BANGLADESH TECHNICAL EDUCATION BOARD

Agargaon, Dhaka-1207

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

SYLLABUS (PROBIDHAN-2016)

COMPUTER TECHNOLOGY

TECHNOLOGY CODE: **666**

6th SEMESTER

DIPLOMA IN ENGINEERING
PROBIDHAN-2016

COMPUTER TECHNOLOGY

6th Semester

Sl. No.	Subject Code	Name of the Subject	T	P	C	Theory Cont. Assess	Theory Final Exam	Practical Cont. Assess	Practical Final Exam	Total
1	66661	Principals of Software Engineering	2	6	4	40	60	50	50	200
2	66662	Microprocessor & Interfacing	2	3	3	40	60	25	25	150
3	66663	Microcontroller Application	0	6	2	-	-	50	50	100
4	66664	Database Management System	2	3	3	40	60	25	25	150
*5	6666X	Optional Subject -1	2	3	3	40	60	25	25	150
6	69054	Environmental Studies	2	0	2	40	60	-	-	100
7	65852	Industrial Management	2	0	2	40	60	-	-	100
Total			**12**	**21**	**19**	**240**	**360**	**175**	**175**	**950**

* 6666X Optional Subjects-I

Group	Subject code	Subject Name
Network Maintenance Group	66665	Network & Data Center Operation
Automation System Group	66666	PLC Automation System
Software Developer Group	66667	Web Mastering
Multimedia Developer Group	66668	Multimedia & Animation

66662   **Microprocessor & Interfacing**   **T P C**
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AIMS

- To be able to acquire the knowledge on microprocessor, microcomputer.
- To be able to develop the knowledge and skill on the architecture and assembly language programming of 16- bit microprocessor
- To be able to acquire the knowledge and skill on memory, interrupt and I/O interfacing.

SHORT DESCRIPTION

Basic conception of microprocessor and microcomputer; Architecture and addressing mode of Intel 8086μp; Instruction timing of Intel 8086 μp; Memory, input /output and interrupt interfacing of Intel 8086 μp; Interfacing principle and peripheral devices; programming of Intel 8086/8088; Intel x86 family, multi-core processor idea;

DETAIL DESCRIPTION

Theory:

1. Understand the concept of microprocessor and microcomputer.
   1.1. Define the microprocessor and microcomputer.
   1.2. Distinguish between microprocessor and microcomputer.
   1.3. Distinguish between microprocessor and microcontroller.
   1.4. Describe the block diagram of simple microcomputer.
   1.5. Evaluation of microprocessor (4, 8, 16, 32 & 64 bit microprocessor)

2. Understand the architecture of 8086 microprocessor.
   2.1. Mention the general features of 8086/8088 microprocessor.
   2.2. Describe the pin and signal diagram of 8086/8088 microprocessor.
   2.3. Distinguish between maximum and minimum mode of 8086/8088 microprocessor
   2.4. Describe the architecture of 8086 microprocessor.
   2.5. Describe the register structure of 8086 microprocessor.
   2.6. Mention the difference between 8086 and 8088 microprocessor.

3. Understand the memory interface of the 8086 microprocessor.
   3.1. Sketch the 8086 system memory interface.
   3.2. State the meaning of even & odd address boundaries.
   3.3. Describe the hardware organization of the memory address space of 8086.
   3.4. Describe the memory read and write bus cycle of 8086 microprocessor. Explain the technique to de-multiplex the system bus.

4. Understand the 8086 addressing mode and programming concept.
   4.1. Describe the addressing mode of 8086 microprocessor.
   4.2. Describe the software model of the 8086 microprocessor.
   4.3. Describe the 8086 instruction set.
   4.4. Explain the instruction format of 8086 microprocessor.

5. Understand the input / output interface and peripheral devices of the 8086 microprocessor.

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 I/O read and I/O write bus cycle of 8086 microprocessor.

5.4. Define programmable peripheral Interface.

5.5. Mention the commonly used support chips and purpose of those.

5.6. Describe the operation of PPI with block diagram.

5.7. Configure the control word of the control register of PPI for simple I/O operations.

6. Understand the interrupt interface of the 8086 microprocessor.

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. Describe the external hardware interrupt interface of the 8086 microprocessor.

7. Understand the assembly language programming of 8086 family.

7.1. Define the assembler pseudo instructions.

7.2. Describe the use of assembler directives (i. e. SEGMENT, ENDS, ASSUME, DUP, etc.)

7.3. Describe the use of program development tools (i.e. editor, assembler, linker, locator debugger and emulator.)

7.4. Explain the sequential, IF-THEN-ELSE, WHILE-DO and REPEAT-UNTILL structure in 8086 assembly language with pseudo code and flow chart.

7.5. Write assembly language programs.

8. Understand the features of advanced microprocessors.

8.1. List the names of other x86 family processors including Pentium series and state the brief specification.

8.2. Describe the real and protected mode memory addressing technique.

8.3. State the function of BIST in Pentium processor.

8.4. State multiprocessing and parallel processing.

8.5. Define multi-core processors (i.e. Dual core, Quad core, core ix).

8.6. Write down the advantages of multi-core processors.

9. Understand the real world interfacing

9.1. Describe the interfacing of LED Display with program to the microprocessor.

9.2. Describe the interfacing of seven segment LED display with program to the microprocessor.

9.3. Describe the interfacing of Multiple Digit Display with program to the microprocessor.

9.4. Describe the method of interfacing of stepper motor to the microprocessor.

Practical:

1. Perform the task to develop and execute an assembly language program for solving arithmetic problems using 8086/88μp trainer or MASM type tools or software simulator.
2. Perform the task to develop and execute an assembly language program for solving logical problems using 8086/88μp trainer or MASM type tools or software simulator.
3. Perform the task to develop and execute an assembly language program to compute 1's or 2's complement of binary number using 8086/88μp trainer or MASM type tools or software simulator.
4. Perform the task to transmit data from a microprocessor to an I/O using Intel 8086/8088 based microprocessor trainer or MASM type tools or simulator software.
5. Perform the task to receive data from an I/O to the microprocessor using Intel 8086/8088 based microprocessor trainer or MASM type tools or simulator software.
6. Perform the task to develop and execute an assembly language program/ Subroutine to produce time delays of different durations using 8086/88μp trainer or MASM type tools or software simulator.
7. Perform the task to develop and execute assembly language programs that implement the branching and looping structures using 8086/88μp trainer or MASM type tools or software simulator.
8. Build a simple computer prototype using 8086/8088 processor with memory, I/O interface and simple I/O devices

Reference Books:

1. Digital Computer Electronics   -   Malvino- Brown
2. Microprocessor And Microcomputer Based System Design -   Mohamed Rafiquzzaman..
3. Microprocessors and Interfacing: Programming and Hardware -   Douglas V. Hall
4. The Intel Microprocessors -   Barry B. Brey
5. Microprocessor & Interfacing -   A.P. Godse & D.A. Godse
6. The 8086 and 80286 Microprocessor -   Avatar Singh