I D NO.	

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 40% Max Marks: 80 Max Time: 2 hrs. 11 May 2018, Friday

ENDTERM FINAL EXAMINATION MAY 2018

Even Semester 2017-18 Course: **ECE/EEE 207 Microprocessor Programming and Interfacing** IV Sem. ECE / EEE

Instruction

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

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Part A

(3 Q x 8 M = 24 Marks)

1. Differentiate between (a) Absolute Decoding and Partial Decoding (b) I/O Mapped I/O and Memory Mapped I/O.
2. Write the BSR control word by giving their hexadecimal values for setting PC7, PC5 and resetting PC6, PC4. Show each bits configured by you.
3. Indicate the sequence of events in the form of a table for 8086 an interrupt INT 09 will be invoked. Given Flag Register contents as 0084h, the *CS:IP* as 0300:0100 and the interrupt service routine branch location to which it jumps will be *Segment:Offset* as 0570:0020.

Part B

(2Q x 15 M = 30 Marks)

4. The ports of an 8255 are connected in Simple I/O mode as: Port A – 8 LEDs (O/Ps), Port C Lower and Upper – 8 switches (I/Ps). Show (a) control word to configure the 8255 as above (b) The addresses for all ports including the control register if the base (Port A) address is 70h and (c) Draw the required interfacing diagram, and (d) the required program to complete the above task.
5. In an 8254 device, Counter-2 is programmed for binary counting with a count value of 55h in mode 2 (Rate Generator). Show (a) control word to configure the 8254 for both the cases (b) The addresses for all counters including the control register if the base (Counter-0) address is 30h and (c) Draw the required interfacing diagram, and (d) the required program to complete the above task.

Part C

(1Q x 26 M = 26 Marks)

6. Devise and develop the Memory Map and draw the Interfacing Diagram to interface a total of 24 KB memory using two 4Kx8 PROMs and four 4Kx8 SRAM Memory Chips with the 8086 microprocessor by indicating the necessary signals.
   Note: Your Decoding logic should contain 74LS138 decoder and any suitable logic gate.

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Weightage: 20% Max Marks: 40 Max Time: 1 hr. 02 April Monday 2018

TEST – 2 **SET A**

Even Semester 2017-18 Course: **ECE/EEE 207 Microprocessor Programming and Interfacing** IV Sem. ECE / EEE

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Part A

(4 Q x 4 M = 16 Marks)

1. Indicate whether the following instructions are valid or invalid by giving a single line justification.
   (a) MOV DX, DL (b) MUL AL, 05h (c) ADD [1000], [3000] (d) SUB BL, BL
2. Differentiate between ROL and RCL instructions of 8086 microprocessor by giving suitable examples.
3. Define Instruction Cycle, Machine Cycle and T-states.
4. Comment on the result obtained after the last instruction, all instructions executed sequentially.

(a)	(b)

MOV BL, 14H
MOV CL, 03H
SHL BL,CL
	MOV BX, 4455h
	AND BL,BH
	XOR BX, FFFFh

Part B

(1 Q x 8 M = 8 Marks)

5. Draw an approximate timing diagram for a Memory Read machine cycle and indicate the necessary signals and corresponding data flow.

Part C

(1Q x 16 M = 16 Marks)

6. (a) Write an assembly language program for generating a software delay of 10 msec if the 8086 is operating at 8 MHz. Show your calculations. (6 M)

   (b) Write an assembly language program to find the largest number stored in an array named MYNUM and store the number in a variable named LARGE. Use proper assembler directives to write your program. The numbers are as below:

   55h, 33h, 44h, 11h, 77h, 22h, 66h (10 M)

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Weightage: 20 % Max Marks: 40 Max Time: 1 hr. 23 Feb Wednesday 2018

TEST – 1

Even Semester 2017-18 Course: **ECE/EEE 207 Microprocessor Programming and Interfacing** IV Sem. **ECE / EEE**

Instruction

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Part A

(4 Q x 4 M = 16 Marks)

1. Give the status of each flag bits of 8085 microprocessor, if two 8 bit numbers CBh and DBh are added.
2. Give a single sentence description for the following 8086 signals: **DT/R', DEN', M/IO'** and **ALE**.
3. Differentiate between the minimum and maximum modes operation of 8086.
4. Distinguish between assembly language and machine language programming.

Part B

(1 Q x 8 M = 8 Marks)

5. Discuss in brief the programming model of 8086 microprocessor by showing the necessary diagram.

Part C

(1Q x 16 M = 16 Marks)

6. Using the initial register values listed in the table below:

Register	Value	Register	Value	Register	Value
BX	2000	DI	4000	CS	3300
BP	AB00	SI	0006	DS	4400
ES	1000	SS	6500	SP	0555

Determine the physical address (or addresses) of the byte (or bytes) read or written in each of the instructions given below, and also Write the addressing mode for each instruction..

(i) SUB [BX+SI], CL (ii) ADD AX, [BX+10]

(iii) MOV DL,[SI] (iv) MOV [BP+DI+20],AX

Note: All values provided are in hexadecimal. No need to perform the operations indicated.