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10CS45

Fourth Semester B.E. Degree Examination, December 2012
Microprocessors

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What is microprocessor? Explain how data, address and control buses interconnect various system components. **(06 Marks)**

b. Explain the program model visible register organization of 8086 µp. **(07 Marks)**

c. What is conventional memory? Explain segments and offsets. List default segment and offset register pairs. **(07 Marks)**

2 a. Explain the descriptors of 80286 and 80386 microprocessors. Also explain prog invisible registers within 80286 µp. **(08 Marks)**

b. Explain with examples the following addressing modes:
i) Scaled – indexed addressing mode
ii) RIP relative addressing mode
iii) Relative prog memory addressing mode. **(06 Marks)**

c. What is stack? What is the use of stack memory? Explain the execution of push and pop instructions. **(06 Marks)**

3 a. Write bubble sort program using 8086 assembly instructing. **(08 Marks)**

b. Explain the following instructions with an example for each:
i) LEA
ii) XCHG
iii) XLAT
iv) DIV
v) AAA. **(05 Marks)**

c. What do you mean by segment override prefix? Explain the following assembler directives:
i) ASSUME
ii) SMALL
iii) PROC
iv) EQU
v) LOCAL. **(07 Marks)**

4 a. With format explain rotate instructions. Give examples to rotate right by 1-bit and rotate left by 5-bits. **(06 Marks)**

b. Discuss with examples unconditional and conditional branching instructions. **(04 Marks)**

c. What is a procedure? Explain the sequence of operation that takes place when a procedure is called and returned. **(04 Marks)**

d. Explain m/c control instructions with examples. **(06 Marks)**

PART – B

5 a. Distinguish between the 16-bit and 32-bit versions of C/C ++ when using the inline assembler. **(06 Marks)**

b. Write a mixed language program that converts binary to ASCII. **(07 Marks)**

c. Write a mixed language module to realize macro to read a character from keyboard. **(07 Marks)**

6 a. Explain the functions of following pins of 8086 microprocessor.

i) RESET
ii) READY
iii) ALE
iv) $\overline{\text{LOCK}}$. **(04 Marks)**

b. With diagram, explain RESET section of 8284 clock generator. Also indicate how clk and RESET are connected to 8088 µp. **(06 Marks)**

c. Using timing diagram, explain the I/O write bus cycle in 8086 micro processor. **(06 Marks)**

d. Bring out the differences between 8086 and 8088 microprocessors. **(04 Marks)**

7 a. Explain how 74LS138 decodes 2732 EPROMS for 32K x 8 section of memory. Assume the starting address is 40000H. Give the detailed memory map. **(06 Marks)**

b. What is flash memory? Explain how a flash memory is interfaced to 8086 µp. **(06 Marks)**

c. Explain 74138 decoder configurations to enable ports at address E 8 H to EFH. **(08 Marks)**

8 a. Write an 8086 ALP to read a byte of data from port A and port B. Add the data and save the result in a memory location. **(05 Marks)**

b. Explain command word format of 82C55 in mode-0. Write the control word format to initialize to set PC3 and reset PC7. **(07 Marks)**

c. With internal block diagram, explain 8254 PIT. Give any two applications of the 8254. **(08 Marks)**

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