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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 µp 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 µp. **(06 Marks)**

d. Explain the concept of segment and offstes 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 µp and 80386 µp. **(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:

MOV AL, $01010101_{(2)}$
AND AL, $00011111_{(2)}$
OR AL, $11000000_{(2)}$
XOR AL, $00001111_{(2)}$
NOT AL **(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 μp. **(04 Marks)**

d. Write the difference between 8086 μp and 8088 μp. **(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)**

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