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 :— **2×10=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.

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

PAPER ID : 0210 **Roll No.**

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 :— **4×5=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 :— **2×10=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 micro-procesors :—

(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 :— **2×10=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 :— **2×10=20**

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