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10CS45

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018

Microprocessors

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. What is microprocessor? Write a brief note on history of microprocessor start from 4004 μ p to Pentium processors. (05 Marks)
- b. Explain the microprocessor based computer system with block diagram. (04 Marks)
- c. Explain the program model visible register organization of 8086 μ p. (06 Marks)
- d. Explain the concept of segment and offsets in real mode access to a memory location with default segment and offset register pairs. (05 Marks)
- 2 a. Explain the protected memory addressing with the formats of descriptors of 80286 μ p and 80386 μ p. (06 Marks)
- b. What are the advantages of memory paging? Illustrate the concept of memory paging with neat diagram. (06 Marks)
- c. Discuss the following addressing modes with examples:
 - i) Register
 - ii) Register indirect
 - iii) Base-plus-index
 - iv) Register relative
 (08 Marks)
- 3 a. Draw the format of the 16 bit instruction mode. The instruction MOV CL, [SI] stands for "Move the 8 bit contents of memory location indirectly specified by SI to the register CL". Encode the instruction into machine code using the instruction format. The opcode for MOV operation is 100010₍₂₎. (06 Marks)
- b. Describe the following instructions with examples:
 - i) PUSH
 - ii) XLAT
 - iii) XCHG
 - iv) MUL
 (08 Marks)
- c. What are assembler directives? Describe the following assembler directives.
 - i) ASSUME
 - ii) PROC
 - iii) ORG
 (06 Marks)
- 4 a. Describe how the AAM instruction converts from binary to BCD. (04 Marks)
- b. Describe the result of executing the following sequence of instructions:


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MOV AL, 01010101(2)
AND AL, 00011111(2)
OR AL, 11000000(2)
XOR AL, 00001111(2)
NOT AL
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 (06 Marks)
- c. Write a note on conditional jump instructions. (04 Marks)
- d. Describe the following instruction with examples:
 - i) LOOP
 - ii) WAIT
 - iii) RET
 (06 Marks)

PART – B

- 5 a. Write the difference between macro and procedure and write example for each. (06 Marks)
- b. Explain PUBLIC and EXTRN directive with program module example. (07 Marks)
- c. Write a mixed language program that converts binary to ASCII. (07 Marks)

- 6 a. Draw the pin-out diagram of 8086 in maximum mode and minimum mode and explain the minimum mode pins. (08 Marks)
- b. With diagram describe how the demultiplexing of address/data done in 8086 microprocessor. (04 Marks)
- c. Using timing diagram, describe the I/O read bus cycle in 8086 μ p. (04 Marks)
- d. Write the difference between 8086 μ p and 8088 μ p. (04 Marks)
- 7 a. Explain with diagram how 74LS138 decodes 2764 EPROMs for a 64×8 section of memory in an 8088 based system. Assume starting address is F0000_H. (08 Marks)
- b. Explain the 8086 memory interfacing with diagram. (08 Marks)
- c. Differentiate between memory mapped I/O and I/O mapped I/O (Isolated I/O). (04 Marks)
- 8 a. Write a note on 82C55 programmable peripheral interface with pin-out diagram. (06 Marks)
- b. Describe the six modes of operation of 8254 counter with diagrams. (06 Marks)
- c. Write a note on interrupt vector table with diagram. (04 Marks)
- d. Write a note on DMA operation. (04 Marks)
