JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-2 EXAMINATION – October 2018
B.Tech, Vth Semester, ECE

Dr. Bijce

COURSE CODE: **10B11CI401** MAX. MARKS: **25**
COURSE NAME: **MICROPROCESSORS AND CONTROLLERS**
COURSE CREDITS: **4** MAX. TIME: **1.5** Hrs

Note: ***All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Missing data, if any, can be appropriately assumed.***

1(a) If DS=0200H, SS=0300H, DX=1000H, BP=0700H, and SI=0400H. Determine the memory address accessed by each of the following instructions, assuming real mode operation: **(CO2, 2M)**

(i) MOV DX, [SI+20H] (ii) MOV CX, [BP-70H]
(iii) ADD [DX+10H], AX (iv) LODSB

(b) Highlight the differences between the following commands. **(CO2, 3M)**

(i) ADD and ADC (ii) SUB and CMP (iii) MUL and IMUL

2(a) Sketch and show clearly the different fields in a 16bit instruction format. **(CO2, 2M)**

(b) Find the machine language equivalent of the following instructions: **(CO2, 3M)**

(Opcode for MOV is 100010; Use tables given below to generate machine code)

(i) MOV [BP+SI], CX (ii) MOV AH, BH (iii) MOV SP, [1200H]

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 Mod*
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]

3. Design a chip select logic circuit to interface eight 8KB EPROMs for a section of memory with microprocessor to address memory range 80000H - 8FFFFH. **(CO3, 5M)**

4. Write an assembly language program for 8086 microprocessor that searches through a block of 275 bytes stored in an array MYSTORY. The program must count the number of ASCII character 'A' (ASCII code 41H) present in the array and store at the memory location COUNT. **(CO2, 5M)**

5. Develop a sequence of instructions that converts a 16 bit unsigned number stored at the memory location ROLLNO into an array of unpacked BCD numbers. Store the array of BCD numbers at a memory location, starting from 3000H. **(CO2, 5M)**