

**328613 (28)**

BE (6th Semester)

Examination, Nov-Dec., 2013

Branch : AEI, EEE, EI, ET & T

**ADVANCED MICROPROCESSOR AND INTERFACING**

*Time Allowed : Three Hours*

*Maximum Marks : 80*

*Minimum Pass Marks : 28*

- Note :** (i) Attempt any five questions.
- (ii) Part (a) of each question is compulsory.
- (iii) Attempt any Two Parts from (b), (c) and (d)
- (iv) All questions carry equal marks.

**Q.1.** (a) Why Microprocessor 8088 is faster than 8085 but slower than 8086? 2

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(2)

- (b) Explain with example, how physical address is formed in Microprocessor 8086. 7
- (c) Draw architecture of Microprocessor 8088 and explain in details. 7
- (d) What is an assembler directive? Explain EXTRN, PUBLIC, DQ and ENDP assembler directives with suitable examples. 7

**Q.2.** (a) What are the advantages of maximum mode over minimum mode? 2

(b) Interface 2114 SRAM (1K x 4 bit) chip to Microprocessor 8086. The memory size required is 1K x 16 bit. Starting address required is 80000h. 7

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(c) Draw and explain the typical maximum mode configuration of Microprocessor 8088.

(d) Write a subroutine to solve the equation

100

$$\sum_{i=1}^{100} x_i^2$$

i=1

Assume  $X_i$  are signed 8 bit numbers present in the memory location from address 5050:0250 and stored the result in successive locations.

Q.3. (a) For what purpose the LOCK instruction of 8086 is used?

(b) Write an ALP to store 128 bytes from memory location 4000:3000 in the form of

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00, 11, 22, 33....EE, FF, 00, 11, 22, 33,.....EE, FF, 00, 11, 22, 33,.....EE, FF. use string instruction

(c) Write an ALP to convert hexadecimal number available in memory location 4000h to the BCD number using AAM instruction and stored the result in memory location 5000h.

(d) Write an ALP to solve the given arithmetic equation

$$3AX + 5DX + 2BP \rightarrow CX$$

Use add and shift method.

Q.4. (a) There are no direct instruction available to set and reset Trap Flag (TF), so give the

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initialization sequence to set and reset Trap

Flag without affecting other flags of

Microprocessor 8086. 2

(b) Draw and explain the internal register structure of Microprocessor 80386DX. 7

(c) If the base address of the descriptor table (Local or Global) is 10000000h and the segment register DS contains 1007h. What is the address of the segment descriptor? Is the segment descriptor is GDT or LDT? 7

(d) Draw and Explain protection mechanism and protection level supported by Microprocessor 80386DX. 7

(6)

Q.5. (a) All the mnemonics of math coprocessor 8087 start with an F, what does it mean? 2

(b) Draw and explain the architecture of math coprocessor 8087 in details. 7

(c) Explain control register of 8087 in details. 7

(d) Write an assembly language program to calculate the area of circle for 10 different values available in the memory location from 3000: 0200h. Store the result in memory location from 3000: 0300h 7

Q.6. (a) Outline the differences between programmable interval timer 8253 and 8254.

(7)

(b) Draw and explain the flow chart of initialization of 8259 PIC 7

(c) Interface 8259 PIC with microprocessor 8086 for the 18 interrupting devices. Use maximum mode configuration and starting address 70h. 7

(d) Explain control word register format of programmable interval timer 8253? 7

Q.7. (a) Write 3 advantages of segmentation of memory of Microprocessor 8086. 2

(b) Draw Timing diagram of memory read in maximum mode configuration of Microprocessor 8086 7

(c) Design 32K word of memory of 8086 microprocessor system. Available memory

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chips are 16K x 8 RAM. Use suitable decoder for selecting memory IC. 7

(d) Read status word of 8257 DMA controller and perform the following operation.

1. If DMA operation of channel 0 is completed then branches to the address 1000h.

2. If TCR of channel 1 has reached terminal count then branches to the address 2000h, otherwise branches to the address 3000h.

The starting I/O port address of the 8257 DMA controller is 70h. 7

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Note : A

Q.1.