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06EC62

Sixth Semester B.E. Degree Examination, December 2012
Micro Processors

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. With neat block diagram, explain how 8086 CPU supports pipelined architecture. **(10 Marks)**

b. Explain significance of special bit indicators available in 8086. **(05 Marks)**

c. If the opcode of MOV instruction is 100010 then find machine code for MOV[BX + 24h], AL. **(05 Marks)**

2 a. With respect to 8086 CPU explain the following:
i) LDS BX, [LOC]
ii) DAS
iii) LOOP
iv) DB
v) Length. **(10 Marks)**

b. Bring out the difference between
MOV AX, BX and MOV AX, [BX]. **(02 Marks)**

c. WALP to pack the two unpacked BCD numbers stored in the locations LOC and LOC + 1. **(05 Marks)**

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d. Replace the following program segment by its single equivalent instruction:
NEG BL
ADD AL, BL
CMC. **(03 Marks)**

3 a. Using table translation method WALP to find equivalent seven segment code for given BCD digit. **(08 Marks)**

b. WALP to read a string from key board and check whether it is a palindrome or not. If palindrome display PAL else NPAL on monitor. **(12 Marks)**

4 a. What is an interrupt? Discuss the interrupt classification in 8086. **(07 Marks)**

b. What do you mean by an IVT? Explain IVT of 8086 microprocessor. **(07 Marks)**

c. Explain microprocessor's response for an INTR interrupt. **(06 Marks)**

PART – B

5 a. Differentiate between memory mapped I/O and I/O mapped I/O schemes. **(04 Marks)**

b. With neat diagram write an 8086 program for 4 × 4 matrix keyboard interface and display key value on monitor. **(10 Marks)**

c. WALP to rotate the stepper motor for 270° in anticlock wise direction. **(06 Marks)**

6 a. Explain data types for 8087 NDP. **(10 Marks)**

b. Represent 20.59375_{10} into short real form. **(04 Marks)**

c. Explain the following with respect ot 8087 coprocessor:

i) FLD src

ii) FADD

iii) FLDPI. **(06 Marks)**

7 Write a note on:

a. Minimum mode configuration of 8086. **(10 Marks)**

b. PCI bus. **(05 Marks)**

c. Flow chart to generate USB data. **(05 Marks)**

8 a. With neat block diagram, explain memory organization in 80386 processor. **(08 Marks)**

b. Explain the following terms for 80486 process or

i) AHOLD

ii) BREQ

iii) $\overline{\text{FLUSH}}$. **(06 Marks)**

c. Explain branch prediction logic and cache structure of Pentium processor. **(06 Marks)**

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06EC62

Sixth Semester B.E. Degree Examination, June 2012
Microprocessors

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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PART – A

1 a. What is a microprocessor? What are the components required to build a minimum microcomputer system? Explain with a neat diagram. **(06 Marks)**

b. What are the roles of each element in the BIU of 8086 CPU? Explain with a neat diagram. How is the 20-bit physical address for memory generated? Explain with an example. **(10 Marks)**

c. What is the minimum size and maximum size of an instruction in 8086? Explain with examples. **(04 Marks)**

2 a. Explain the importance of each field in Byte-1 and Byte-2 of the 8086 instruction template. If the 6-bit op-code for ADD instruction is "000000" then formulate the op-code/s for "ADD AX, CX" instruction. **(07 Marks)**

b. What are the pseudo codes? Explain the following directives with examples:
i) ENDP ii) EXTRN iii) GLOBAL iv) PROC. **(07 Marks)**

c. Write the single instruction equivalent for the following program segments if available and justify your answer; assume that these program segments are starting from memory location FFFF0h and 8086 is reset just before execution.

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i) FFFF0: MOV CL, 100
XCHG AX, BX
ROR AX, CL
XCHG AX, BX

ii) FFFF0: XOR AX, AX
MOV BX, AX
ADD AX, BX
XCHG AX, BX

(06 Marks)

3 a. What is a procedure? What are its advantages? **(04 Marks)**

b. Write a 8086 procedure to convert a packed BCD number in AL to ASCII equivalent in AX. **(06 Marks)**

c. How do you invoke near procedures and far procedures in 8086? What are the methods available for parameter passing in procedures? **(06 Marks)**

d. What makes a MACRO facility to be preferred over a procedure in a program development? **(04 Marks)**

4 a. What is the response of 8086 µp when interrupted? Explain clearly. **(06 Marks)**

b. Explain the interrupt system of 8086 CPU with all the sources of interrupts. **(08 Marks)**

c. How many string instructions are available in 8086 instruction set? Explain briefly. **(06 Marks)**

PART – B

5 a. Why interfacing is required? Explain. **(03 Marks)**

b. What do you mean by key-debouncing? Explain briefly hardware debouncing and software debouncing methods. **(05 Marks)**

c. Interface a 4×4 keypad to 8086 CPU and write a program to identify any key pressed. Write necessary comments. **(12 Marks)**

6 a. What are the functions of the following 8087 instructions? Explain.
i) FBSTP TAX ii) FSUBR Dt, Sr iii) FXAM iv) FLDL2E **(06 Marks)**

b. Interface 8087 NDP to 8086 CPU; indicate all critical signal connections. **(07 Marks)**

c. Write a program to compute roots of a quadratic equation using 8087 instructions. **(07 Marks)**

7 a. What is maximum mode of operation for 8086 CPU means? Show all necessary arrangements for 8086 maximum mode. **(07 Marks)**

b. Write a program using 8086 instruction to check whether PCI bus extension is available using BIOS. **(06 Marks)**

c. For an USB in personal computer give;
i) Pin configuration ii) Two CRC polynomials iii) Token packet & data packet. **(07 Marks)**

8 a. Using a block diagram, briefly indicate different signal groups on 80386 processor. **(10 Marks)**

b. With a neat block diagram, explain the Pentium architecture and features. **(10 Marks)**

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EC45

Fourth Semester B.E. Degree Examination, June 2012

Microprocessor

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

1 a. Give a general block diagram of microprocessor based system. Explain briefly the various blocks of the system. **(10 Marks)**

b. What are flags? Give the structure of the flags. **(05 Marks)**

c. Compare machine language, assembly language and high level languages. **(05 Marks)**

2 a. Explain various addressing modes used in 8085, with an example for each. **(10 Marks)**

b. Explain the following instructions :
i) DAA, ii) XTHL, iii) JM addr, iv) CC addr, v) SBBC **(05 Marks)**

c. Give the timing diagram of STA instruction. **(05 Marks)**

3 a. Explain the functions of following pins of 8085 :
i) IO / $\overline{M}$ ii) ALE iii) READY iv) S_1 and S_0 v) $\overline{\text{RESETIN}}$ **(10 Marks)**

b. Write an assembly language program to transfer ten bytes of data stored in memory location XX50 to XX70H. **(10 Marks)**

4 a. Write an assembly language program to perform binary to ASCII code conversion. Use subroutine to convert binary digit (O to F) into ASCII HEX code. **(10 Marks)**

b. Write an assembly language program to display number 00H to 99H with a delay of 1 second between successive counts. **(10 Marks)**

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5 a. Interface one 2K ROM and two 4K RAMS to 8085 through suitable hardware. What is the memory map of such a system? **(10 Marks)**

b. Differentiate between memory mapped I/O and I/O mapped I/O. **(05 Marks)**

c. What are hardware and software interrupts available in 8085? Which has the highest priority? **(05 Marks)**

6 a. Give the step by step actions taking place in 8085 when its execution is interrupted. **(10 Marks)**

b. How do you mask the interrupts and how can we know that an interrupt is masked? **(05 Marks)**

c. What are machine control instructions? **(05 Marks)**

7 a. What is DNA operation? Explain the features and operation of DNA controller 8257, with a block schematic. **(10 Marks)**

b. Explain the internal schematic of 8255 chip and its operating modes briefly. **(10 Marks)**

8 Write short notes on :
a. 8253 timer
b. 8279 keyboard/display controller
c. RS232C standard
d. D/A conversion with 8085. **(20 Marks)**

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