on a workstation
6. Managing user accounts in windows and LINUX
7. Sharing of Hardware resources in the network.
8. Use of Netstat and its options.
9. Connectivity troubleshooting using PING, IPCONFIG
10. Installation of Network Operating System(NOS)
11. Create a network of at least 6 computers.
12. Study of Layers of Network and Configuring Network Operating System
13. Study of Routing and Switching, configuring of Switch and Routers, troubleshooting of networks
14. Study of Scaling of Networks, Design verities of LAN and forward of Traffic
15. Study WAN concepts and Configure and forward Traffic in WAN
16. Configure IPv4 and IPv6 and learn Quality, security and other services
17. Learn Network programming
18. Troubles shoot Networks.

Pr.3 - MICROPROCESSOR & MICROCONTROLLER LAB
(Common to   ETC,AE&I,CSE & IT/AIML)

Total Periods	60	Maximum Marks	**50 Marks**
Lab. Periods:	4 Periods /week	Term Works	25Marks
Examination	3hours	End Semester Examination	25 Marks

A. Rationale:
    The Microprocessor control has taken predominance over other types of control quite some time past. Starting from Electrical Power plant to consumer electronics this tiny chip finds extensive uses. As such Microprocessors have made pervading influence on our lives. This field is developing so rapid that it is difficult to keep track with the changes. Under this subjects Architecture and instruction sets of 8 bit and 16 bit processor have been discussed. Some applications have been included through the interfacing chips.

B. Objective:
    After completion of this course the student will be able to:
1. The concept of Microprocessor 8085 (8Bit)
2. Concept of 16 Bit Processor 8086
3. Programming & Interfacing Concept
4. Develop software for microcontroller systems using a high-level programming language
5. Demonstrate familiarity with common microcontroller subsystems, such as timer modules
6. Demonstrate an ability to use both polling and interrupt-driven approaches for interfacing a microcontroller with peripheral devices
7. Develop and analyze software to interface a microcontroller with common peripheral devices, such as switches, visual displays, digital-to-analog converters, analog-to-digital converters, and flash memory to produce a system to accomplish a specified task
8. Design interfaces to external devices connected to the microcontroller using a standard bus

C. List of Practicals
NOTE: Total 14 Experiments Have To Be Completed. (4 from Gr - A ,3 from Gr - B , 4 from Gr - C, 3 from Gr - D)

Gr A) 8085(Compulsory)
1. Addition, Subtraction, Multiplication, Division of two 8 bit numbers resulting 8/16 bit numbers.
  Optional (Any three)
2. 1''s and 2's Complements
3. Binary to Gray Code / Hexadecimal to decimal conversion.
4. Logic Operations (AND, OR,) & Masking of bits
5. Time delay (Single Register, Register Pair, More than Two Register)
6. Compare between two numbers
7. Smallest /Largest number among n numbers in a given data array
8. Block Transfer of data

Gr B) 8086(Compulsory)
  1. Addition, subtraction, Multiplication, Division of 16 bit nos + 2's complement of a 16 bit no.
  Optional (Any two)
  2. Marking of specific bit of a number using look-up table.
  3. Largest /Smallest number of a given data array.
  4. To separate the Odd and Even numbers from a given data array.

5. Sorting an array of numbers in ascending/descending order

6. Finding a particular data element in a given data array.

Gr-C) INTERFACING (Compulsory-any one)

1. Operation of 8255 using 8085 & 8051 microcontroller

2. Generate square waves on all lines of 8255 with different frequencies (concept of delay program)

OPTIONAL (Any Three) based on self-study

1. Study of stepper Motor and its operations (Clockwise, anticlockwise, angular movement, rotate
   in various speeds)

2. Study of Elevator Simulator

3. Generation of Square, triangular and saw tooth wave using Digital to Analog Converter

4. Study of 8253 and its operation (Mode 0, Mode 2, Mode 3)

5. Study of Mode 0, Mode 1, BSR Mode operation of 8255.

6. Study of 8279 (keyboard & Display interface)

7. Study of 8259 Programmable Interrupt controller.

8. Study of Traffic Light controller

9. Steeper Motor Controller.

Gr-D) 8051 MICROCONTROLLER (Compulsory) by self-study

1. Initialize data to registers and memory using immediate, register, direct and indirect addressing
   mode

OPTIONAL (any two)

2. Write a Program for

2.1   Bit Digital Output-LED Interface

2.2   8 Bit Digital Inputs (Switch Interface)

3. Write a Programs for(Any one)

3.1   4 x 4 Matrix Keypad Interface

3.2   Buzzer Interface

3.3   Relay Interface

4. Write a Program for character based LCD Interface.

5. Write a Program for Analog to Digital Conversion (On chip ADC& DAC)

6. Interfacing With Temperature Sensor.

7. Write a program Stepper Motor Interface

8. Write a program   to Generate Delay Subroutine

9. 805 Timer & Counter programming –Generate Square wave

Pr.4-DATABASE MANAGEMENT SYSTEM LAB

Total Periods	60	Maximum Marks	100 Marks
Lab. Periods:	4 Periods /week	Term Works	50 Marks
Examination	3hours	End Semester Examination	50Marks

A. ASSINGMENT FOR DBMS LAB

1. Show the Structure of DEPT. Select all data from DEPT table. Create a query to display unique jobs from the EMP table.
2. Write a query to Name the column headings EMP#, Employee, Job and Hire date, respectively. Run the query.
3. Create a query to display the Name and salary of employees earning more than Rs.2850.Save the query and run it.
4. Create a query to display the employee name and department no. for employee no. 7566.
5. Display the employee name, job and start date of employees hire date between Feb.20.1981 and May 1, 1981. Order the query in ascending order of start date.
6. Display the name and title of all employees who don't have a Manager.
7. Display the name, salary and comm. For all employee who earn comm. Sort data in descending order of salary and comm.
8. Display the name job, salary for all employees whose job is Clerk or Analyst their salary is not equal to Rs.1000, Rs.3000, Rs.5000.
9. Write a query to display the date. Label the column DATE.
10. Create a unique listing of all jobs that are in department 30.
11. Write a query to display the name, department number and department name for all employees.
12. Write a query to display the employee name, department name, and location of all employee who earn a commission.
13. Write a query to display the name, job, department number and department name for all employees who works in DALLAS.
14. Write a query to display the number of people with the same job. Save the query @ run it.
15. Create a query to display the employee name and hire date for all employees in same department.
16. Display the employee name and salary of all employees who report to KING.
17. Display the mane, department name and salary of any employee whose salary and commission matches both the salary and commission of any employee located in DALLAS.
18. Create a student database table using create command using Regd. No as Primary Key , insert data of your class.
19. Delete the information of student having roll No -15 and City- Bhubaneswar. Rename the Student database table to STUDENT INFORMATION.
20. Practice of all Data Retrieval, DML, DDL, TCL and DCL commands used in Oracle by writing queries.

Pr.5 -TECHNICAL SEMINAR

Total Periods	02	Maximum Marks	50 Marks
Lab. Periods:	02Periods /week	Term Works	50Marks
Examination		End Semester Examination	--

A. Objective:

Each student has to select a recent topic of latest technology in the area of Computer Science and present a seminar in front of all students of the class. He/She has to prepare a PowerPoint presentation of the selected topic of minimum 10 slides are the total presentation will be approximately 10 minutes duration .There will be interactive session between the presenter and rest of the students including the faculty members of the dept at the end of presentation .A student has to present at least 2 nos.of seminar during a semester and to submit the report for evaluation.

Equipments

Hardware & Tools:
PC with i5 or above with latest configuration- 30 Nos.(minimum)
Laptop: 1No.
UPS as per needs
Crimping tool, Cable tester,
RJ 45 connectors, RJ-11, BNC, SCST
Coaxial Cable, UTP, STP, OFC cable
Screw Driver Kit
Switch/Hub- 3 Nos.
Router – 1No.
8085 MP kit- 10 Nos.
8086 MP kit- 10 Nos
8051 MC kit-10 Nos.
8255 PPI- 10 Nos.
8279 KBI -10 Nos.
8259 PIC 10 Nos.
Stepper motor- 3 Nos.
Other Interfacing device/Kits-5 sets of each

Software

➢   Windows Server/Linux Server
➢   Oracle 10 g or above (Multiuser with 30 user license or 30 Nos. single user)
➢   Linux