

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. Suppose that DS = 1100H, SS = 2000H, CS=4000, BP = 1000H, SI=0010H and DI = 0100H. Determine the addressing mode and memory address accessed by each of the following instructions, assuming real mode operation:

(a) MOV CX, [BP+DI] (b) MOV CX, [DI] (c) MOV AL,[SI-0100H] (d) MOV BL,[0ABCH]

[2] [CO-1]

Q2. a) Find the machine language equivalent of the MOV AX, [BX+2] instruction.

[2] [CO-2]

b) Convert 8B1E004CH from machine language to assembly language.

[2] [CO-2]

(Note: Opcode for MOV is 100010; solve by mentioning the different fields of 16-bit instruction format; Use tables given below for question 2.)

MOD	Function
00	No displacement
01	8-bit sign-extended displacement
10	32-bit signed displacement
11	R/M is a register

Code	W = 0 (Byte)	W = 1 (Word)	W = 1 (Doubleword)
000	AL	AX	EAX
001	CL	CX	ECX
010	DL	DX	EDX
011	BL	BX	EBX
100	AH	SP	ESP
101	CH	BP	EBP
110	DH	SI	ESI
111	BH	DI	EDI

R/M Code	Addressing Mode
000	DS:[BX+SI]
001	DS:[BX+DI]
010	SS:[BP+SI]
011	SS:[BP+DI]
100	DS:[SI]
101	DS:[DI]
110	SS:[BP]
111	DS:[BX]

*Note: Special Addressing Mode

Q3. a) Describe the role of different buses in the architecture of a microprocessor. Elaborate the stepwise procedure of processing and execution of an assembly language instruction stored at a memory location by the 8086 processor's internal blocks.

[3] [CO-1]

b) Emphasize the importance of segment registers in 8086 microprocessor in comparison to 8085 microprocessor.

[2] [CO-1]

Q4. a) Develop a sequence of instructions in assembly language that copy the content of BH register into 10 bytes of memory locations starting from 1000:2000 and after filling the ten memory locations with the contents BH register next subsequent 10 memory location contents should be moved into an area of memory starting from 2000:1000H. Write appropriate comments for your program along with each instruction.

[3] [CO-2]

b) What is the role of HOLD and READY pin of the microprocessor?

[1] [CO-1]