

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0210

Roll No.

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B.Tech.

(SEM.IV) THEORY EXAMINATION 2010-11

MICROPROCESSORS

Time : 3 Hours

Total Marks : 100

Note :- (1) Attempt **ALL** questions.

(2) All questions carry equal marks.

1. Answer any **FOUR** parts of the following :— $4 \times 5 = 20$ (a) What are the different generations of computers ?
Explain in brief.

(b) Draw and explain the general architecture of a microcomputer system.

(c) Explain the following :—

(i) Data Bus

(ii) Address Bus

(iii) Control Bus

Also mention their significances and limitations.

(d) Draw and explain the building blocks of a computer system with help of a neat diagram.

(e) What are the different addressing modes used in 8085 microprocessors ? Also mention its utilities.

(f) What are the interfacing devices of 8085 microprocessors ? Explain the machine cycle timing diagram of 8085 microprocessors.

2. Answer any **TWO** parts of the following :— $2 \times 10 = 20$
- (a) Explain the pinconfiguration of 8-bit microprocessor such as 8085 microprocessors. Also explain the following terms in regarding with 8085 microprocessors :—
- (i) MACHINE CYCLES
 - (ii) INTERRUPT
 - (iii) ALU
- (b) Explain the following instructions of 8085 microprocessors :—
- (i) SHLD addr
 - (ii) XCHG
 - (iii) MOV M, r
 - (iv) MVI M, data
 - (v) DAD r_p
 - (vi) INR M
 - (vii) ORA r
 - (viii) CMPM
 - (ix) STC
 - (x) RET
- (c) Explain the following addressing modes of 8085 microprocessors :—
- (i) Register addressing mode
 - (ii) Direct addressing mode
 - (iii) Register indirect addressing mode
 - (iv) Immediate addressing mode
 - (v) Implicit addressing mode
- Also give their suitable examples.

3. Answer any **TWO** parts of the following :— $2 \times 10 = 20$

(a) What do you mean by “PIPELINING” ? How this concept is used in 8086 ? Also draw the functional block diagram of 8086 and explain the function of its each section. How much active memory is available as general purpose data storage memory in 8086 ?

(b) Explain the following addressing modes in 8086 :—

- (i) DIRECT ADDRESSING Mode
- (ii) Based indexed addressing mode
- (iii) Relative based indexed addressing mode
- (iv) Register Relative addressing mode
- (v) Immediate addressing mode.

Explain in brief with help of a suitable examples.

(c) Explain the following instruction set format in 8086 microprocessor :—

- (i) CBW
- (ii) ROR AX, CL
- (iii) SBB BX, CX
- (iv) IMUL CX
- (v) AND BX, [SI]
- (vi) AAA
- (vii) ADD AX, [SUM]
- (viii) MOV [SI], BX
- (ix) PUSH S
- (x) POP D

4. Answer any **TWO** parts of the following :— $2 \times 10 = 20$

(a) What do you understand by “DEBUGGING” and “TESTING” of a program ? Explain in details. Write

an assembly language program to divide a 16-bit number by an 8-bit number.

(b) What do you mean by "ASSEMBLY LANGUAGE PROGRAMMING" ? Explain with an example by writing a program to find out the 2's complement of a number.

(c) Explain the function of the following :—

(i) ASSEMBLER

(ii) COMPILER

Also write an ALP to add two 6-byte numbers whose bytes are stored at 2501 and 2601 onwards respectively. Store the result back at memory locations starting from 2501 and onwards.

5. Answer any **TWO** parts of the following :— $2 \times 10 = 20$

(a) Write short notes on the following :—

(i) 8259—Programmable Interrupt Controller.

(ii) 8255—Programmable Peripheral Interface.

(b) What are interfacing devices ? Why are they required ? What are I/O ports ? INTEL 8212—An 8-bit I/O port is an unprogrammable but multi-mode in nature. Explain in brief.

(c) Give the features and functional block diagram of the following chips in brief :—

(i) 8237-DMA controller.

(ii) 8253/8254-Programmable timer/counter.