BANGLADESH TECHNICAL EDUCATION BOARD

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

COMPUTER TECHNOLOGY

SYLLABUS

FIFTH AND SIXTH SEMESTER

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

COMPUTER TECHNOLOGY
COURSE STRUCTURE

FIFTH SEMESTER

Sl. No	Subject Code	Subject Name	T	P	C
1.	2650	Computer Architecture	2	3	3
2.	2651	Microprocessor and Microcomputer - I	2	3	3
3.	2655	Computer Servicing - I	0	3	1
4.	2658	Database Management Systems	2	3	3
5.	2659	Visual Programming	1	6	3
6.	2660	Data communication Fundamentals	2	3	3
7.	1355	Environmental Management	2	0	2
8.	1551	Book Keeping & Accounting	2	0	2
9.	1552	Business Organization	2	0	2
			15	**21**	**22**

SIXTH SEMESTER

Sl. No	Subject Code	Subject Name	T	P	C
1.	2672	Microprocessor and Microcomputer - II	2	3	3
2.	2673	Computer Peripherals	2	3	3
3.	2674	Data Communication and Computer Network – I	2	3	3
4.	2675	Computer Operating System	2	3	3
5.	2676	Assembly Language Programming	0	3	1
6.	2678	Query Language	0	3	1
7.	2679	Web Programming	0	3	1
8.	1561	Business Communication	2	0	2
9.	1562	Industrial Management-I	2	0	2
			12	**21**	**19**

CONTENTS

FIFTH SEMESTER

SIXTH SEMESTER

FIFTH SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				
						Theory		Practical		Total
						Cont. assess.	Final exam.	Cont. assess.	Final exam.	
1.	2650	Computer Architecture	2	3	3	50	50	30	20	150
2.	2651	Microprocessor and Microcomputer - I	2	3	3	50	50	30	20	150
3.	2655	Computer Servicing - I	0	3	1	-	-	30	20	50
4.	2658	Database Management Systems	2	3	3	50	50	30	20	150
5.	2659	Visual Programming	1	6	3	25	25	60	40	150
6.	2660	Data communication Fundamentals	2	3	3	50	50	30	20	150
7.	1355	Environmental Management	2	0	2	50	50	-	-	100
8.	1551	Book Keeping & Accounting	2	0	2	50	50	-	-	100
9.	1552	Business Organization	2	0	2	50	50	-	-	100
			15	**21**	**22**	**375**	**375**	**210**	**140**	**1100**

SIXTH SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				
						Theory		Practical		Total
						Cont. assess.	Final exam.	Cont. assess.	Final exam.	
1.	2672	Microprocessor and Microcomputer - II	2	3	3	50	50	30	20	150
2.	2673	Computer Peripherals	2	3	3	50	50	30	20	150
3.	2674	Data Communication and Computer Network – I	2	3	3	50	50	30	20	150
4.	2675	Computer Operating System	2	3	3	50	50	30	20	150
5.	2676	Assembly Language Programming	0	3	1	-	-	30	20	50
6.	2678	Query Language	0	3	1	-	-	30	20	50
7.	2679	Web Programing	0	3	1	-	-	30	20	50
8.	1561	Business Communication	2	0	2	50	50	-	-	100
9.	1562	Industrial Management-I	2	0	2	50	50	-	-	100
			12	**21**	**19**	**300**	**300**	**210**	**140**	**950**

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

COMPUTER TECHNOLOGY

SYLLABUS

FIFTH SEMESTER

		T	P	C
2650	**COMPUTER ARCHITECTURE**		**2**	**3**	**3**

AIMS

- To able to familiarize with the fundamentals of computer architecture
- To able to understand the encoding procedure of instruction for computing.
- To able to develop knowledge and skill on designing Adder,subtractor, multiplier, divisor and ALU.
- To be able to develop knowledge and skill on the execution unit, control unit, memory organization and I/O systems.
- To be able to familiarize with parallel. and multi processing system.

SHORT DESCRIPTION

Computer architecture fundamentals; Computer instruction design; Arithmetic Logic and Control unit; Memory organization; Input/output operation and Parallel processing.

DETAIL DESCRIPTION

Theory:

1 Understand the basics of computer architecture.

1.1 State the meaning of stored program computer.
1.2 Distinguish between stored program computer and nonstored program computer
1.3 State the key features of EDVAC(1st stored program computer)
1.4 State the structure and meaning of instructions of EDVAC.
1.5 Describe the organization of an IAS stored program computer system.
1.6 Define data transfer, data processing and program control instruction of IAS computer.
1.7 Prepare IAS program to perform simple arithmatic operation of 2 numbers.

2. Understand the basics of contemporary computer structure.

2.1 state the types of contemporary computers(general register machines, accumulator based machines & stack machines).
2.2 Describe the organization of each types of contemporary computer.
2.3 State the difference of general register machines, accumulator based machine and stack machines.
2.4. State the meaning of the instructions supported by different types of contemporary computers.

3 Understand the instruction design process of computer .

3.1 State the types of instruction formats depending on the number of address with example.
3.2 Mention the characteristics of good instructions.
3.3 State the important points to be considered for designing instruction format.
3.4 State the meaning of op-code encoding & decoding
3.5 Mention the types of opcode encoding techniques.
3.6 Describe blockcode op-code encoding technique
3.7 Mention the merits and demerits of the block code encoding technique.
3.8 Describe the expanding op-code encoding techniques.
3.9 Describe the Huffman op-code encoding techniques
3.10 Prove that Huffman op-code encoding scheme achives optimal result by keeping the redundency to a minimum value.

4. Understand the design and implementation of arithmetic and logic units.

4.1 Describe the implementation of a 4 bit Ripple carry adder.
4.2 State the limitation of CPA
4.3 State the meaning of Carry generate functions and Carry propagate functions.
4.4 Describe the operation of a of 4-stage carry look-ahead circuit.
4.5 Prove that 16 bit CLA is faster than 16 bit CPA
4.6 State the steps to design a four function ALU.
4.7 Describe the organization of a of 4 bit 2 function arithmatic unit..
4.8 Describe the organization of a of 4 bit 2 function logic unit
4.9 Show the combining technique of arithmetic and logic unit.

5 Understand the the features of Bit Slice Processor,RISC,CISC and Co-processor

5.1 Define bit-slice processor with example.
5.2 Describe the functions of a bit-slice processor(AM 2901) with block diagram..
5.3 State the control word format of AM 2901
5.4 Describe the implementation of ALU function,sourse and destination control field of bit-slice processor(AM 2901)
5.5 Describe the general features of RISC and CISC.
5.6 State the defination and function of co-processor
5.7 Mention the name of the techniques to pass command to a co-processor.
5.8 Describe the functions of each block of intel 8087 Mathcoprocessor.

6 Understand the operation of multiplier and divisor.

6.1 Define non-additive and additive multiplier.
6.2 Describe the algorithm to multiply two 4-bit unsigned numbers
6.3 Describe the operation of a 4×4 unsigned array multiplier.
6.4 Describe the opreation of a 2's complement sequential Booth's multiplier using flowchart.

6.5 Describe the opreation of a sequential n bit binary divisor.
6.6 State the algorithm of restoring & non restoring division process of two integer numbers

7 Understand the basic concepts of control unit.

7.1 . State the purposes of Control Unit.
7.2 Describe the Hardware implementation of data transfer operations of a register with enable input and conditional control signals such as

(a) C_o **:** A ← B Where C_o =GD[0] and G= A >B

(b) if X=0 and t=1, then C_o **:** A ← B else A ← D

7.3 State the meaning of hardware approach and microprogrammed approach to design a control unit.
7.4 State the steps of hardware approch for designing a control unit..
7.5 Describe the basic structure of a microprogrammed control unit and microinstruction format.

8 Understand the principle of memory organization .

8.1 Describe the memory hierrarchy of a microcomputer system.
8.2 Mention the design goals of a memory system.
8.3 Describe the general features of centralized and distributed memory organization.
8.4 State the formula to calculate the number of RAM chips requirements to design higher capacity RAM.
8.5 Describe the design procedure of 1K× 8 RAM and 4K× 4 RAM using 1K×4 RAM chips.
8.6 Describe the conceptual organization of the bank switching and address extension scheme.
8.7 Describe the memory organization of a cache memory in a computer system
8.8 Calculate the average access time and efficiency of a system that employs a cache memory.

9 Understand the input / output tchniques.

9.1 List the methods of data transferring techniques between computer and the I/O devices.
9.2 Describe the programmed I/O.
9.3 Distinguish between standard I/O vs. memory mapped I/O.
9.4 Describe the basic concepts of interrupt driven I/O.
9.5 Describe the principal of direct memory access(DMA) system.

10 Understand the concept of array and pipeline processing system .

10.1 Define parallel processing.
10.2 State the parallelism facilities in conventional computers.
10.3 Classify Computer architecture using Flynn's method with example
10.4 Describe the organization of an array processor.

10.5 Describe the basic concepts of pipe line processing.
10.6 Describe over lapped execution of instruction pipeline.
10.7 Describe the concept of arithmetic pipeline.

11 Understand the multiprocessor system.

11.1 Define multiprocessor system.
11.2 Mention the characteristics of a multiprocessor system.
11.3 State the advantages of multiprocessor system.
11.4 Mention the principal elements of a multiprocessor system.
11.5 Describe the conceptual view of a multiprocessor organization.
11.6 Describe the organization of single bus,multi bus and crossbar system
11.7 Mention the advantages and disadvantages of single bus, multi bus and cross bus organization.

Practical:

1. Perform the task to develop a 4 bit parallel in serial out shift register using D type Flip Flop
2. Perform the task to develop a basic cell to design a general purpose register using a 4 input multiplexer and a D type Flip Flop.
3. Perform the task to make a 4 bit General purpose register using the basic cell.
4. Perform the task to Implement an 8 bit adder using 4 bit adder as a building blocks.
5. Perform the task to Design and develop an 8 bit adder using 4-bit CLA.
6. Perform the task to Design and develop a 4-bit adder/subtractor circuit.
7. Perform the task to Design and develop a two function logic unit.
8. Perform the task to Design and develop a four function ALU.
9. Perform the task to transfer 8 bit data to/from an I/O device using programmed interfaces through the I/O port/ports.
10. Perform the task to Implement a 4×4 array multiplier using full adders..
11. Perform the task to Implement a 1k×8 RAM chip using 1K×4 RAM.

REFERENCE BOOKS

1. Modern Computer Architecture
by Mohamed Rafiquzzaman.

2, Computer Architecture and Organization
by John P Hayes

2651 MICROPROCESSOR AND MICROCOMPUTER- I

T	P	C
2	3	3

AIMS

- To be able to acquire the knowledge on microprocessor, microcomputer and computer language.
- To be able to develop the knowledge and skill on the architecture and assembly language programming of 8-bit Intel & Motorola μp.
- To be able to acquire the knowledge and skill on memory and I/O interfacing.

SHORT DESCRIPTION

Operation of SAP-2, Architecture and addressing mode of Intel 8085μp; Instruction timing of Intel 8085 μp; Assembly language programming of 8085 μp; Memory and input /output interfacing of Intel 8085 μp; Architecture and programming of MC6800.

DETAIL DESCRIPTION

Theory:

1 Understand the the operation of SAP- 2 .

1.1 Define microprogramming.
1.2 Distiguish between Hardwired control and microprogramming for computer operation.
1.3 Describe the function of each block of SAP-2 computer.
1.4 Mention the type of instructions used in SAP-2(Memory reference instructions, Register instructions,JUMP and CALL instructions,Logic instructions and miscellaneous group instructions.)
1.5 Describe each type of SAP-2 instructions including their format and meaning.
1.6 Prepare source and Hand assemble program using each types of SAP-2 instructions for solving simple arithmetic,logic and delay problem.
1.7 Describe the addressing modes of SAP-2 instructions.
1.8 Describe the operation of the circuit diagram of SAP-2 for setting the Flags.
1.9 State the difference between SAP-1 and SAP-2 computer.

2 Understand the architecture of intel 8085 microprocessor.

2.1 Define microprocessor and microcomputer.
2.2 Describe the evolution of microprocessor. (i.e. 4, 8,, 16 and 32 and 64 bit μp).
2.3 Mention the important features of intel 8085 microprocessor.
2.4 Describe the function of each block of intel 8085 microprocessor.
2.5 Describe the bus organization of 8085 microprocessor.

2.6 Sketch the register architecture of 8085 microprocessor.
2.7 Describe the function of each register of 8085 microprocessor.
2.8 State the meaning of the signals of 8085 microprocessor.

3 Understand the instruction set and addressing mode of 8085μp.

3.1 Classify the instructions of 8085 microprocessor.
3.2 Mention the name of 8085 addressing modes.
3.3 Describe the 8085 addressing modes.
3.4 Define instruction set.
3.5 Describe the format and meaning of each instruction used in Intel 8085 microprocessor.

4 Understand the 8085 instruction timing and execution.

4.1 State the clock period and machine cycle of 8085.
4.2 Describe the basic system timing of 8085.
4.3 Describe the 8085-memory read write operation with timing diagram.
4.4 Describe the interrupt timing of 8085.
4.5 Describe the interrupt acknowledge machine cycle.
4.6 Describe the bus idle machine cycle.

5 Understand the programming concept of 8085μp.

5.1 Describe the programming process with flowchart.
5.2 State the meaning of assembler directives.
5.3 Describe the meaning of each field of assembly language program.
5.4 Describe the use of the assembler directives of 8085.
5.5 Write simple program using the 8085 instruction set for solving arithmetic,logic and delay problem.

6 Understand Intel 8085 input / output operation and interfacing.

6.1 Mention the basic input output techniques.
6.2 Describe the operation of 8085 programmed I/O, interrupt driven I/O, Direct Memory Access Controller (DMAC) and DMA.
6.3 Describe the I/O structure of a typical microcomputer.
6.4 Describe the function of coprocessors.
6.5 Describe the use of 8085 SID and SOD lines.

7 Understand memory and peripheral interfacing.

7.1 Describe the memory mapping techniques.
7.2 Sketch the diagram of memory chips with microprocessor to form a simple microcomputer system.
7.3 Describe the chip select scheme by decoding address lines.
7.4 Define support chips.
7.5 List the commonly used support chips (both dump & smart).
7.6 State the functions of PPI and PIC.
7.7 Describe the operation of PPI & PIC using block diagram .
7.8 Describe the control word format of PPI.
7.9 Configure the control word of the control register for simple I/O operations.

7.10 Write simple program for data transfering to and from microprocessor using PPI.

8 Understand the general aspects of intel family of μP.

8.1 Describe the evolution based on performance and device complexity of the intel μP architecture.

8.2 Mention the difference between a multi-chip and single chip microcomputer.

8.3 State the embedded microcontrollers and reprogrammable microprocessor.

8.4 Explain the basic architecture of the intel family of μP.

8.5 Mention the comparison of address & data bus and the clock speeds for the intel family members.

8.6 Describe the memory map of the intel family members and personal computer system.

8.7 Explain hte internal register array (programming model) of all versions of the intel family members.

9 Understand the architecture of MC 6800 microprocessor.

9.1 Mention the important features of MC 6800.

9.2 Describe the internal architecture of MC 6800.

9.3 Describe the pins and signals of MC 6800.

9.4 Describe the instruction set of MC 6800.

9.5 Explain the read and write timing diagram of MC 6800.

9.6 Mention the addressing mode of MC 6800.

9.7 Compare intel 8085 with MC 6800.

9.8 Write simple program using the instruction set of MC 6800.

Practical:

1. Perform the task to develop and execute an assembly language program for solving arithmetic problems(Addition/Subtraction) using SAP/i8085 / MC 6800 μp trainer.
2. Perform the task to develop and execute an assembly language program to compute 1's or 2's complement of binary number using SAP/i8085 / MC 6800 μp trainer.
3. Perform the task to develop and execute an assembly language program for solving arithmetic problems(Multiplication / Division) using SAP/i8085 / MC 6800 μp trainer
4. Perform the task to develop and execute an assembly language program for solving logic operation using SAP/i8085 / MC 6800 μp trainer.
5. Perform the task to develop and execute an assembly language program/ Subroutine to produce time delays of different durations using SAP/i8085 / MC 6800 μp trainer.
6. Perform the task to develop and execute an assembly language program that inputs a byte of data from a port using handshaking and store the byte into a register in a SAP/i8085 / MC 6800 μp trainer.
7. Perform the task to develop and execute an assembly language program that inputs an 8 bit character in a serial data stream and store it in a specified memory location using a SAP/i8085 / MC 6800 μp trainer
8. Perform the task to develop and execute assembly language programs that transfer data between I/O and memory with an available I/O techniques. using a SAP/i8085 / MC6800 μp trainer.

9. Perform the task to develop and execute assembly language programs that implement the branching and looping structures using a SAP/i8085 / MC 6800 μp trainer.

REFERENCE BOOKS

1. Digital Computer Electronics
   -Malvino- Brown
2. Microprocessor and Microcomputer Based System Design
   – Mohamed Rafiquzzaman.
3. Microprocessor Architecture, Programming and Applications with 8085
   – Ramesh S. Gaonkar.

2655	COMPUTER SERVICING – I	T	P	C
			0	3	1

AIMS

- To be able to identify the external features and the electrical connections of different units of a microcomputer system.
- To be able to develop the knowledge, skill and attitude in PC assembling and servicing.
- To be able to perform the maintenance of PC.

SHORT DESCRIPTION

Identification of parts and their connections; Disassembling & assembling of PC, Software installation; Fault identification and correction, Handling tools.

DETAIL DESCRIPTION

IDENTIFICATION OF PARTS AND THEIR CONNECTIONS

1 Identify the external controls and connectors of a microcomputer.

1.1 Select the proper tools, equipment and manuals.
1.2 Trace the connections among different units.
1.3 Unplug the power cord and disconnect the electrical connections among different units.
1.4 Seek & draw the rare and front panel terminals, connectors & control knobs of system unit, monitor and other support equipment.
1.5 Trace & draw the connection diagram among different units.
1.6 Make a report.

2 Identify the hardware components of system unit.

2.1 Select proper tools, equipment and manuals.
2.2 Shut down the system.
2.3 Unplug the power cord.
2.4 Unscrew and remove the cover of the system unit.
2.5 Seek the power supply unit, MB, disk drives, display card, RAM, etc.
2.6 Draw the internal over view of the system unit showing the position of different units and major components.
2.7 Trace and track the major connection.
2.8 Make a report.

DISASSEMBLING & ASSEMBLING OF PC

3 Disassemble the old working PC.

3.1 Select the required tools and equipment.
3.2 Turn off the power.

3.3 Unplug the power cord and disconnect the electrical connections among different units.
3.4 Unscrew and remove the cover of the system unit
3.5 Disconnect the cables and other connections with special paper pencil note of the connections.
3.6 Seek and remove the attached screw of the drives.
3.7 Seek and remove all the attached screws of different units connected with cheasis.
3.8 Remove the individual units and put them in safe place.
3.9 Make a report.

4 Assemble the previously disassemble PC.

4.1 Select the tools and individual units of microcomputer system.
4.2 Place the motherboard and other units into the respective location of the casing and then screwing them with cheasis.
4.3 Connect all the cables, lead wires and the power connectors among the individual units / points.
4.4 Mount the cover of the casing and screwing it.
4.5 Connect all the external I/O devices to the system unit.
4.6 Run the PC.
4.7 Make a report.

5 Identify the main board components and layout.

5.1 Select the required tools, a new motherboard and manuals.
5.2 Seek the major chips, BIOS, socket, slots, connectors, jumpers etc. of the motherboard.
5.3 Draw the layout of a motherboard.
5.4 Make a report.

6 Set up the processor and RAM modules into the main board.

6.1 Select the required tools, main board, processor and manuals.
6.2 Unpack the main board and processor.
6.3 Set the processor into the CPU socket of the MB.
6.4 Set the CPU fan on the processor.
6.5 Set jumper (if necessary) as required according to the direction in the manuals.
6.6 Fit the RAM modules into the respective slots of the main board.
6.7 Make a report.

7 Assemble a new PC.

7.1 Select the tools, manuals and individual hardware units for a new PC.
7.2 Unscrew the cover of the casing.
7.3 Set the assemble main board into the casing.
7.4 Fit the display card into the respective slot of the MB.
7.5 Connect the power connector into the MB.
7.6 Connect the monitor into the video terminal.

7.7 Connect the power cord(s) to the main line.
7.8 Check the display.
7.9 Place all other devices into the respective location of the casing.
7.10 Connect all the cables, power terminals, ports and other LED wires among the different units.
7.11 Check the display again.
7.12 Mount the cover and make a report.

SOFTWARE INSTALLATION

8 Configure the BIOS.

8.1 Select the system unit, keyboard, mouse and monitor.
8.2 Connect the I/O units, other cables and cords with system unit.
8.3 Connect the power cord(s) to the main line.
8.4 Turn on the power and then press the respective key to enter into the BIOS.
8.5 Set up the BIOS as required.
8.6 Setup the supervisory & user password.
8.7 Save & exit from the BIOS.

9 Install the operating system.

9.1 Select the new assembled PC, boot up disk or start up CD with operating system.
9.2 Insert the start up disk or CD into the respective drive.
9.3 Turn on the PC.
9.4 Take action according to the messages of POST routine and on-screen message.
9.5 Make the partitions into the hard disk. Using fdisk and modem windows operating system.
9.6 Format the hard disk and transfer the system file.
9.7 Run the setup file and follow the on-screen message(s) to complete the installation procedures.

10 Install the driver softwares.

10.1 Select the required software CDs.
10.2 Run the PC and open the system options from control panel.
10.3 Select the appropriate device driver options.
10.4 Remove the conflict-device-driver and reboot the system if required.
10.5 Follow the on-screen message to install the driver or follow the instructions of the manufacturer's manual.

11 Install the application softwares.

11.1 Select the required elements or software CDs.
11.2 Start the PC to run the OS.
11.3 Insert the application software CD.
11.4 Run the setup file of the application and or follow the on screen messages to complete the installation procedures.

12 Install new hardwares (sound card, modems, CDD, DVD, scanner, printer, plotter, one more HDD, etc) into the PC.

12.1 Select the required elements.
12.2 Turn off the power of the PC.
12.3 Unscrew the cover and then remove it.
12.4 Fit the hardware into the proper location and screw them into the cheasis.
12.5 Mount the cover and screw it.
12.6 Turn on the power of the PC and then install the driver of the respective hardware.

13 Measure the output voltages and signals of an ATX power supply unit.

13.1 Disconnect the power connector from drives and motherboard.
13.2 Check the specified voltage and signals from the casing of the power supply.
13.3 Turn on the power supply without connecting it into the motherboard.
13.4 Measure the output voltage and signals of the power supply.
13.5 Compare the meaned voltage and signals with the specied collected voltage and signals.

FAULT IDENTIFICATION AND CORRECTION

14 Apply the general techniques to trace the faults.

14.1 Observe, read and record the symptoms.
14.2 Write down the possible causes for the symptoms.
14.3 Check or test the possible causes one by one, starting with the easiest one.
14.4 Write down the other possibilities of the faults occured.
14.5 Make a logical deduction of the symptoms.
14.6 Perform the test to check the faults.
14.7 Record the problems and its eventual solution for reference.

15 Work with diagnostic softwares (post routines, standard / advanced / third-party diagnostic software).

15.1 List the diagnostic softwares.
15.2 List the post error codes.
15.3 Check the comprehensible messages on the screen during booting.
15.4 Remedy the problem.
15.5 Run the standard / advanced diagnostic software (if POST fails), and follow the on-screen messages or use the initial menu.
15.6 List the third-party diagnostics for the non- IBM PCs.
15.7 Use Norton utilities or PC-tools to troubleshoot the PC.

HANDLING TOOLS

16 Apply tools and techniques to service and upgrade the PCs.

16.1 List and handle a basic toolkit that is essential for PCs servicing.

16.2 List and handle a special tools and materials which are essential for servicing PCs.
16.3 List and handle a software tools for diagnostic programs and utilities to edit batch files, format disks, examine machines configurations, backup and recover data files and so on.
16.4 Adjust the multimeter for a measurement.
16.5 Remove and replace the IC chips using chip extractor.
16.6 Make connection using soldering iron.
16.7 Repair circuit board by replacing soldered components.

REFERENCE BOOKS

1. Upgrading, Maintaining & servicing IBM PCs & Compatibles
by Julian Moss.
2. IBM PC AND CLONES
by B Govindarajalu.

2658	DATABASE MANAGEMENT SYSTEM	T	P	C
			2	3	3

AIMS

- To be able to acquire the knowledge and skill in the database system concept.
- To be able to familiarize with data models in database systems.
- To be able to acquire the knowledge and skill in the query languages.

SHORT DESCRIPTION

Database system concept; Data models; Query languages.

DETAIL DESCRIPTION
Theory:

DATABASE SYSTEM CONCEPT

1 Understand the principle of database system.
- 1.1 Define database management system.
- 1.2 Explain the purpose of database management system.
- 1.3 Explain the conventional file processing system.
- 1.4 Distinguish between conventional file processing system and database management system.
- 1.5 Mention the advantages & disadvantages of database management system.

2 Understand the data model fundamentals.
- 2.1 Define data abstraction.
- 2.2 Explain the levels of data abstraction.
- 2.3 Define data models.
- 2.4 Mention different types of data models.
- 2.5 Explain the principle of object-based logical models.
- 2.6 Explain the principle of record-based logical models.
- 2.7 Explain the principle of physical data models.

3 Understand the concepts of data base languages.
- 3.1 Define schema.
- 3.2 Mention the types of schema.
- 3.3 Define database languages
- 3.4 Describe the basic operation of data definition language (DDL) and data manipulation language (DML).
- 3.5 Define data dictionary.
- 3.6 Explain the characteristics of procedural & non-procedural DML.

4 Understand database user, manager and administrator.
- 4.1 Describe the function of different group of database users.

4.2 Explain the different tasks of database manager.
4.3 Describe the functions of the database administrator.
4.4 Explain the organization chart of a typical information processing department.
4.5 Explain the overall system structure of database management system.

DATA MODELS

5 Understand the entity relationship model.

5.1 Define entity & entity set.
5.2 State relationship & relationship set.
5.3 Describe the constraints in entity-relationship (mapping cardinalities and existence dependencies).
5.4 State the meaning of different keys in DBMS.

6 Understand the E-R diagram.

6.1 Mention the meaning of E-R diagram symbol.
6.2 State different types of attribute uses in E-R diagram.
6.3 Describe E-R diagram for different mapping constrains.
6.4 State the techniques of representing E-R diagram to table.
6.5 Describe the representation of strong and weak entity set.
6.6 Explain the extended features (generalization, specialization, aggregation etc.) of E-R diagram.

7 Understand the network and hierarchical data model.

7.1 Describe the database concepts of network and hierarchical data model.
7.2 Explain the data structure diagram of the network model.
7.3 Explain the data structure diagram of the hierarchical model.
7.4 State the conversion technique of the network model into E-R and data structure diagram.
7.5 State the conversion technique of the hierarchical model into E-R and tree structure diagram.

8 Understand the relational data model.

8.1 Describe the basic concepts of relational data model.
8.2 Explain the structure of relational data model.
8.3 Describe the basic concepts of relational algebra.
8.4 Explain the retrieval function in relational database.
8.5 Explain the data updating function in relational database.

QUERY LANGUAGE

9 Understand the Query Languages.

9.1 Describe the formal query language concepts.
9.2 List the most popular commercial query languages.
9.3 Mention the several parts of SQL.
9.4 State three clauses of SQL expression.

9.5 Explain the uses of three clauses of SQL.
9.6 Describe the uses of SQL set operations (Union, intersect and except).
9.7 Describe the use of SQL aggregate functions.

10 Understand the database system architecture.

10.1 Define server, parallel, distributed database system.
10.2 Explain the structure of server (centralized and client server), parallel and distributed database system architecture.
10.3 Describe the advantages & disadvantages of server, parallel and distributed database system architecture.
10.4 Describe the applications of server, parallel and distributed database system architecture.

11 Understand the database integraity, security and recovery.

11.1 Define integraity, security and recovery.
11.2 Describe the domain constraint and referential integraty.
11.3 Explain the causes of security violation.
11.4 Describe the level of authorization.
11.5 Explain the uses of encryption in database security.
11.6 State the failure classifications.
11.7 Mention the recovery techniques.
11.8 Describe the logical undo logging and restart recovery.

12 Understand storage and file structures.

12.1 List the physical storage media.
12.2 Describe the features of different storage media uded for database storage.
12.3 Define file organization.
12.4 Describe the fixed length record file organization.
12.5 Describe the variable length record file organization.
12.6 State the basic concepts of sequential file organization.
12.7 Describe the buffer management techniques.
12.8 State the basic concepts of clustering file organization.

Practical:

1. Create a data entry screen using database commands.
2. Modify the data entry screen.
3. Apply commands for sorting data.
4. Query data using various criteria.
5. Prepare one to one, one to many and many to many relation.
6. Prepare reports .
7. Prepare E-R diagram.

REFERENCE BOOK

1. Database System Concepts – Henry F. Korth.
2. principles of database management system - James Martin

2659	VISUAL PROGRAMMING	T	P	C
		1	6	3

AIMS

To provides the students with an opportunity to acquire knowledge, skill & attitude in the field of visual programming with an special emphasis on:

- visual program environment
- design and development of visual programs
- modification of codes generated by Visual Basic Programs.

SHORT DESCRIPTION

Concept of traditional & object oriented program; General concepts of OOP; Visual Basic Fundamentals; Visual Basic projects; Visual Basic codes; Program flow & control statements; Visual Basic variables and constants; Visual Basic form and design; MDI application; Functionality of form with controls; Visual Basic debugging; Objects & classes in VBA; Printer object; Visual Basic data access & control methods.

DETAIL DESCRIPTION

Theory:

VISUAL BASIC FUNDAMENTALS

1 Understand the basics of Visual Basic.

1.1 Define visual programming.
1.2 Distinguish between the character based systems and graphical user interface.
1.3 Describe the need of visual programming.
1.4 Describe the advantage and disadvantage of visual programming.
1.5 Mention the steps to prepare Visual Basic programs.
1.6 Describe the prototypical Visual Basic development cycle.
1.7 Describe different types of Visual Interface components.

2 Understand Visual Basic Projects,codes, program flow and control statements.

2.1 Define projects.
2.2 Mention the project type with major features in Visual Basic.
2.3 Mention the file types with major features of Visual Basic project.
2.4 Mention the purpose of using general page, make page and compile page.
2.5 Define modules and procedures in Visual Basic.
2.6 Mention the general rules for procedures of Visual Basic.

2.7 Describe the important aspects of each components of Visual Basic subroutines & functions.
2.8 Describe the important parts of Visual Basic code window/editor.
2.9 Describe the structure and format of program flow and control statements

3 Understand Visual Basic variables and constants.

3.1 Mention the data types with important aspects in Visual Basic.
3.2 Mention the method of declaring variable with syntax in Visual Basic.
3.3 Mention the rules for naming variables in Visual Basic.
3.4 Describe the scope and life time of variables in Visual Basic.
3.5 Describe the syntax of fixed size and variable size array in Visual Basic.
3.6 State the meaning of special values like Null, Empty, Error, etc, of variant variables.
3.7 Describe the concept of passing variables to procedures.
3.8 Mention different types of Visual Basic constants.
3.9 Describe the importance of user defined data types.

VISUAL BASIC FORM AND CONTROLS

4 Understand Visual Basic form and design.

4.1 Define form and application window.
4.2 List the most common properties with important aspects of Visual Basic form.
4.3 List the methods with important features in Visual Basic.
4.4 Define form events.
4.5 Describe form maintenance and form operation events.
4.6 Describe *form mouse* and *form key board* events.
4.7 Describe the important aspects of built-in-dialog boxes.

5 Understand MDI application.

5.1 Define MDI parent and MDI child form.
5.2 State the important aspect of MDI architecture.
5.3 Mention the behavior of MDI child form.
5.4 Define Menu and Popup menus.
5.5 List the menu item property controls and their functions.

6 Understand the functionality of form with controls.

6.1 List the controls in Visual Basic form.
6.2 State the functions and name prefixes of Visual Basic controls.
6.3 Describe the unique properties, methods and events of common controls.
6.4 State the meaning of OLE container control.
6.5 Define control array.
6.6 Mention the benefits of using control arrays.
6.7 Describe the techniques of referencing controls.

6.8 Describe the way of passing control as an argument.
6.9 State the meaning of control focus.

ERRORS AND DEBUGGING

7 Understand the Visual Basic debugging.

7.1 Describe the errors of VBA.
7.2 List the important aspects of syntax, logical and runtime errors.
7.3 Mention the important point for avoiding errors.
7.4 Describe the debugging techniques.

OBJECT AND CLASSES

8 Understand objects and classes in VBA.

8.1 List the objects (visible and invisible) in VBA.
8.2 Mention the advantages of using objects in Visual Basic.
8.3 State the principle of component object model (COM).
8.4 Mention the syntax of statements of using objects in VBA.
8.5 List the properties and methods of a typical class module.
8.6 Describe the property procedure in VBA.
8.7 Define collections.
8.8 State the operations supported by collections in VBA.

9 Understand the Printer Object.

9.1 Mention the print routine variables with their meaning.
9.2 Mention a sample print routine code.
9.3 Describe the printer objects properties.
9.4 Mention the code to search and display printer information.
9.5 Describe the important features and tools of crystal reports.

10 Understand Visual Basic data access and control methods.

10.1 Describe the formats encountered in text files.
10.2 Describe the syntax for reading text files.
10.3 Describe the Visual Basic file handling commands.
10.4 Describe the data control and its associated properties & methods.

<u>Practical</u>:

1 Familiarize with the overall layout of the Visual Basic environment and development tools.

1.1 Invoke to the Visual Basic software.
1.2 Identify the components of the user interface.
1.3 Navigate each of the development tools.
1.4 Acquaint the integrated development environment of the package.
1.5 Write a report.

2 Perform the development of simple new application using Visual Basic which contain atleast two controls, textbox and command button.

2.1 Invoke to the Visual Basic.
2.2 Design the interface.
2.3 Write the code.
2.4 Save the project.
2.5 Run the application.

3 Perform the development of an application using mathematical operators.

3.1 Invoke Visual Basic.
3.2 Create a new project.
3.3 Place the controls in the form to create the user interface.
3.4 Type the code.
3.5 Save the project.
3.6 Run the application.

4 Perform the task to manage a project.

4.1 Create,open and save a project.
4.2 Add,remove and save files.
4.3 Add controls to a project.
4.4 Make and run an executable files.
4.5 Set project options.
4.6 Use wizards and Add Ins menu.

5 Perform the design & development of a Visual Basic Interface for displaying the grade/class of students using if....then....else statement.

5.1 Invoke Visual Basic.
5.2 Create a new project.
5.3 Place the controls on the form to create the user interface.
5.4 Type the codes.
5.5 Save the project.
5.6 Run the application.
5.7 Write a report.

6 Perform the design & development of a Visual Basic Interface that contain command buttons, option buttons, text boxes, combo boxes, list boxes and check boxes.

6.1 Design an interface using paper & pencil.
6.2 Invoke Visual Basic.
6.3 Create a new project.
6.4 Place the controls on the form according to the designed user interface.
6.5 Type the code for each button & boxes.
6.6 Modify the codes.
6.7 Save the project.
6.8 Run the project.
6.9 Write a report.

7 Perform the design & development of a Visual Basic program to compute sum/average of series.

7.1 Invoke Visual Basic.
7.2 Create a new project.
7.3 Place the control to create boxes for start and end value.
7.4 Place a check box for indicating the result of even or odd numbers.
7.5 Place a text box where the error message will be displayed for wrong entry.
7.6 Create necessary command buttons.
7.7 Create an Exit button to quit the program.
7.8 Type necessary codes.
7.9 Save and run the created application.
7.10 Write a report.

8 Perform the development of a Visual Basic program to build a math calculator which will be able to perform addition, subtraction, multiplication and division.

8.1 Invoke Visual Basic.
8.2 Create a new project.
8.3 Create necessary buttons.
8.4 Type codes.
8.5 Save the project.
8.6 Run the application.
8.7 Write a reports.

9 Perform the development of a Visual Basic program for converting the unit of temperature.

9.1 Invoke Visual Basic.
9.2 Create a new project.
9.3 Create necessary buttons & boxes.
9.4 Create checkboxes which indicate conversion from Celsius to Fahrenheit or Fahrenheit to Celsius.
9.5 Type codes.
9.6 Save the project.
9.7 Run the application.
9.8 Write a report.

10 Perform the task to create a user interface which contain MDI application.

10.1 Create an MDI application.
10.2 Work with MDI forms and child forms.
10.3 Specify the active child form or control.
10.4 Load MDI form and child forms.
10.5 Set child form size and position

10.6 Maintain state information for a child form
10.7 Unload MDI forms with query unload.
10.8 Set /Change the startup form
10.9 Display a splash screen on startup
10.10 End the application.

11 Perform the task to develop a Visual Basic program which contain main menu and popup menus including colors.

11.1 Invoke Visual Basic.
11.2 Create a new project.
11.3 Create main menu and pop up menus with menu editor.
11.4 Use the listbox in the menu editor
11.5 Create separate bar
11.6 Assign Access keys and short cut keys to a menu control editor.
11.7 Create sub menu
11.8 Create menu control array
11.9 Enable and disable menu control.
11.10 Display check mark on a menu control.
11.11 Make menu control invisiblle
11.12 Add menu control at Runtime
11.13 Write code for menu control
11.14 Display pop up menu
11.15 Create menu for MDI application
11.16 Use color and write codes
11.17 Save the project and run the application.
11.18 Write a report

12 Perform the task to create toolbar and dialog box.

12.1 Create a toolbar.
12.2 Write code for toolbar.
12.3 Perform menu and toolbar negotiation.
12.4 Display a form as a modal dialog box
12.5 Display a form as a modeless dialog box
12.6 Display information with Msgbox.
12.7 Customize an existing dialog box
12.8 Create a new dialog box
12.9 Add a title
12.10 Set standard dialog box properties.
12.11 Disable controls on a dialog box
12.12 End the application.
12.13 Write a report

13 Perform the task to develop a Visual Basic Database program to process monthly payroll or student score of an organization.

13.1 Invoke Visual Basic program.
13.2 Create a new project.
13.3 Browse through the database using the data control.
13.4 Use the data control to Add, Modify and Delete the records in the table.
13.5 Navigate through the records without using the data control.
13.6 Create the application using common dialog control.
13.7 Type necessary codes.
13.8 Create reports.
13.9 Save and run the application.
13.10 Print the reports.

14 Perform the task to create an database application with the data control using Data combo and Data list control,DataGrid and ADO Data control (for linking)

15 Perform the task for programming with objects.

15.1 Create a own class.
15.2 Add properties and method to a class.
15.3 Add event to a class.
15.4 Create data Aware classes
15.5 Program with own objects
15.6 Create own collection classes
15.7 Add an activeX designer to the project menu.

16 Perform the task for program with ActiveX components.

16.1 Create a reference to an objects.
16.2 Use ActiveX components properties,method and Events.
16.3 Release an Activex component
16.4 Nevigate object models
16.5 Handle run time errors in ActiveX components
16.6 Handle requests pending to an ActiveX components
16.7 Insert object with the OLE container control.

17 Perform the task for respoding to mouse and keyboard Events.
18 Perform the task to work with text and graphics.

REFERENCE BOOK

1 Guide to Visual Basic 6 - by Peter Norton
2 Microsoft Visual Basic 6.0 Programmer,s Guide – by Microsoft press

2660 DATA COMMUNICATION FUNDAMENTALS

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AIMS

- To be able to acquire the knowledge on Telecommunication Basics.
- To be able to provide the knowledge and to develop skill on signal and data transmission systems and transmission media.

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SHORT DESCRIPTION

Telecommunication Basics, Analog and digital modulation and demodulation techniques, Digital communication system, Guided transmission media and connectors, Unguided transmission media and systems, analog multiplexing system and Satellite communication system.

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DETAILS DESCRIPTION

Theory:

1 Understand communication basics and terminology.

1.1 State the terms: electronic communication, telecommunication and data communication.
1.2 Describe communication system with a simple block diagram.
1.3 State the terms :Frequency,Wavelenth,Spectrum,Bandwidth, Throughput,propagation speed, propagation time,Noise figure & SNR
1.4 Mention the difference between bandwidth and data rate.
1.5 State Shannon capacity theorems.
1.6 Describe the allocation of frequency bands for communication systems
1.7 Describe the wave properties and transmission impairments (Attenuation,Distortion,Noise).
1.8 State the mode of signal transmission(simplex,half-duplex and full-duplex).

2 Understand the Operation amplitude modulation.

2.1 Define Modulation and state the necessity of modulation.
2.2 Mention the types of modulation.
2.3 State the meaning of amplitude modulation with necessary waveform
2.4 Derive the expression for amplitude modulated signal.
2.5 State the meaning of modulation index and percent modulation.
2.6 Describe the sidebands produced in amplitude modulated waves

2.7 Describe the Operation of a simple AM modulator and a quadrature demodulator using block diagram.
2.8 State the application and limitation of amplitude modulation.
2.9 Solve problems related to amplitude modulation technique.

3 Understand the properties of Frequency and Phase modulation

3.1 State the meaning of frequency and Phase modulation with necessary waveform .
3.2 State the methematical expression for frequency and Phase modulated signal.
3.3 Describe the sidebands produced in frequency modulated waves
3.4 Describe the Operation of FM modulator and demodulator using block diagram.
3.5 State the application of frequency and phase modulation.
3.6 State the advantage frequency modulation.
3.7 Solve problems related to frequency and phase modulation technique.

4 Understand the analog modulation of digital data

4.1 Define digital to analog modulation .
4.2 State the types of digital to analog modulation
4.3 Describe ASK,FSK and PSK with necessary waveform and bandwith.
4.4 State the advantage and disadvantages of ASK,FSK and PSK (BPSK)
4.5 Describe QPSK with necessary waveform and constellation diagram
4.6 Describe QAM with necessary waveform, constellation diagram and bandwidth.
4.7 Describe the basic principle of spread spectrum digital communication system.

5 Understand Digital communication system

5.1 Define digital modulation .
5.2 Describe Digital communication system with block diagram.
5.3 Define linecoding.
5.4 Describe the chraracteristics of linecoding(Signal level and data level,bit rate and pulse rate ,DC components, Self synchronization)
5.5 Mention the catagories of Line coding
5.6 State Unipolar Linecoding with timing diagram and its drawbacks.
5.7 Describe different types of polar encoding with necessary timing diagram.
5.8 Describe bipolar AMI encoding with timing diagram.
5.9 Define 2B1Q and MLT-3 schemes.

6 Understand transmission media and connectors.

6.1 Mention the catagories of. transmission media
6.2 Describe the construction of Twisted-pair (STP,UTP),Co-axial and fiber-optic cable.
6.3 State the characteristics of Twisted-pair (STP,UTP),Co-axial and fiber-optic cable including their connectors.

6.4 Describe the propagation modes of Light along optical channel.
6.5 State the apllication field of Twisted-pair (STP,UTP),Co-axial and fiber-optic cable and connectors.
6.6 State the advantage and disadvantages of each types of cables.

7 Understand the characteristics of Unguided transmission media and systems.

7.1 Define unguided transmission media.
7.2 State the signal propagation methodes with necessary figures.
7.3 State the difference between Unidirectional and omnidirectional antenna.
7.4 Describe the method of Radio,microwave and infrared communication system.
7.5 State the characteristics of Radio,microwave and infra red communication system.

8 Understand analog multiplexing system

8.1 Define multiplexing and Demultiplexing system of communication system.
8.2 Mention the catagories of multiplexing system.
8.3 Define Frequency division multiplexing .
8.4 Describe Frequency division multiplexing and Demultiplexing process.
8.5 Solve simple problems related to FDM bandwidth and configuration.
8.6 Describe the analog hierarchy in FDM system.
8.7 Describe the Wave division multiplexing and Demultiplexing technique with block diagram.

9 Understand Satellite communication system.

9.1 State the principle of Satellite communication system.
9.2 State the types of Satellite
9.3 Describe the components of a Satellite system.
9.4 Mention the categories of earth stations.
9.5 Describe the functions of VSAT.
9.6 Mention the name of the elements of USAT.
9.7 Mention the frequency bands for satellite microwave communications with uses and bandwidth
9.8 State the advantage and disadvantages of satellite communication system.

<u>Practical</u>:

1. Perform the task to Observe the Audio,Video and Data signal using an Ocilloscope.
2. Perform the task to measure the frequency and voltage of a function generator using an Ocilloscope.
3. Perform the task to use/construct an AM modulator and observe the output operation.

4. Perform the task to use/construct an AM demodulator/detector and observe the output operation
5. Perform the task to use/construct a FM modulator and observe the output operation
6. Perform the task to use/construct an PM modulator and observe the output operation.
7. Perform the task to use/construct an ASK modulator and observe the output operation
8. Perform the task to use/construct an FSK modulator and observe the output operation
9. Perform the task to use/construct an PSK modulator and observe the output operation.
10. Identify different types of guided communication media(UTP,STP,Co-axial and fiber-optic cable) and observe their constructional features.
11. Identify different types of connector and accessories used with UTP,STP,Co-axial and fiber-optic cable and observe their constructional features.
12. Identify the Physical and software features of an external MODEM.

REFERENCE BOOKS

1. Data communications and Networking – Behrouz A. Forouzan.
2. Fundamentals of comunication-M. Shamim Kaiser and associates
3. Analog and Digital communication systems – Martin S. Roden.

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1355	**ENVIRONMENTAL MANAGEMENT**		**2**	**0**	**2**

AIMS

- To be able to understand the basic concepts of environment and environmental pollution.
- To be able to understand the concepts of ecology, ecosystems, air pollution, water pollution, soil pollution, radioactive pollution, sound pollution, etc.
- To be able to understand the methods of controlling air pollution, water pollution and sound pollution.
- To be able to understand the management of waste, pesticide pollution and soil pollution.
- To be able to understand the global environmental issues and the environmental problems in Bangladesh.

SHORT DESCRIPTION

Basic concepts of environment; Ecology & eco-systems; Air and atmospheric regions; Toxic chemicals, gases, vapours, fumes, pesticides & microbials; Air pollution and its sources & effects; Green house effect and depletion of ozone layer; Control of air pollution; Water pollution and its sources & effects; Monitoring of water pollution; Waste water treatment; Sound pollution and its control; Soil pollution and its management; Radioactive pollution and its control; Solid waste management; Major environmental issues in Bangladesh; Arsenic pollution in Bangladesh; Pesticides pollution and its management in Bangladesh; Environmental frame work and policy in Bangladesh; National environmental legislations and guidelines; Global environmental issues and the international conventions & earth summits held on environment.

DETAIL DESCRIPTION

1 Understand the basic concepts of environment.

1.1 Define environment.
1.2 Mention the main components of environment.
1.3 Describe the environment of a house.
1.4 Describe natural environment, man-made environment and social environment.
1.5 Mention the functions of environment.
1.6 Define the following environmental terms :

Marine environment, Estuarine environment, Terrestrial environment, Freshwater environment, Environmental education, Nutrients, Material particles, Solar capital, Earth capital, Mangrove forest, Photo-chemical oxidant, Population growth, Zero population growth, Sustainable society, Pollutant, Contaminant, Receptor, Sink, Pathways of pollutant, Speciation.

2 Understand ecology and eco-systems.

2.1 Define ecology and eco-system.
2.2 Describe the biotic and abiotic components of eco-system.
2.3 Explain how does eco-system work.
2.4 Mention the range of tolerance in eco-system.
2.5 Mention the stability of eco-system.
2.6 Describe the following bio-geochemical cycles of eco-system.
a) Carbon cycle
b) Nitrogen cycle
c) Phosphorus cycle
d) Sulphur cycle.
2.7 Describe the following ecological terms:
Food chain, Food web, Biomass, Ecological pyramid, Pyramid of biomass, Pyramid of energy, Bio-concentration, Bio-magnification, Restoration ecology.

3 Understand the air and the atmospheric regions.

3.1 Define the following terms:
Air, lithosphere, hydrosphere, biosphere, atmosphere, troposphere, stratosphere, mesosphere, thermosphere, ionosphere and exosphere.
3.2 Mention the average composition of the atmosphere at the sea level.
3.3 Describe the chemical species and particulates present in the atmosphere.
3.4 Explain that atmosphere of the earth is an oxidizing environment.
3.5 Describe the chemical reactions occur in the atmosphere.
3.6 Describe the ozone layer in the atmosphere and its importance.
3.7 Describe the filtration of solar radiation in the atmosphere.

4 Understand the toxic chemicals, gases, vapors, fumes, pesticides and microbails which are hazardous to environment.

4.1 Define toxic substance.
4.2 Make a list of toxic chemicals, gases, pesticides, microbailes, vapors and fumes which are hazardous to human life.
4.3 Make a list of naturally occurring toxicants.
4.4 Mention the names of main hazardous substances present in the atmospheres.
4.5 List the toxic elements found in water.

5 Understand the air pollution and its sources & effects.

5.1 Define air pollution.
5.2 Mention the composition of clean dry atmospheric air.
5.3 List the air pollutants.
5.4 Describe the sources of air pollution.
5.5 Describe the effects of air pollution on human health, animals, plants and non-living things.
5.6 Explain the formation of photo-chemical smog and its effect.

5.7 Describe the acid rain and its causes & effect on eco-system.
5.8 Describe the disasters of major air pollution in the world mentioning location, causes and effects.

6 Understand the "Green House Effects" and depletion of Ozone layer.

6.1 Mention green house gases.
6.2 Describe the green house effects.
6.3 Mention the predictions of global warming and climate changes.
6.4 Describe ozone layer depletion and its causes.
6.5 Mention the steps to be taken in Bangladesh for the protection of ozone layer depletion and green house effect.

7 Understand the control of air pollution at the emission of the pollutant sources.

7.1 Mention the method of control of air pollution by the correction of pollution sources.
7.2 Describe the method of cleaning air or gaseous effluents by gravitational setting chamber.
7.3 Describe the method of air and gas cleaning by cyclone separator.
7.4 Describe the method of air or gaseous effluent cleaning by wet scrubber.
7.5 Describe the method of air cleaning by fabric filter system.
7.6 Describe the method of air and gas cleaning by electrostatic precipitator.
7.7 Describe the method of cleaning air gas by centrifugal scrubber.
7.8 Describe the method of cleaning exhaust air of automobile behicle by catalytic converter.

8 Understand the water pollution and its sources & effects.

8.1 Define water pollution.
8.2 Mention the specification of ideal water as per recommendation of the World Heath Organization (WHO).
8.3 List the different types of water pollutants.
8.4 Describe the sources of water pollution.
8.5 Describe the effects of water pollution on human health, animal, plants and environment.
8.6 Mention the major water pollution disasters of the world mentioning location, causes and effects on environment.

9 Understand the monitoring of water pollution.

9.1 Define the following terms:
(i) Dissolved oxygen (DO).
(ii) Biochemical oxygen demand (BOD).
(iii) Chemical oxygen demand (COD).
(iv) Total organic carbon (TOC).
(v) Threshold limit value (TLV).

9.2 Describe the method of determination of dissolved oxygen (DO) in a sample of water.
9.3 Describe the method of determination of biochemical oxygen demand (BOD) in a sample of water.
9.4 Describe the method of determination of chemical oxygen demand (COD) in a sample of water.
9.5 Describe the method of determination of total organic carbon (TOC) in a sample of water.
9.6 Mention the method of determination of nitrogen and phosphorus in a sample of water.
9.7 Mention the method of determination of pH value of water.
9.8 Mention the methods of determination of microbials present in a sample of water.

10 Understand the waste water treatment.

10.1 Define the primary treatment, secondary treatment and tertiary treatment of waste water.
10.2 Mention the methods of primary and secondary treatment of industrial waste water.
10.3 Describe the activated sludge process of industrial waste water treatment.
10.4 Describe the trickling filters method of industrial waste water treatment.
10.5 Describe the method of sludge treatment in biological waste water treatment plant.
10.6 Describe the methods of removal of suspended solid, nitrogen and phosphorus from waste water.
10.7 Mention the advanced biological system for waste water treatment.
10.8 Describe the chemical oxidation method of waste water treatment.

11 Understand the sound pollution and its control.

11.1 Define sound, sound wave and sound pollution.
11.2 Mention the classification of sound.
11.3 Mention the sources of sound pollution.
11.4 Describe the effect of sound pollution on human health.
11.5 Describe the causes of sound pollution.
11.6 Mention the scale of measuring sound intensity.
11.7 Describe the methods of control of sound pollution.

12 Understand the soil pollution and its management.

12.1 Define soil pollution.
12.2 List the different soil pollution.
12.3 Describe the classification of soil pollution.
12.4 Mention the sources of soil pollution.
12.5 Mention the damaging effect of soil pollution.
12.6 Describe the effect of soil pollution on human health.

12.7 Describe the management of soil pollution.

13 Understand the radioactive pollution and its control.

13.1 Define radioactive pollution.
13.2 Mention the sources of radioactive pollution.
13.3 Describe the causes of radioactive pollution.
13.4 Mention the environmental pollution from radioactive waste.
13.5 Describe the effect of radioactive pollution on human health.
13.6 Describe the method of control of radioactive pollution.

14 Understand the solid waste management.

14.1 Define solid waste.
14.2 List the sources of solid waste.
14.3 Mention the classification of solid waste.
14.4 Mention the methods of collection of solid waste.
14.5 Describe the potential method of disposal of solid waste.
14.6 Describe the recycling of solid wastes.
14.7 Describe waste management by vermi composting.
14.8 Mention the waste management strategies in Bangladesh.

15 Understand the major environmental issues in Bangladesh.

15.1 List the major environmental issues in Bangladesh.
15.2 Describe the causes of flood, cyclone, tidalbore, soil erosion, droughts, earthquakes and salinity in Bangladesh.
15.3 Mention the population growth in Bangladesh and its effect in the environment of the country.
15.4 Describe the marine, river and wet land pollution in Bangladesh mentioning its causes & effects in the environment.
15.5 Describe deforesting and its effect in biodiversity in the country.
15.6 Describe the causes of increasing salinity in Bangladesh and its effect in the environment.
15.7 Mention the causes of increasing draught in Bangladesh and its effect in the country.

16 Understand the arsenic pollution in Bangladesh.

16.1 Mention the arsenic pollution of water in Bangladesh.
16.2 Describe the effects of arsenic pollution in water on human health and on environment in Bangladesh.
16.3 Describe the causes of arsenic in ground and underground water.
16.4 Describe the quality standard of arsenic contaminated water.
16.5 Describe the tests for arsenic in water.
16.6 Describe the remedial measure of arsenic in water.
16.7 Describe the principle of construction of a Arsenic Removal Plant (ARP) from arsenic contaminated water.

17 Understand the pesticide pollution in Bangladesh and its management.

17.1 Define pesticide.
17.2 Make a list of pesticides.

17.3 Mention the causes of pesticide pollution in Bangladesh.
17.4 Describe the effect of pesticide pollution in the environment.
17.5 Mention the bed effect of use of organo-chlorine insecticide on environment.
17.6 Describe the mode of action of DDT, toxaphenes, heptachlor, aldrion dialdrin and derivatives of phosphoric acid and their effects on environment.
17.7 Mention the modern insecticides and their effects on environment.
17.8 Describe the management of pesticides control.

18 Understand the environmental frame work and policy in Bangladesh.

18.1 List the name of the organization and research institutions engaged for the environmental research in Bangladesh.
18.2 Describe the environmental frame work in Bangladesh.
18.3 Describe the functions of Environment Management Action Plan (NEMAP).
18.4 Describe the environment policies and laws of Bangladesh.
18.5 Mention the Environmental Impact Assessment (EIA) and its importance in Bangladesh context.
18.6 Describe the activities of directorate of environment of Bangladesh.

19 Understand the national environmental legislations and guidelines.

19.1 Mention environmental act and legislations prescribed for air and water quality.
19.2 Describe environmental act prescribed for industries in Bangladesh.
19.3 Describe the guide lines of environment prescribed for industries in Bangladesh.
19.4 Describe environmental act prescribed for solid waste deposit.
19.5 Describe environmental act prescribed for forest park and wild-life preservation in the country.
19.6 Describe environmental act prescribed for urbanization in the country.

20 Understand the global environmental issues and the international conventions & earth summits held on environment.

20.1 Mention the main issues of global environment.
20.2 Describe the conventions and earth summits held on environment in different places of the world.
20.3 Mention the global steps taken to minimize green house effect and ozone layer depletion.
20.4 Mention the causes of raising water level of global sea and its consequences.
20.5 Describe the global issue on sharing of surface water and its importance.
20.6 Describe global environmental quality standard.

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1551	BOOK KEEPING & ACCOUNTING	T	P	C
		2	0	2

AIMS

- To be able to understand the principles and practices of book keeping and accounting.
- To be able to understand the procedures of general accounting, financial accounting and their applications.

SHORT DESCRIPTION

Concept of book keeping and accounting; Transactions; Entry systems; Accounts; Journal; Ledger; Cash book; Trial balance; Final accounts; Cost account & financial accounting; Depreciation; Public works accounts.

DETAIL DESCRIPTION

1 Understand the concept of book keeping and accounting.

1.1 Define book keeping and accountancy.
1.2 State the objectives of book keeping.
1.3 State the advantages of book keeping.
1.4 Differentiate between book keeping and accounting.
1.5 State the necessity and scope of book keeping and accounting.

2 Understand the transactions.

2.1 Define transactions and business transaction.
2.2 Explain the importance of transactions.
2.3 Describe the characteristic features of transactions.
2.4 Discuss the classification of transaction.
2.5 Identify the transaction from given statements stating reasons.

3 Understand the entry system.

3.1 State the aspects of transactions.
3.2 Define single entry system.
3.3 State the objectives of single entry system.
3.4 Discuss the disadvantages of single entry system.
3.5 Define double entry system.
3.6 Discuss the principles of double entry system.
3.7 Justify whether double entry system is an improvement over the single entry system.
3.8 Distinguish between single entry and double entry system of book keeping.

4 Understand the classification of accounts.

4.1 Define accounts.

4.2 State the objectives of accounts.
4.3 Illustrate different type of accounts with example.
4.4 Define “Golden rules of Book keeping”.
4.5 State the rules for “Debit” and “Credit” in each class of accounts.
4.6 Determine Debtor (Dr) and Creditor (Cr.) from given transactions applying golden rules.
4.7 Define accounting cycle.
4.8 State the different steps of accounting cycle.

5 Understand the journal.

5.1 Define journal.
5.2 State the object of journal.
5.3 State the functions of journal.
5.4 Mention the various names of journal.
5.5 Interpret the form of journal.
5.6 Journalize from given transactions.

6 Understand the ledger.

6.1 Define ledger.
6.2 Interpret the form of ledger.
6.3 State the functions of ledger.
6.4 Distinguish between journal and ledger.
6.5 Prepare ledger from given transactions.
6.6 Explain why ledger is called the king of all books of accounts.

7 Understand the cash book.

7.1 Define cash book (single, double and triple column).
7.2 Explain cash book as both journal and ledger.
7.3 Prepare double column cash book from given transactions showing balances.
7.4 Prepare triple column cash book from given transaction and find out the balances.
7.5 Define petty cash book.
7.6 Prepare analytical and imprest system of cash book.
7.7 Define discount.
7.8 Explain the different types of discount.

8 Understand the trial balance.

8.1 Define trial balance.
8.2 State the object of a trial balance.
8.3 Discuss the methods of preparation of a trial balance.
8.4 Explain the limitations of a trial balance.
8.5 Prepare trial balance from given balance.

9 Understand the final accounts.

9.1 State the components of final account.
9.2 Distinguish between trial balance and balance sheet.
9.3 Identify the revenue expenditure and capital expenditure.

9.4 Select the items to be posted in the trading account, profit & loss account and the balance sheet.
9.5 State the adjustment to be made from the given information below or above the trial balance.
9.6 Prepare trading account, profit & loss account and balance sheet from the given trial balance & other information.

10 Understand the cost and financial accounting.

10.1 Define financial accounting.
10.2 State the objectives of financial accounting.
10.3 Define cost accounting.
10.4 Discuss the relationship between financial accounting and cost accounting.
10.5 State the elements of direct cost and indirect cost.
10.6 Prepare cost sheet showing prime cost, factory cost, cost of production, total cost and selling price.
10.7 Explain the following terms:
a. Fixed cost
b. Variable cost
c. Factory cost
d. Overhead cost
e. Process cost
f. Direct cost
g. Operating cost
h. Standard cost

11 Understand the depreciation

11.1 Define depreciation.
11.2 State the objects of depreciation.
11.3 Discuss the necessity for charging depreciation.
11.4 Describe the different methods of determining depreciation.
11.5 Explain the relative merits and demerits of different method of depreciation.

12 Understand the public works accounts.

12.1 State the important aspects of public works accounts.
12.2 Describe the main features of public works accounts.
12.3 Explain “Revenue and Grant”.
12.4 Define Value Added Tax (VAT)
12.5 State the merits and demerits of VAT.
12.6 Define bill and voucher.

1552 BUSINESS ORGANIZATION

T	P	C
2	0	2

AIMS

- To be able to understand the basic concepts and principles of business organization.
- To be able to understand the banking system and insurance policy in Bangladesh.
- To be able to understand the trade system and stock exchange activities in Bangladesh.

SHORT DESCRIPTION

Principles and functions of business organization; Formation of business organization; Purchasing functions and systems; Banking system and its operation; Negotiable instrument; Stock Exchange; Home trade and foreign trade; Insurance; provident fund and benevolent fund.

1 Understand business organization.

1.1 Define business.
1.2 Mention the objects of business.
1.3 Define business organization.
1.4 State the principles of business organization.
1.5 State the function of business organization.

2 Understand the formation of business organization.

2.1 Define soletradership, partnership and joint stock company.
2.2 Describe the formation of soletradership, partnership and joint stock company.
2.3 Mention the advantages and disadvantages of soletradership, partnership and joint stock company.
2.4 Discuss the role of co-operative society (producers co-operative and consumers co-operative) in Bangladesh.

3 Understand the purchasing functions and system.

3.1 Define purchasing.
3.2 Describe the five R (right quantity, right quality, right time, right price & right source) of purchasing principles.
3.3 State the function of purchase.
3.4 Discuss the purchasing procedure.

4 Understand the banking system and its operations.

4.1 Define bank.
4.2 State the service rendered by bank.

4.3 Describe the classification of bank in Bangladesh.
4.4 State the functions of Bangladesh Bank in controlling money market.
4.5 Mention the various name of commercial Bank in Bangladesh and their functions.
4.6 Describe the role of “Gramin Bank” in assisting small scale industries.
4.7 Mention different types of account operated in a bank.
4.8 Mention how different types of bank accounts are opened and operated.

5 Understand the negotiable instrument.

5.1 Define negotiable instrument.
5.2 Discuss the types of negotiable instrument.
5.3 Define cheque.
5.4 Describe different types of cheque.
5.5 Define bill of exchange.
5.6 Define hondi and letter of credit.

6 Understand the stock exchange.

6.1 Define stock exchange.
6.2 State the objects of stock exchange.
6.3 Explain the functions of stock exchange.
6.4 Mention the procedure of membership of stock exchange.
6.5 Discuss the procedure of transaction in stock exchange.
6.6 Explain the stock exchange systems in Bangladesh.

7 Understand the home trade.

7.1 Define home trade.
7.2 State the objects of home trade.
7.3 Define whole sale trade.
7.4 State the functions of whole sale trade.
7.5 Define retail trade.
7.6 State the advantages of retail trade.
7.7 Differentiate between whole sale trade and retail trade.

8 Understand the foreign trade.

8.1 Define foreign trade.
8.2 Mention the advantages and disadvantages of foreign trade.
8.3 Mention the classification of foreign trade.
8.4 Discuss the importance of foreign trade in the economy of Bangladesh.

9 Understand the insurance, pension compensation, provident fund and benevolent fund.

9.1 Define insurance.
9.2 Describe the essential conditions of insurance contract.
9.3 Describe life insurance, marine insurance, fire insurance, re-insurance and premium.
9.4 Discuss the types of insurance.
9.5 Distinguish between life insurance and general insurance.
9.6 State the pension policy of the government and autonomous bodies.

9.7 Explain the features of group insurance system and employees benevolent fund.

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

COMPUTER TECHNOLOGY

SYLLABUS

SIXTH SEMESTER

2672 MICROPROCESSOR AND MICROCOMPUTER –II

T	P	C
2	3	3

AIMS

- To be able to develop the knowledge on the architecture and programming model of i8086 & MC 68000μPs.
- To be enable of writing program using i8086 & MC 68000μPs.
- To be able to develop the knowledge and skill on memory, I/O and interrupt interface of 8086μP.

SHORT DESCRIPTION

Intel family of μP fundamentals; Architecture and assembly language programming of 8086 μP; Memory, I/O & interrupt interface of 8086μP; MC 68000 fundamentals.

DETAIL DESCRIPTION

Theory:

1 Understand the architecture of intel 8086 / 8088 μP.

1.1 Mention the general features and electrical characteristics of 8086 / 8088μP.
1.2 State the pin signals of 8086 / 8088μP.
1.3 Describe the minimum & maximum mode signals of 8086 / 8088μP.
1.4 Describe the function of each block of 8086 μP architechture..
1.5 Describe the register structure of the 8086 μP.
1.6 Explain the minimum / maximum system mode interface of 8086 μP.
1.7 Explain the instruction execution sequence of 8086 μP.

2 Understand the 8086 addressing mode and programming concept.

2.1 Mention the addressing mode of 8086 μP.
2.2 Describe the addressing mode of 8086 μP for accessing immediate and register data, data in memory, I/O ports, etc.
2.3 Describe the software model of the 8086 μP.
2.4 Describe the software functions of the internal registers.
2.5 Explain the effect in registers before and after the instruction execution for different addressing modes of 8086 μP.
2.6 Describe the 8086 instruction set.
2.7 Explain the instruction format of 8086 μP.

3 Understand the assembly language programming of 8086 family.

3.1 Define the assembler pseudo instructions.

3.2 Describe the use of assembler directives (i. e. SEGMENT, ENDS, ASSUME, DUP, etc.)
3.3 Describe the use of program development tools (i.e.editor, assembler, linker, locator debugger and emulator.)
3.4 Explain the sequential, IF-THEN-ELSE, WHILE-DO and REPEAT-UNTILL structure in 8086 assembly language with pseudo code and flow chart.
3.5 Write assembly language programs.

4 Understand the memory interface of the 8086 μP.

4.1 Sketch the 8086 system memory interface.
4.2 State the meaning of even & odd address boundaries.
4.3 Describe the organization of IBM address space of 8086μP.
4.4 Define the active nonoverlapping/overlapping memory segments.
4.5 State the dedicated & general use of memory in 8086μP.
4.6 Explain the generation of physical memory address showing the relationship between logical segment address & offset and physical memory address.
4.7 Describe the hardware organization of the memory address space of 8086.
4.8 Describe the functions or use of memory control signals of 8086μP.
4.9 Describe the memory read and write bus cycle of 8086μP.
4.10 Explain the technique to demultiplex the system bus.

5 Understand the input / output interface of the 8086 μP.

5.1 Describe the 8086 system I/O interface.
5.2 Describe the I/O address space of the 8086 system.
5.3 Describe the operations of I/O instructions in 8086μP.
5.4 Describe the I/O read and I/O write bus cycle of 8086μP.
5.5 Describe the operation of the circuit to implement the parallel output ports in 8086 systems.
5.6 Describe the implementation/interface of PPI,PIT and DMAC with 8086 μP.

6 Understand the interrupt interface of the 8086 μP.

6.1 Mention the types of interrupts.
6.2 Describe the common features of different types of interrupts.
6.3 Sketch the map of interrupt vector table.
6.4 State the function and use of each address pointer or vector.
6.5 Describe the function, format and operation of interrupt instructions.
6.6 Describe the external hardware interrupt interface of the 8086μP.
6.7 Describe the function of PIC with block diagram.

7 Understand the memory and I/O system of a microprocessor based PC.

7.1 Describe the memory map of a personal computer.
7.2 State the meaning of TPA and XMA.

7.3 Describe the memory map of the TPA in a PC.
7.4 Explain the system area of a typical PC.
7.5 Describe the I/O map of a PC.
7.6 Describe the physical memory system of a pentium microprocessor.

8. Understand the bus interface system of a microcomputer.

8.1 State the meaning of bus interface.
8.2 Mention the names of different bus interface.
8.3 Draw the structure of PCI bus.
8.4 State the advantages of PCI bus.
8.5 Draw the structure of AGP.
8.6 State the main features of AGP.
8.7 Describe the structure of different memory interfaces.

9 Understand the new features of 16 and 32 bit microprocessor.

9.1 List some 16 bit microprocessor of different company with specification.
9.2 Describe the operation of each functional unit of Intel 80286 microprocessor.
9.3 Mention the advance features those do not have in Intel 8086/8088 processor.
9.4 Describe the connection diagram of 16 bit microprocessor,clock generator and system bus interface.
9.5 State the function of each bit of an EFLAG.
9.6 State the meaning of real mode and protected mode operation.
9.7 Describe the real mode memory addressing scheme using a segment address plus an offset.
9.8 Mention the functions of selectors and descriptors in a protected mode memory addressing.
9.9 Draw the descriptor format of Intel 80286.
9.10 Describe the protected mode memory addressing technique.

10 Understand the operation of the pentium microprocessors.

10.1 List the names of pentium processors.
10.2 State the detail specification of each types of pentium processors.
10.3 Describe the memory system of pentium processor.
10.4 State the meaning of superscaler architecture of pentium processor.
10.5 Describe the structure of pentium control and EFLAG registers.
10.6 State the function of BIST in pentium processor.
10.7 Describe the new features and recent development of pentium series processors (Intel pentium I, II, III & IV

<u>Practical</u> :

1. Perform the task to transmit 8 bit data from a microprocessor to an I/O module through a PPI using Intel 8086/8088 based μp trainer

2. Perform the task to receive 8 bit data from an I/O module to the μp through a PPI using Intel 8086/8088 based μp trainer
3. Perform the task to detect and display the the number of pulses through a PPI using Intel 8086/8088 based μp trainer.
4. Perform the task to transmit 8 bit data from a microprocessor to an I/O module through a PPI using handshaking technique in a Intel 8086/8088 based μp trainer
5. Perform the task to Receive 8 bit data from an I/O module to the μp through a PPI using handshaking technique in a Intel 8086/8088 based μp trainer
6. Perform the task for controlling LED matrix to Flash and shift LEDs using Intel 8086/8088 based μp trainer.
7. Perform the task to display a character in a LED matrix using Intel 8086/8088 based μp trainer.
8. Perform the task to shift and change the character in a LED matrix using Intel 8086/8088 based μp trainer
9. Perform the task for controlling the steps of a stepper motor.using Intel 8086/8088 based μp trainer
10. Perform the task for controlling the start,stop and direction using Intel 8086/8088 based μp trainer
11. Perform the task for controlling the rotational speed of an DC motor using Intel 8086/8088 based μp trainer
12. Perform the task to generate a trianguler/square wave voltage using Intel 8086/8088 based μp trainer
13. Perform the task to convert digital signal to analog form using Intel 8086/8088 based μp trainer
14. Perform the task to convert analog signal to digital form using Intel 8086/8088 based μp trainer
15. Perform the task to control the traffiq light using Intel 8086/8088 based μp trainer

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2673	COMPUTER PERIPHERALS	T	P	C
		2	3	3

AIMS

- To be able to develop the knowledge & skill in peripherals & their interface.
- To be able to acquire the knowledge and to develop the skill on working principle & operation of peripheral devices.

SHORT DESCRIPTION
peripheral interface and peripherals; Input-Output devices; Display devices; Special I/O devices; Disk, disk drives and controllers.

DETAIL DESCRIPTION

Theory:

PERIPHERAL INTERFACE

1 Understand the basics of interfacing.

1.1 Define peripheral and interfacing with example
1.2 State the functions and necessity of interfacing .
1.3 State the Categories of interface(Memory interface,I/O port/latch interface,peripheral interface,Inter system communication interface, System overhead interface,Control interface)
1.4 State the function of each category of interface with example.
1.5 Mention the methods of peripheral interfacing.
1.6 State the steps of analog and digital interfacing.in a computer system.
1.7 State the elements of interface.
1.8 Describe the function of a general purpose parallel interface with block diagram.

2 Understand the operation of serial interfaces.

2.1 State the necessity of serial interfacing.
2.2 Mention the asynchronous character and synchronous block data format for a serial interface.
2.3 Describe the operation of asynchronous serial interface with block diagram(UART).
2.4 Describe the operation of synchronous serial interface with block diagram.
2.5 Distinguish the Charateristics of asynchronous and synchronous serial interface.
2.6 Describe the operation of an USART with block diagram.

2.7 Describe the operation of RS 232.C/v.24 standard serial interface with block diagram.

INPUT-OUTPUT DEVICES

3 Understand the operation of keyboards and mouses.

3.1 Describe the construction and operation of mechanical,membrane, capacitive and Hall effect key switches.
3.2 Mention the desirable quality of key switches.
3.3 State the function of a keyboard encoder.
3.4 Describe the operation of keyboard encoder with block diagram..
3.5 State the terms : bouncing, n-key rollover and n-key lockout.
3.6 Explain the flowchart for scanning the keyboard.
3.7 Describe the principle of hardware debouncing.
3.8 Describe the operation of an opto-mechanical mouse.
3.9 Describe the working principle of an optical mouse.

4 Understand the basic operation of displays and adapters.

4.1 Classify the display devices.
4.2 Describe the operation of a CRT.
4.3 State the meaninig of the terms-pixel,scanning,Horizontal and Vertical scanning,interlace and non interlace scanning,composite video signal raster and VRAM.
4.4 Describe the principle of producing a character on a CRT display.
4.5 Describe the function of each block of the circuitry to produce one page dot-matrix character on CRT.
4.6 Describe the principle of producing color pixel on CRT screen.
4.7 Describe the operation of a color monitor using block diagram.
4.8 Describe the principle of LCD .
4.9 Describe the general structure of a modern graphics adapter.
4.10 Prepare the specification of a CRT/LCD monitor.

5 Understand the constructional and operational feature of dot matrix printers.

5.1 Classify printers.
5.2 State the feature of a dot-matrix printer.
5.3 Describe the operation of a dot matrix printer.
5.4 List the Major parts and components of a dot matrix printer.
5.5 State the function of each parts and components used in printing mechanism.
5.6 Describe the operation of the head driving circuit in a dotmatrix printer.
5.7 Mention the advantages and disadvantages of dot matrix printers.
5.8 Prepare the specification of a dot matrix printer.

6 Understand the operation of inkjet printers.

6.1 State the principle of inkjet and bubble jet formation for printing.
6.2 Describe the operation of an inkjet printer.

6.3 List the Major parts and components of an inkjet printer..
6.4 Mention the advantages and disadvantages of an inkjet printer..
6.5 Prepare the specification of an inkjet printer.

7 Understand the operation of LASER printers.

7.1 State the meaning of LASER.
7.2 Describe the operation of a LASER. printer.
7.3 List the Major parts and components of a LASER printer.
7.4 State the function of each parts and components of a LASER printer
7.5 Mention the advantages and disadvantages of an inkjet printer.
7.6 Prepare the specification of a LASER printer.
7.7 Mention the steps of data exchange via parallel interface.

SPECIAL I/O DEVICES

8 Understand the characteristics of special type I/O devices.

8.1 List the special types of I/O devices.
8.2 State the characteristics of joy-stick and digitizer.
8.3 Describe the working principle of light pen.
8.4 Classify and define different type of scanner.
8.5 Describe the operation of a flat bed scanner.
8.6 State the use of hand held scanner.
8.7 Define OMR, OCR and MICR.
8.8 Describe the characteristics of OMR, OCR and MICR.
8.9 Describe the advantages and limitations of MICR.
8.10 Describe the operation of a plotter.

DISK, DISK DRIVES AND CONTROLLERS

9 Understand the opration of Hard disk and CD ROM drives .

9.1 State the methods of data recording (punch card/paper tape, magnetic tape, magnetic disk and optical) for μC systems with example.
9.2 State the features of a flash memory as a secordary storage device.
9.3 Mention the data storage layout of a disk.
9.4 Describe the operation of a hard disk controller with block diagram.
9.5 Describe the operation hard disk drive.
9.6 Describe the recording principle in a CD.
9.7 Describe the operation of a optical disk drive(CD drive)
9.8 State the features of a re-writable optical disk.

<u>Practical</u>:

1. Identify the external and internal over view with major features and components of a keyboard.
2. Identify the controls (external & internal) and major components of a color CRT .
3. Locate the major parts and components of the circuit board of a color monitor.

4. Identify the mechanical assembly and the electronic part of a dot-matrix printer.
5. Identify the mechanical assembly and the electronic part of a LASER printer.
6. Identify the parts and components of an Inkjet printer.
7. Identify the major parts of a display adapter.
8. Identify the external and internal parts and components of a mouse
9. Identify the external and internal parts and components of a scanner .
10. Identify the external and internal parts and components of a plotter.
11. Identify the parts and components of a Hard Disk Drive.
12. Identify the parts and components of a CD drive.

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1. Computer Peripherals – Barry wilkinson and David Horocks.
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3. Microprocessors –K.C. SHET & K.M. HEBBAR
4. The Indispensable PC hardware – Hans Peter Messner.

2674 DATA COMMUNICATION AND COMPUTER NETWORK – I

T	P	C
2	3	3

AIMS

- To be able to acquire the knowledge on Digital communication and computer networks
- To be able to provide the knowledge and to develop skill on network topologies and protocols.
- To be able to establish / implement a LAN and provide services of Network.

SHORT DESCRIPTION

Digital communication systems,Network fundamentals; Topologies and protocols; The OSI reference model. Functions of the Physical layer and Data Link layer, Process of error detection and correction, Flow and error control,Network Addressing and Ethernet LAN.

DETAILS DESCRIPTION

Theory:

1 Understand Digital Transmission coding system.

1.1 State the purpose of Block codinig .
1.2 Describe the steps of Block codinig .
1.3 Describe the 4B/5B and 8B/10B block codes.
1.4 State the meaning of sampling and Quantization.
1.5 Describe the concept of Pulse Amplitude Modulation(PAM).
1.6 Describe the process of of Pulse code Modulation(PCM) system.
1.7 Describe Delta Modulation using block diagram.

2 Understand Digital Multiplexing Techniques.

2.1 Define Time division Multiplexing .
2.2 Describe the process of synchronous Time division Multiplexing .
2.3 State the meaning of the terms :Interleaving,synchronizing,Bit Padding
2.4 Solve problem related to TDM.
2.5 Describe the DS Hierarchy services including T and E-lines.
2.6 Describe the principle of Code division multiplexing system.
2.7 Describe the principle of SONET/SDH.

3 Understand distributed data processing and network basics.

3.1 Define distributed data processing system and computer Network.
3.2 Distinguish between distributed data processing and computer network.
3.3 State the advantages and limitations of distributed data processing.
3.4 Describe the advantages of Computer network.
3.5 Describe the application of computer network.
3.6 Describe client / server and peer-to-peer network.
3.7 Describe the general features of LAN, MANs and WANs.

4 Understand the network topologies.

4.1 Define topology.
4.2 Mention the difference between physical and logical topology.
4.3 Define point-to-point and multi point connections.
4.4 Describe the physical connection of bus, ring, star and hybrid topologies.
4.5 Mention the advantages and disadvantages of bus, ring, star and hybrid topologies.
4.6 Describe the factors to select a particular topology.
4.7 Describe the logical topologies of a token ring network.

5 Understand the functions of communication and network protocols.

5.1 Define network protocol.
5.2 Describe the main elements of protocol.
5.3 Describe the characteristics of different types of protocol.
5.4 Describe the functions of protocol.
5.5 List different types of network protocols.
5.6 State the functions of NetBEUI,NWLink and TCP/IP.
5.7 State the the advantages and disadvantages of NetBEUI,NWLink and TCP/IP.

6 Understand the OSI model.

6.1 Define communication standards.
6.2 Distiguish between De Facto and De Jure standards.
6.3 Describe the function of different communication standards organization.
6.4 State the the function of Forums and Regulatory Agencies.
6.5 State the function of IEEE in the field of communication and computer Network.
6.6 State the ISO issues.
6.7 Describe the reason for developing OSI Model.
6.8 Describe the functions of each layer of the OSI reference model.

7 Understand the functions of the Physical layer and Data Link layer of the OSI reference model.

7.1 Draw the position diagram of Physical layer in the Internet model.
7.2 Describe the functions and services of Physical layer.

7.3 Draw the position diagram of Data link layer in the Internet model
7.4 Describe the duties and responsibilities of Data link layer.
7.5 State the functions of LLC and MAC sublayer.
7.6 Describe the function of network connectivity devices used in Physical and Data link layers(Reapeater, modems, Hub/ Switch and bridge)

8 Understand the process of error detection and correction in a network.

8.1 State the types of errors with example.
8.2 Define Redundency.
8.3 State the types of Redundency checks/error detection methods in data communication.
8.4 Describe the process of simple and two dimentional Parity Check.
8.5 Describe the process of **Cyclic Redundency Check(CRC)** error detection method.
8.6 Describe the steps of **Checksum** error detection method..
8.7 Distinguish the performance of each error detection method.
8.8 Describe the Humming code error correction technique.
8.9 Describe the Burst error correction technique with example.

9 Understand functions of the Data Link control(Flow and error control).

9.1 Define flow control and error control.
9.2 State the types of flow control and error control machanism(ARQ).
9.3 Describe the process of Stop- and-Wait ARQ.
9.4 Describe the process of Go-Back- N-ARQ.
9.5 Describe the process of Selective-Reject ARQ
9.6 State the characteristics of High level Data Link Control(HDLC).
9.7 Describe the Frame structure of HDLC
9.8 Describe the operation step of HDLC.

10 Understand Network and IP Addressing.

10.1 Define Network Addrressing.
10.2 State the format of physical address of a NIC.
10.3 Define IP.
10.4 Describe the IP address Formats of Class A,B,C,D,E with example.
10.5 Describe Subnets and Subnet Masks.
10.6 Define IPv6.

11 Understand operation and features of Ethernet LAN.

11.1 State the background of Ethernet Technology.
11.2 Describe the frame format of ethernet /IEEE-802.3
11.3 Describe the features of Physical layer of 10-Mbps Ethernet(PLS,AUI and MAU).
11.4 Describe the implementational features of Traditional Ethernet (10Base5,10Base2,10Base-T,10Base-FL).
11.5 Describe the implementation features of Traditional Ethernet (10Base5, 10Base2,10Base-T,10Base-FL).

11.6 Describe the implementation features of FAST Ethernet(100Base-TX, 100Base-FX and 100Base-T4).

11.7 Describe the implementation features of Gigabit Ethernet(1000Base-SX, 1000Base-LX ,1000Base-CX and 1000Base-T).

Practical:

1 To identify the Nework Cards,Tools,Tester and Accessories(modems, Hub/ Switch,Reapeater,Bridge,Router etc.)

2 To connect RJ45 Cnnector with UTP Cable in the form of straight through /Cross Over.

3 To establish a Pear to Pear LAN

4 To install NIC into the PC

5 To check the MAC address of the NIC

6 Connect cable connector with PC & Hub/Switch

7 Configure the TCP/IP in each PC

8 Test the connectivity of the PCs

9 Perform the task to Work with a Peer to peer LAN environment for simple data communication.

10 Share the folders / secondary memory.

11 Share a printer or any other resources.

12 Work for Net meeting.

13. To establish a Client–Server Local Area Network

14. To install Windows 2003 server into a server PC

15. To configure TCP/IP to server and client PCs

16. Perform the task to configure the Active Directory

17. Perform the task to configure The DNS.

18. Perform the task to configure the DHCP

19. Perform the task to configure the Mail Server

20. Perform the task to configure the Web server.

21. Perform the task to configure the Print/File server.

22. Perform the task to Work with a Client–Server LAN environment for simple data communication and Administrative functions.

REFERENCE BOOKS

1 Data communications and Networking – Behrouz A. Forouzan
2 Data and Computer Communications-William Stallings
3 Fundamentals of comunication-M. Shamim Kaiser and associates
4 Local Area Networking – S. K Basandra.
5 Computer Networks – Uyless Black.
6 Computer Networks – Andrew S. Tanenbaum.
7 MCSE Windows & Networking Essential – Joe Casad.

2675 COMPUTER OPERATING SYSTEM

	T	P	C
	2	3	3

AIMS

- To be able to develop the skill and attitude to Direct,control and manage of computer using operating system.
- To be able to install the linux operating system.
- To be able to develop the skill to configure and customize linux operating system.

SHORT DESCRIPTION

Basic concepts of operating system; Memory management; Dead locks; Process management; I/O system; File system.and Linux fundamentals; Linux commands and utilities.

DETAIL DESCRIPTION

BASIC CONCEPTS OF OPERATING SYSTEM

1 Understand the general features of operating system.

1.1 Define operating system,Kernel and monitor program.
1.2 Describe the functions(of kernel) and services of operating system
1.3 Describe the abstract view of the components of computer system.
1.4 Describe the evolution (history) of operating system.
1.5 Explain the role of operating system as an extended machine and as a resource manager.
1.6 Mention the important features of DOS, Windows, UNIX and LINUX.
1.7 Define the terms-Multiuser,Multitasking and GUI.

2 Understand the terms related to operating system.

2.1 Define batch processing system
2.2 Describe the method of batch processing system.
2.3 State the disadvantages of batch processing.
2.4 Describe the uses of job control language for operating system.
2.5 Describe the process of spooling.

3 Understand multiprogramming,multiprocessing and time sharing system.

3.1 Define multiprogramming.
3.2 Mention the requirements of multiprogramming.
3.3 Explain the operation of multiprogrammed batch system.
3.4 Define multiprocessing.
3.5 Describe the basic organization of multiprocessing system.
3.6 Describe the advantages and limitations of multiprocessing.
3.7 Explain the concepts of time sharing system with diagram.

3.8 Describe the advantages and disadvantages of time sharing system.

MEMORY MANAGEMENT

4 Understand the technique of memory management .

4.1 Mention the function of memory management.
4.2 Describe the single / multiple partition scheme.
4.3 Describe fixed memory partition with separate / single input queue.
4.4 Describe external and internal fragmentation.
4.5 Describe relocatable and dynamically relocatable partitioned allocation.
4.6 Define swapping
4.7 Describe swapping system.
4.8 Describe the compaction paged allocation.
4.9 Describe the segmented allocation and segmented page allocation.
4.10 Describe the concept of virtual memory and demand paging.

PROCESS MANAGEMENT

5 Understand the basics of process management.

5.1 Define process.
5.2 Describe the process state with diagram.
5.3 Mention the difference between process and program.
5.4 Describe the imfortence of process control
5.5 Mention the function of scheduler and traffic controller.
5.6 Describe the process scheduling and scheduling queues.
5.7 Describe the race conditions and stalemate.
5.8 Describe the manner in which multiple processor may be used for multiprogramming.

DEADLOCKS

6 Understand the concept of deadlocks.

6.1 Define deadlock, preemptable and non- preemptable resources.
6.2 Mention the necessary conditions of deadlocks.
6.3 Describe deadlock prevention.
6.4 Describe the deadlock avoidance and their algorithm.
6.5 Describe the deadlock detection algorithm.
6.6 Describe the way of recovery from deadlock

I/O SYSTEM

7 Understand the I/O system concepts.

7.1 State the characteristics and principle of I/O hardware.
7.2 Describe the role of operating system in I/O operation.
7.3 Describe the goals of I/O software.
7.4 Describe the function of each layer of I/O system.

FILE SYSTEM

8 Understand the file system fundamentals.

8.1 Mention the concept and attributes of file.
8.2 Describe the basic file operation.

8.3 State the terms : the file pointer, file open count, disk location of file.
8.4 Mention the file types with common features.
8.5 Define file system.
8.6 Describe the organization of file system.
8.7 Describe the features of general file system.
8.8 Describe the free space management of disk space.
8.9 Describe the allocation methods of disk space.

9 **Understand the feature of Linux Operating System**.

9.1 State the background and importance of Linux.
9.2 Describe the features of Linux Kernel.
9.3 State the advantages of linux operating system.
9.4 State the features of Fedora or Red Hat Enterprise Linux.
9.5 State the name of information required during the installation of Fedora Linux.
9.6 State the features of GNOME and KDE desktop
9.7 Define shell
9.8 Mention the name of different shell for different user.
9.9 State the function of Linux shell.

Practical

1 Perform the task to install Linux operating system.

1.1 Arrange the necessary hardware for installing linux network operating system(Fedora)
1.2 Insert the First CD in the CD ROM Drive.
1.3 Start the boot procedure.
1.4 Check the installation media.
1.5 Choose a Language
1.6 Choose a Keyboard.
1.7 Select monitor Configuration
1.8 Choose install type
1.9 Choose Partitioning strategy
1.10 Choose Partitioning options
1.11 Configure boot loader.
1.12 Configure advance boot loader
1.13 Configure networking
1.14 Choose firewall configuration.
1.15 Choose additional language support.
1.16 Choose a time zone.
1.17 Set root password.
1.18 Select packages.
1.19 Configure the monitor.
1.20 Finish installation.

2 Perform the task to Make partition to a Hard disk with disk Druid.

2.1 Delete the partition in disk druid.
2.2 Add a partitions in disk druid.
2.3 Edit a partitions in disk druid.
2.4 Write a reports.

3 Perform the task to Make partition to a Hard disk with fdisk .

3.1 Use fdisk command to list all partition,to see each partition is being used and to change the partition.
3.2 Delete the partition.
3.3 Create partitions.
3.4 Change the partition type.
3.5 Display the partition table and exit.
3.6 Write a reports.

4 Perform the task to Use the FIPS utility.

4.1 Check windows /DOS partition.
4.2 Create a bootable FIPS Floppy.
4.3 Defragment the Harddisk.
4.4 Reboot(FIPS boot disk) and test.
4.5 Run FIPS
4.6 Reboot(FIPS boot disk) and test.
4.7 Restart the computer.
4.8 Write a reports.

5 Perform the task to Use GRUD boot loader.

5.1 Boot the computer with GRUD.
5.2 Change or Add boot options(Temporarily or Permanently).
5.3 Add a new GRUD boot image.
5.4 Write a reports

6 Perform the task to Use LILO boot loader.

6.1 Boot the computer with LILO.
6.2 Use the LILO .
6.3 Set the /etc /lilo.conf.file.
6.4 Change the boot loader.
6.5 Write a report.

7 Perform the task to work with Linux Desktop.

7.1 Log on into the Linux.
7.2 Familiar with the Desktop.
7.2.1 Check the home folder.
7.2.2 Change the preferences.
7.2.3 Configure the panel/destop.
7.3 Use the GNOME desktop.
7.4 Use the Metacity window manager
7.5 Use the GNOME Panel
7.6 Use Red Hat menu
7.7 Add apllet,application launcher and drawer.

7.8 Change panel properties.
7.9 Choose and use KDE desktop.
7.10 Write a report.

8 Perform the task to manage files with the conqueror file manager.

8.1 Open a file.
8.2 Choose an application.
8.3 Delete,copy, paste,move and link files.
8.4 View quick file information,hidden files,file system tree.
8.5 Display the system users with *who*.
8.6 Change icon size
8.7 Search for fliles
8.8 Create new file and folders.
8.9 Write a report.

LINUX COMMANDS AND UTILITIES

9 Apply basic linux commands and utilities.

9.1 Use the command options to modify the basic function of linux commands.
9.2 Use two or more linux commands in tandem by using input and output redirection.
9.3 Use the parameters with linux commands.
9.4 Select and use the notational shorthand used in linux documentation.
9.5 Use the linux online man pages and help facilities.
9.6 Use the wildcards.
9.7 Check the environmental variables.
9.8 List the processes running on the linux system.
9.9 Kill the processes.
9.10 Write a reports.

10 Work with the linux file system.

10.1 List the type of files and directories.
10.2 Move one directory to another.
10.3 Make a new file and directory.
10.4 Move and copy files.
10.5 Remove the files and directories.
10.6 Use *chown* and *chgrp* to change file and directory ownership.
10.7 Use *chmod* to change the file and directory permissions.
10.8 Use *gunjip* command to uncompress .gz files compressed by gzip.
10.9 Write a reports.

11 Work with bash (Bourne Again shell).

11.1 Select the most common shells used in linux.
11.2 Enter commands into bash.
11.3 Use wildcards that bash shell supports.
11.4 Use the history command with or without options.
11.5 Use the aliases command.

11.6 Use the input/output redirection command.
11.7 Show the use of pipeline.
11.8 Modify the bash shell.
11.9 Write a report.

12 Use file systems, disks and other derives.

12.1 Mount the floppy disk and CD ROM.
12.2 Make a new file system.
12.3 Unmount the floppy & CD ROM.
12.4 Use tar and gzip.
12.5 Use tar command to backup files in floppy.
12.6 Write a report.

13 Manage the users account.

13.1 Make the root (superuser) suppresser accounts.
13.2 Make the user accounts.
13.3 Add and delete users.
13.4 Delete groups.
13.5 Write a report.

14 Work with text editors.

14.1 Select the text editor in linux.
14.2 Use vi editor to enter & edit text.
14.3 Use emacs to enter & edit text.
14.4 Write a report.

15 Work with the printer in linux.

15.1 Select the printer to support in linux.
15.2 Configure the printer.
15.3 Use the commands lpr, lpq, lprm and lpc for printing documents under linux.
15.4 Write a report.

16 Apply the tools to develop and to debug the C & C++ applications under linux.

16.1 List the GCC options.
16.2 List and use the basic gdb commands.
16.3 Use the sample gdb session.
16.4 List and use the additional C programming tools in linux.

REFERENCE BOOKS

1. Operating System Concepts.
by Silberschatz galvin.
2. Modern Operating Systems.
by Andrew S. Tanenbaum.
3. Computer Fundamentals.
by P. K. Sinha.

4. Red Hat Fedora Linux 2 bible
By Christopher Negus
5. Learnng Red Hat Linux
By Bill Mc Carty
6. Linux – by Kamran Hussain, Timof by Pasker.

2676 ASSEMBLY LANGUAGE PROGRAMMING

T	P	C
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AIMS

- To be able to develop the skill in using the assembler.
- To be able to realize the use of the instruction set of 8086/8088 microprocessor.
- To be able to develop the knowledge and skill in assembly language programming.

SHORT DESCRIPTION

Assembler and assembly language fundamentals; Simple programs; Arithmetic problems; Branching and looping programs, Handling character coded data; Code conversion problems; Handling tables and lists;Input/ Output programs; Handling interrupts.

DETAIL DESCRIPTION

ASSEMBLER AND ASSEMBLY LANGUAGE FUNDAMENTALS

1 Familiar with the features of microprocessor and assembler.

1.1 Draw the functional structure of Intel 8086 microprocessor
1.2 Draw the register structures of Intel 8086 microprocessor
1.3 Draw a memory map of the PC(BIOS,Video,Application program area,DOS/Windows,BIOS and DOS data,interrupt vectors and device drivers).
1.4 Show the relationship among segment**:**offset(logical) address and physical address and location of segment.
1.5 Label the different fields of assembly language instructions(syntax).
1.6 List the name of some assembler
1.7 Write the program data type and function of byte,word and arrays variables(pseudo-op-DB,DW) and Name constant (EQU) with syntax and example.

2 Familiar with the program structure(memory model,data segment,stack segment,code segment and programming steps in assembly language.

2.1 Write the model names,description and syntax
2.2 Write the syntax of dara,stack and code segment diectives with example.
2.3 Write the General form of assembly language program.
2.4 Draw the flow chart for creating and running an assembly language program.

2.5 Write the use and format of I/O instruction(MOV and INT) including function number(1,2,9 and 21) and associate registers.

3 Perform the task to prepare and run assembly language program to read a character from the keyboard and display it at the beginning of the next line.

3.1 Write the algorithm of the problem.
3.2 Draw the flowchart of the program
3.3 Write and realize the requirement of the instructions including their syntax and meaning(MOV & INT).
3.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler files Command(MASM, LINK, DEBUG) exist.
3.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.
3.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.
3.7 Link the program by converting object file to executable(**.**EXE) file (using LINK).
3.8 Run the executable file to demonestrate the result/output.
3.9 Write a Report.

4 Perform the task to prepare and run assembly language program for displaying a string .

4.1 Write the algorithm of the problem.
4.2 Draw the flowchart of the program
4.3 Write and realize the requirement of new instruction including its syntax and meaning (LEA).
4.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler Command(MASM,LINK, DEBUG) exist.
4.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.
4.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.
4.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..
4.8 Run the executable file to demonestrate the result/output.
4.9 Write a Report.

5 Perform the task to prepare and run assembly language program to change and display a letter case from upper to lower and lower to upper

5.1 Write the algorithm of the problem.
5.2 Draw the flowchart of the program

5.3 Write and realize the requirement of the new instructions including their syntax and meaning(ADD & SUB).
5.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler Command(MASM, LINK, DEBUG) exist.
5.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.
5.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.
5.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..
5.8 Run the executable file to demonestrate the result/output.
5.9 Write a Report.

6 Perform the task to prepare and run an assembly language arithmatic (addition and subtraction) program to show the registers content,check the flag settings and affect of flags using DEBUG command.

6.1 Write the algorithm of the problem.
6.2 Draw the flowchart of the program
6.3 Write and realize the requirement of the new instructions including their syntax and meaning(NEG & INC).
6.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler Command(MASM, LINK, DEBUG) exist.
6.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.
6.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.
6.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..
6.8 Apply DEBUG command to the Run(executable) file
6.9 View the registers content and flag status by typing “R”
6.10 Use the trace(T) command for all the instructions step by step and to show the registers content and affect of flags.
6.11 Use go (G) command to complete the execution of the program.
6.12 Use quit(Q) command to exit from the DEBUGing process.
6.13 Write a Report.

7 Perform the task to prepare and run assembly language program to display the entire IBM character set for realizing the operation of jump instruction.

7.1 Write the algorithm of the problem.
7.2 Draw the flowchart of the program

7.3 Write and realize the requirement of the new instructions including their syntax and meaning(INC,DEC,JNZ).
7.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler Command(MASM,LINK, DEBUG) exist.
7.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.
7.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.
7.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..
7.8 Run the executable file to demonestrate the result/output.
7.9 Write a Report.

8 Perform the task to prepare and run assembly language program to read a sequence of characters and display them in reverse form on the next line for realizing the operation of stack.

8.1 Write the algorithm of the problem.
8.2 Draw the flowchart of the program
8.3 Write and realize the requirement of the new instructions including their syntax and meaning(XOR,CMP,JE,PUSH,POP,JCXZ, JMP and LOOP).
8.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler Command(MASM,LINK, DEBUG) exist.
8.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.
8.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.
8.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..
8.8 Run the executable file to demonestrate the result/output.
8.9 Write a Report.

9 Perform the task to prepare and run assembly language program to prompt the user to enter a line of text. On the next line,display the capital letters entered that comes first alphabetically and the one that comes last.If no capital letter are entered,display “No capital letters”,for realizing the operation of branching and looping structures.

9.1 Write the algorithm of the problem.
9.2 Draw the flowchart of the program
9.3 Write and realize the requirement of the new instructions(JNGE, JNLE,JNL,JNG,JNE)including their syntax and meaning.
9.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the

directory and folder where the assembler Command(MASM,LINK, DEBUG) exist.

9.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.

9.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.

9.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..

9.8 Run the executable file to demonestrate the result/output.

9.9 Write a Report.

10 Perform the task to prepare and run assembly language program to read a binary number from keyboard and stores it's value in a register for realizing the operation of logic,shift and rotate instructions.

10.1 Write the algorithm of the problem.

10.2 Draw the flowchart of the program.

10.3 Write and realize the requirement of the new instructions including their syntax and meaning(AND,SHL/SAL,OR,ROL/ROR).

10.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler Command(MASM,LINK, DEBUG) exist.

10.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.

10.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.

10.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..

10.8 Run the executable file to demonestrate the result/output.

10.9 Write a Report.

11 Perform the task to prepare and run an assembly language arithmatic program to find the product of two positive integers by addition and bit shifting method using DEBUG command.

11.1 Write the algorithm of the problem.

11.2 Draw the flowchart of the program

11.3 Write and realize the requirement of the new instructions including their syntax and meaning(CALL & RET,TEST,JZ,SHR).

11.4 Choose a text edittor(Note pad) and assembler(MASM/TASM),create source program and save the program with(**.**ASM) extension into the directory and folder where the assembler Command(MASM, LINK, DEBUG) exist.

11.5 Assemble the program by converting source file(.ASM) to object file(.obj) using MASM.EXE files of the current directory.

11.6 Create Source Listing(**.**LST) and Cross Reference(**.**CRF) files.

11.7 Link the program by converting object file to executable(**.**EXE) file using(LINK)..

11.8 Apply DEBUG command to the Run(executable) the file.
11.9 View the registers content and flag status by typing “R”
11.10 Display the memory byte of the SS using dump(D) command.
11.11 Use the RAX and RBX command to change the value of AX and BX registers.
11.12 View the registers content and flag status by typing “R” again.
11.13 Use the trace(T) command to see the affect of first instruction,CALL 0007 .
11.14 Display the memory byte of the SS using dump(D) command.
11.15 Use go offset, dump(D) and trace(T) command step by step to see the affect of registers and flag bits.
11.16 Use go(G) command to complete the execution of the program.
11.17 Use quit(Q) command to exit from the DEBUGing process.
11.18 Write a Report.

12 Prepare and run the assembly language programs to handle character coded data, find the length of string, search a string, edit a string, add parity bit, compare two strings, etc.

12.1 Select the equipment, hexa-ASCII table, etc.
12.2 Choose a title to describe the problem.
12.3 Write sample problem showing the input data and results.
12.4 Write the algorithms and draw the flowcharts of the problems.
12.5 List the source code and object code of the programs.
12.6 Input the source or hexa codes of the programs into the machine.
12.7 Execute the programs.

13 Prepare and run the assembly language programs to handle code conversion i.e. Hexa to ASCII, decimal to 7- segment, ASCII to decimal, BCD to binary, ASCII string to binary number and vice-versa.

13.1 Select the required equipment.
13.2 Write the sample problems showing the input data and results.
13.3 Write the algorithms and the flowcharts of the problems.
13.4 List the source and object code of the programs.
13.5 Input the source or hexa- codes of the programs into the machine.
13.6 Execute the programs.

14 Prepare and run the assembly language programs to add entry to list, check an ordered list, replace a chain with data, sort an array, remove entry from list, add entry in ordered list, etc.

14.1 Select the required equipment or elements.
14.2 Write sample problems to showing the input data and results.
14.3 Write algorithms and draw flowcharts of the problem.
14.4 List the source / object codes of the programs.

14.5 Input the source or object code into the machine.
14.6 Execute the program to display the results.

15 Prepare and run assembly language programs to interface the peripherals to the computer and transfer data, status and control signals.

15.1 Select the requirements.
15.2 Choose a title for the programs.
15.3 Write sample programs showing the input data and results.
15.4 Draw the hardware configuration to describe the principle of peripheral interfaces.
15.5 Draw the flowcharts.
15.6 List the source / object codes of the programs.
15.7 Input the source / object codes of the programs into the machine.
15.8 Execute the programs.

16 Produce the assembly language programs to handle keyboard and printers interrupts and to places / sends the data for I / O operations.

16.1 Select the requirements.
16.2 Choose a title for the programs.
16.3 Write sample programs showing the input data and results.
16.4 Draw the flowcharts of the problems.
16.5 List the source / object codes of the programs.
16.6 Input the program codes into the machine.
16.7 Execute the programs.

REFERENCE BOOKS

1. Assembly Language Programming and Organization of the IBM PC
-Ytha Yu and Charles Marut.
2. 8080A-8085 Assembly Language Programming
- Lance A Leventhal.
3. Using Assembly Language
– Allen L Wyatt.

2678 QUERY LANGUAGE

T	P	C
0	3	1

AIMS

- To be able to develop skill and attitude to create and work with query language.
- To be enable to create, use and manipulate oracle database.

SHORT DESCRIPTION

Install Oracle Database Language and Invoking SQL *Plus. Manipulate data in data base management system, View,Delete and Update data into a table, Modify the structure of a table and work with a an ASCII editor, Computate Table Data, Oracle Functions, Date Constraints, Grouping Data From Tables in SQL, Manipulating Dates In SQL, Joins, Constructing Sentence with data from Table Columns using the Union, Intersect, And Minus Clause, Indexes in SQL View,sequences and Security in SQL PL/SQL Transaction, process and Parameterized cursor in PL/SQL, Concurrency Control(Implicit and explicit lock) and error handling in PL/SQL Database object,Oracle package and database trigger in PL/SQL **.**

DETAIL DESCRIPTION

1 Perform the task to install Oracle Database Language and Invoking SQL *Plus.

16.5 Arrange the necessary hardware and operating system for installing **Oracle.**
16.6 Choose the Oracle Server software and client tools.
16.7 Insert the Oracle CD in the CD ROM Drive.
16.8 Follow the steps for installing Oracle according to the requirments.
16.9 Follow the steps for invoking SQL *Plus
16.10 Follow the steps for creating shortcut on the desktop

2 Perform the task to manipulate data in data base management system.

12.1 Create a two dimentional matrixes.
12.2 Construct generic SQL Sentences.
12.3 Create table command.
12.4 Create a table from a table.
12.5 Insert data into a table from another table
12.6 Insert a data set into a table from another table

3 Perform the task to view,delete and update data into a table.

12.1 View the data of all rows and all columns
12.2 View the data of Selected columns and all rows .
12.3 View the data of Selected rows and all columns .
12.4 View the data of Selected columns and selected rows
12.5 Eliminate the duplicates from the Select statement
12.6 Sort the data in a table.

12.7 Remove data from all rows.
12.8 Remove data from a specific rows.
12.9 Update all rows
12.10 Update record conditionally .

4 Perform the task to modify the structure of a table and work with a an ASCII editor.

12.1 Add a new column.
12.2 Modify the existing column
12.3 Rename the table
12.4 Destroy the table
12.5 Find the tables create by the user
12.6 Find out the the column details of a table created
12.7 Run the SQL file using Start at the SQL prompt.
12.8 Save the ASCII file from the SQL Prompt

5 Perform the task to Compute on Table Data including 'DUAL' and SYSDATE

12.1 Compute with Arithmetic Operators .
12.2 Rename Column Used with Expression List
12.3 Compute with Logical Operators .
12.4 Work with Range Searching and Pattern Matching
12.5 Work with ORACLE TABLE 'DUAL' and SYSDATE

6 Perform the task to work with Oracle functions and different Type of constraints.

12.1 Work with Group fuctions((Aggregate Function).
12.2 Work with Scalar Function (Single Row Function)
12.3 Work with Date conversion Function.
12.4 Work with Table level constraints, UNIQUE, PRIMARY KEY, FORIGN KEY and CHECK constaints.
12.5 Define different constraints on a table
12.6 Set default values for columns
12.7 Work with the user constaints Table
12.8 Create constraints using the ALTER Table clause.
12.9 Delete constraints using the ALTER Table clause..

7 Perform the task to work for grouping data from tables and manipulate dates in SQL

12.1 Retrieve data using Group BY Clause
12.2 Retrieve data using HAVING Clause
12.3 Manipulate date with TO_CHAR and TO_DATE Functions.
12.4 Create Special date formats using the To_Char function

8 Perform the task to work with Subqueries and JOINS in SQL

12.1 Work with Subqueries

12.2 Join multiple tables (Equi Joins)
12.3 Join a table to itself (Self Joins)
12.4 Construct sentence with data from table columns.
12.5 Use the UNION, INTERSECT and MINUS CLAUSE

9 Perform the task to work with Indexes in SQL

12.1 Create simple, Composite and Unique Indexes.
12.2 Drop Indexes
12.3 Work with Multiple Indexes on a table
12.4 Use ROWID to Delete Duplicate Rows from a Table
12.5 Use ROWNUM in SQL Statements

10 Perform the task to work with View,sequences and Security in SQL

12.1 Create and use views.
12.2 Rename the columns of a view
12.3 Selecting a data set from view
12.4 Update and Destroy a Views
12.5 Create Sequences
12.6 Alter a sequence
12.7 Drop A Sequences
12.8 Grant privileges using the GRANT statement
12.9 Revoking permission using the REVOKE statement

11 Perform the task to work with PL/SQL

12.1 Familiar with generic PL/SQL code block and execution environment.
12.2 Display user messages on the screen .
12.3 Work with the Conditional Control statements in PL/SQL
12.4 Work with the Iterative Control statements in PL/SQL

12 Perform the task to work with oracle transaction,process and Parameterized cursor in PL/SQL

12.1 Close transactions.
12.2 Create SAVEPOINT.
12.3 Processes the SQL statements
12.4 Declare a Parameterized cursor in PL/SQL
12.5 Open a Parameterized cursor and pass values to the cursor

13 Perform the task to work with Concurrency Control(Implicit and explicit lock) and error handling in PL/SQL

12.1 Use Oracle default locking strategy.
12.2 Work with Oracle Explicit Locking using Select ..For update statement and lock table statement .
12.3 Work with Oracle named Exception Handlers
12.4 Work with user defined Exception Handlers for I/O validations and business rules.

14 Perform the task to work with Database object,Oracle package and database trigger in PL/SQL

12.1 Create stored procedure and functions.

12.2 Delete a stored procedure and functions.
12.3 Create and invoke a package & the Oracle engine.
12.4 Alter to an existing package
12.5 Use Overload Built-in PL/SQL functions and procedure
12.6 Use Database triggers .
12.7 Delete a trigger.
12.8 Generate a primary key using a database triggers
12.9 Generate Primary Key Using Sequence
12.10 Generate Primary Key Using MAX Function

REFERENCE BOOK

1 SQL,PL/SQL
The programming language of ORACLE
By-IVAN BAYROSS

2679 WEB PROGRAMMING

T	P	C
	0	3	1

AIMS

- To be able to develop skill and attitude to design & create web page.
- To be enable to browse and use web sites
- To be enable to link web pages and multimedia objects to the internet environment

SHORT DESCRIPTION

Design and development of web pages using XHTML/XML/PHP; Physical and logical character effects in XHTML/XML/PHP pages; Use of ordered and unordered list, table,forms,Radio button,Submit button and checkbox in web pages;Use of Validation check.,Managing document spacing, linking image ,other pages and multimedia objects and use of cascading style sheet in web page .

DETAIL DESCRIPTION

WEB BASIC

1 Perform the task to familiar with the browser programs.

1.1 List the web browsers to access the web.
1.2 Access to a popular program web browser.
1.3 Start up a browser program.
1.4 Move back and forth among web sites using browser window commands or menu options.
1.5 Use URL to change the default home page.
1.6 Select a link to load the web page or file associated with the link.
1.7 Display the web site of a company/university or any other organization.

2 Perform the task to create a simple well structured XHTML/XML/PHP documents.

2.1 Draw the architecture of a simple XHTML/XML/PHP document
2.2 Select a favorite text editor.
2.3 Create a new file for the document.
2.4 Select a sample text statement for the document.
2.5 Type the document using different type of tags(XHTML/XML/PHP tag, HEAD tag and body tag.
2.6 Type the comment tag followed by a sample comment.
2.7 End the comment using appropriate sign character.
2.8 Use multiline comment in the document.
2.9 Save the HTML document.
2.10 Test the sample comments using an appropriate browser(explorer).

3 Perform the task to create a simple XHTML/XML/PHP documents with paragraph and header elements.

3.1 Select the directories to develop a XHTML/XML/PHP document.
3.2 Open a file in a text editor.
3.3 Type comments with appropriate Tag format
3.4 Use <XHTML>/<XML>/PHP> start tag.
3.5 Include <Head> tag.
3.6 Use Title of the page using appropriate <TITLE> Tag.
3.7 Close </Head> tag.
3.8 Use <BODY> tag including paragraph and six heading tags.
3.9 Use </BODY> and </XHTML> End Tag.
3.10 Save the file with appropriate file extension.
3.11 View the home page using different browsing applications.

4 Perform the task to add physical and logical character effects in XHTML/XML /PHP page.

4.1 Include different type of attributes inside the body tag.
4.2 Use bold, italic and fixed width fonts.
4.3 Change font size and background & font color.
4.4 Underline text.
4.5 Specify strikethrough formatting.
4.6 Include superscripts and subscripts.
4.7 Use heading style.
4.8 Place emphasis and strong emphasis.
4.9 Specify a citation.
4.10 Emphasize a defined term.
4.11 Write a report.

LISTS

5 Perform the task to create unodered and ordered list in web page.

5.1 Create a number list.
5.2 Specify the style and sequence of number.
5.3 Create a bulleted list.
5.4 Modify the appearace of bullets.
5.5 Create unmarked list, menu list, directory list and glossary list using appropriate tag and attribute.
5.6 Test the document using an appropriate browser(explorer).

6 Perform the task to maintain proper spacing in web page.

6.1 Add horizontal rule(line) to an HTML document.
6.2 Align text on a line using tables.
6.3 Center the text on a page.
6.4 Manage vertical space.
6.5 Stop a browser form breaking a line at a critical point.
6.6 Include preformatted text in the web page.
6.7 Insert a block quotation.

6.8 Create columnar text to span a table.
6.9 Make space to the home pages.
6.10 Test the web page by loading it into a browser.

7 **Perform the task to create text hyperlinks**

7.1 Open the text editor to write source code of the web pages
7.2 Use Title of the page using appropriate <TITLE> Tag
7.3 Use rhe tag
7.4 Specify the locations of the linked resourse using appropriate anchor element(a) and attribute
7.5 Test the web page by loading it into a browser.

8 Perform the task to use and link of image as the background for the web page.

8.1 Locate or create a background image.
8.2 List the popular image formats for use as web page background.
8.3 Open the web page in a text editor.
8.4 Locate the opening tag of the body element for the page.
8.5 Specify the location of the image file using img element and appropriate attributes.
8.6 Specify the width and hight of the image.
8.7 Type the URL of the image as a background of the web page after the equal sign.
8.8 Save the web page and Test the web page by loading it into a browser

9 Perform the task to establise the links to a web page.

9.1 Identify various parts of URL.
9.2 Create relative URL.
9.3 Add a base for relative URLs within the body of a document.
9.4 Specify the relationship between a page and other resources.
9.5 Create a link to a local page.
9.6 Create a link to other pages.
9.7 Send data to an http server via a URL.
9.8 Create a link to a specific part of a page.
9.9 Create a link to an FTP/Gopher/Telent/WAIS Usenet Newsgroup.
9.10 Create a link to electronic mail

10 Perform the task to apply math and tables effectively in a web page.

10.1 Create a table in a web page.
10.2 Place a caption in a table.
10.3 Insert a table heading.
10.4 Put data into cells or table element.
10.5 Insert a blank cell into a table.
10.6 Create a new row of data.
10.7 Specify the width of a table relative to the browser window.
10.8 Specify the distance between cells.
10.9 Set the distance from the cell edge to the cell data.

10.10 Put the table in the home page.

11 Perform the task to create forms into a web page.

11.1 Open a text editor to create forms.
11.2 ype the heading of the form using appropriate tag.
11.3 Type an instruction for the user using paragraph tag.
11.4 Specify the form method and action attributes.
11.5 Specify the field name of the form using appropriate label tag.
11.6 Specify the input type,size and length of the text box using appropriate attributes.
11.7 Specify the input type and value to create button.
11.8 Use textarea,checkbox,select and option tag element in a form of web page.
11.9 Save the form documents with appropriate file name and extention.
11.10 Test the web page by loading it into a browser.

12 Perform the task to create and use image map,metaelement,frameset element and nested framesets.

12.11 Open a text editor to create forms.
12.12 Type the heading of the image map using appropriate tag.
12.13 Designate areas of an image using map and area elements and appropriate attributes.
12.14 Create a meta element using
12.15 Use frameset elements and attributes to allow the browser to display more than one documents simultaniously.
12.16 Save the documents and Test the web page by loading it into a browser.

13 Perform the task to apply externally linked multimedia objects in a web page.

13.1 Add links to multimedia in a home page.
13.2 Add an external image.
13.3 Convert among image formats.
13.4 Insert a video.
13.5 Convert the video file formats.
13.6 Insert a sound file.
13.7 Convert the audio file formats.
13.8 Install the document on the web site.

14 Perform the task to create a simple style sheets using CSS.

14.1 Open the HTML document to edit in any favorite editing environment.
14.2 Locate the position in which content to be added.
14.3 Begin style sheet section using STYLE tag and TYPE Attributes for specify the MIME type.
14.4 Specify CSS rules inside the curly braces
14.5 Specify property name followed by colon and property value.
14.6 Specify properties separated by semicolon.

14.7 Specify the background color of the element.
14.8 Specify the font-family property.
14.9 Apply class attribute styles.
14.10 Save the document.
14.11 Test the document using an appropriate browser(explorer).

15 **Perform the task to check validity of a html documents.**
15.1 Open the XHTML document to edit in any favorite editing environment.
15.2 Prepare a simple web page
15.3 Specify the Locate of the file or URL
15.4 Upload the file to the site at “validator.w3.org/filename.html.

16 Perform the task to design and develop a web page of your Department/ Institute or any other organization containing formated text, table, forms ordered and unordered list items,image,video,sound and Style Sheets including some linked pages.

REFERENCE BOOK

1 HTML- IV - by John Zakour, Jeff Foust, David Kerven

Course Platforms

•Notepad
–http://www.notepad.org/
•Macromedia Dreamweaver
–
http://www.macromedia.com/software/dreamweaver/?promoid=home_prod_dw_082403•
•Microsoft FrontPage
–http://msdn.microsoft.com/office/understanding/frontpage/OR
•Microsoft Web Matrix
–http://www.asp.net/webmatrix/
OR
•Microsoft Visual Web Developer
–http://lab.msdn.microsoft.com/express/vwd/

Web resources
http://www.w3schools.com/html/default.asp
•www.w3.org/TR/xhtml11
•www.xhtml.org
•validator.w3.org
•hotwired.lycos.com/webmonkey/00/50/index2a.html
•wdvl.com/Authoring/Languages/XML/XHTML
•www.w3.org/TR/2001/REC-xhtml11-20010531

1561	BUSINESS COMMUNICATION	T	P	C
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AIMS

- To be able to understand the basic concepts of communication and its process & forms.
- To be able to perform the information handling.
- to be able to perform in writing application for job, letter and forms of correspondences

SHORT DESCRIPTION

Basic concepts of communication; Communication model & feedback; Types of communication; Methods of communication; Formal & informal communication; Essentials of communication; Report writing; Technical report; Information handling; Office management; Communication through correspondence; Official and semi-official letters.

DETAIL DESCRIPTION

1 Understand the basic concepts of communication and its process & scope.

1.1 Define communication.
1.2 Define business communication.
1.3 Describe the scope of business communication.
1.4 State the objectives of business communication.
1.5 Discuss the essential elements of communication process.

2 Understand the communication model and feedback.

2.1 Define communication model.
2.2 State the business functions of communication model.
2.3 Define feedback.
2.4 State the basic principles of effective feedback.
2.5 Explain the essential feedback to complete communication process.

3 Understand the types of communication.

3.1 Explain the different types of communication.
3.2 Describe the advantages and disadvantages of upward communication.
3.3 Describe the advantages and disadvantages of downword communication.
3.4 Distinguish between upward and downword communication.
3.5 Define two-way communication.
3.6 Describe the advantages and disadvantages of two-way communication.

4 Understand the methods of communication.

4.1 Define communication method.
4.2 Discuss the various methods of communication.
4.3 Describe the advantages and disadvantages of oral communication.
4.4 Describe the advantages and disadvantages of written communication.
4.5 Distinguish between oral and written communication.

5 Understand the formal and informal communication.

5.1 Define formal communication.
5.2 Describe the advantages and disadvantages of formal communication.
5.3 Define informal communication.
5.4 Discuss the advantages and disadvantages of informal communication.
5.5 Distinguish between formal and informal communication.

6 Understand the essentials of communication.

6.1 Describe the essential features of good communication.
6.2 Describe the barriers of communication.
6.3 Discuss the means for overcoming barriers to good communication.

7 Understand the report writing.

7.1 Define report.
7.2 Define business report.
7.3 State the essential qualities of a good report.
7.4 Describe the factors to be considered while drafting a report.
7.5 Explain the components of a report.
7.6 Describe the classification of report.

8 Understand the technical report.

8.1 Define technical report.
8.2 Mention the uses of technical report.
8.3 Describe the types of technical report.
8.4 Distinguish between a technical report and general report.

9 Understanding the information handling.

9.1 Define data, facts and events.
9.2 State the sources of information.
9.3 Describe the channel of communication relevant to information.
9.4 Define management information systems (MIS).
9.5 Discuss the channel of presentation of data in the report.

10 Understand the office management.

10.1 Define office and office work.
10.2 State the characteristics of office work.
10.3 Define filing and indexing.
10.4 Discuss the methods of filing.
10.5 Discuss the methods of indexing.
10.6 Distinguish between filing and indexing.

11 Understand communication through correspondence.

11.1 State the types of correspondence.
11.2 Define commercial letter.
11.3 Mention the objects of commercial letter.
11.4 State the different parts of a commercial letter.
11.5 Distinguish between commercial letter and personal letter.

12 Understand the official and semi-official letters.

12.1 Define official letter and semi-official letter.
12.2 Distinguish between official letter and semi-official letters.
12.3 Prepare the following letters :
interview letter, appointment letter, joining letter and application for employment.
12.4 Prepare the complain letters.
12.5 Draft a tender notice to be published in a daily newspaper.

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1562	**INDUSTRIAL MANAGEMENT – I**		**2**	**0**	**2**

AIMS

- To be able to develop the working condition in the field of industrial or other organization.
- To be able to understand develop the labor management relation in the industrial sector.

SHORT DESCRIPTION

Basic concepts of management; Principles of management; Scientific management; Organization; Span of supervision; Motivation; Personnel management and human relation; Staffing and manpower development; Training of staff; Job evaluation and merit rating; Industrial dispute; Budget & budgetary control; Concept of leadership.

1 Understand the basic concepts & principles of management.

1.1 Define management and industrial management.
1.2 State the objectives of modern management.
1.3 Describe the scope and functions of management.
1.4 State the principles of management.
1.5 Discuss the terms : administration, organization, management.
1.6 State the activity level of industrial management from top personnel to workmen.
1.7 Describe the reaction among administration, organization & management.
1.8 Explain the social responsibilities of management.

2 Understand the concept of scientific management.

2.1 Define scientific management.
2.2 Discuss the basic principles of scientific management.
2.3 Explain the different aspects of scientific management.
2.4 Discuss the advantages and disadvantages of scientific management.
2.5 Describe the difference between scientific management and traditional management.
2.6 Describe the following four periods of management thought:
(i) pre-scientific management.
(ii) scientific management.
(iii) human relations
(iv) refinement extension and synthesis of management theories and practices.

3 Understand the concepts of organization and organization structure.

3.1 Define management organization.
3.2 State the elements of management organization.

3.3 Discuss the types of organization structure
3.4 Describe different forms of organization structure.
3.5 Distinguish between line organization and line & staff organization.
3.6 Distinguish between line organization and functional organization.
3.7 Describe the feature advantages and disadvantages of each organization.
3.8 Define organizational chart.
3.9 Describe the different types of organizational chart.

4 Understand the basic concept of span of supervision.

4.1 Define span of supervision and optimum span of supervision.
4.2 Discuss the considering factors of optimum span of supervision.
4.3 Discuss advantages and disadvantages of optimum span of supervision.
4.4 Define delegation of authority.
4.5 Explain the principles of delegation of authority.
4.6 Explain the terms: authority, responsibility and duties.

5 Understand the concept of motivation.

5.1 Define motivation.
5.2 Discuss the importance of motivation.
5.3 Describe financial and non-financial factors of motivation.
5.4 State the motivation process or cycle.
5.5 Discuss the motivation theory of Maslows and Harzbergs.
5.6 Differentiate between theory-X and theory-Y.
5.7 Discuss the relation between motivation and morale.

6 Understand the concept of personnel management and human relation.

6.1 Define personnel management.
6.2 Describe the scope of personnel management.
6.3 Discuss the importance of personnel management.
6.4 Discuss the functions of personnel management.
6.5 Discuss the disadvantages of personnel management in Bangladesh.
6.6 Describe the way of solving problems of personnel management in Bangladesh.

7 Understand the staffing and manpower development.

7.1 Define staffing.
7.2 Discuss the importance and necessity of staffing.
7.3 Define recruitment and selection of employees.
7.4 Describe various sources of recruitment of employees.
7.5 Describe the various methods of selection of employees.
7.6 Discuss the advantages and disadvantages of internal sources of recruitment.
7.7 Discuss the disadvantages of external sources of recruitment.
7.8 Define manpower planning.
7.9 Describe advantages and disadvantage of manpower planning.

8 Understand the need for training of staff.

8.1 Define training and orientation of employee.
8.2 Discuss the importance and necessity of training.
8.3 Describe the process of training.
8.4 Discuss the various methods of training of workmen, technicians and executive personnel.
8.5 Explain the benefits of training in business and industrial concerns.

9 Understand the concept of job evaluation and merit rating.

9.1 Explain the terms : Task of a employee, Job evaluation, Job description, Job specification, Personnel specification, Merit rating, Job analysis
9.2 Describe the methods of job evaluation and merit rating.
9.3 Discuss the advantages and disadvantages of job evaluation and merit rating.
9.4 Distinguish between job evaluation and merit rating.

10 Understand the concept of industrial dispute.

10.1 Define industrial dispute.
10.2 Discuss the elements of industrial dispute.
10.3 Describe the causes of industrial dispute.
10.4 Discuss the modes of dispute settlement in Bangladesh.
10.5 Explain the terms:
- Strike.
- Lock-out
- Picketing
- Gherao
- Go slow.

11 Understand the concepts of budget and budgetary control.

11.1 Define budget and budgetary control
11.2 Describe the different types of budget.
11.3 Discuss the objectives of budget.
11.4 Discuss the advantages and disadvantages of budgetary control.
11.5 State the pre-requisites for successful budgetary control.

12 Understand the concept of leadership.

12.1 Define leadership.
12.2 Discuss the importance and necessity of leadership.
12.3 Discuss the functions of leadership.
12.4 Identify the types of leadership.
12.5 Describe the qualities of a leader.
12.6 Distinguish between autocratic leader and democratic leader.