

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2023

B.Tech-V Semester (ECE/Minor ECE)

COURSE CODE (CREDITS): 18B11EC512 (3)

MAX. MARKS: 15

COURSE NAME: Microprocessor and Interfacing

COURSE INSTRUCTORS: Dr. Shweta Pandit

MAX. TIME: 1 Hour

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

- Q1. a)** Distinguish between the Harvard and Von Neumann Architecture of computer system. [2][CO-1]
- b)** Compare the different Intel Microprocessors in terms of its data bus size, clock speed, and number of transistors. [2][CO-1][CO-5]
- Q2. a)** In the real mode, find the starting and ending addresses of each segment located by the CD00H and 4589H segment register values. [0.5][CO-1]
- b)** Find the memory address of the next instruction executed by the 8086 microprocessor, for the following CS:IP combinations: [0.5][CO-1]
- (i) CS = 8971H and IP = ABCDH (ii) CS=1000H and IP=2000H
- c)** Suppose that AX = 1234H, BX = 3456H, DX=1000H, and CS=0030, DS = 0010H, SS=0020H, ES=0040H. Determine the addresses accessed by the following instructions of 8086 microprocessor:
- (i) MOV DX, [BP+BX] (ii) MOV CH, [BX+4\*AX+1000H] [1][CO-1]
- d)** What do you understand by addressing modes in microprocessor? What are the different addressing modes used in the following instructions: [3][CO-1]
- i) MOV [BX+SI+100H], AX ii) MOV BX, AX iii) MOV BX, [AX] iv) MOV AX, [1234]  
v) MOV AX, 1234
- Q3 a)** After the execution of addition instruction on CBH and E9H numbers by the microprocessor, find the value/status of different flag registers of microprocessor. [1][CO-1]
- b)** Suppose ADD BL, CL instruction has to be executed by the 8086 microprocessor. With the help of architecture diagram, mention the different steps for the above instruction execution by the 8086 microprocessor. [2][CO-1]
- c)** Provide the different fields of the 16-bit instruction mode of machine language instruction format. Find the machine language instruction for MOV [DI], CL; and the assembly language instruction for 88160021H machine code. [1+1+1][CO-2]
- (Note: Opcode for MOV is 100010; Use tables given below.)

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