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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 μ p. (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 μ p. (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)

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 – 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)
