CBCS SCHEME

USN

17CS44

Fourth Semester B.E. Degree Examination, June/July 2019
Microprocessors and Microcontrollers

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

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.

Module-1

1 a. With a neat block diagram explain internal architecture of 8086 microprocessor. **(08 Marks)**

b. Explain the following with respect to 8086 microprocessor:
(i) Memory segmentation (ii) Flag Register **(06 Marks)**

c. Calculate the physical address in following instructions if CS = 4000H, DS = 2000H, SS = 1000H, ES = 3000H, BX = 0022H, BP = 1234H
(i) MOV AL, [BX] (ii) MOV CL, [BP] (iii) MOV ES : AX, [BX + 05] **(06 Marks)**

OR

2 a. What is an addressing mode? With example explain different addressing modes of 8086. **(08 Marks)**

b. What is stack? Explain the working of PUSH and POP instructions. **(06 Marks)**

c. What is an assembler directive? With example explain following assembler directives:
(i) assume (ii) org (iii) db (iv) equ **(06 Marks)**

Module-2

3 a. Differentiate between procedure and macro. Write a program using macros that clears the screen, sets the cursor at the centre of screen and display the message "Journey Towards Excellence". **(08 Marks)**

b. Explain shift and rotate instructions of 8086. **(06 Marks)**

c. Write a program to count number of zeros and ones in a given byte. **(06 Marks)**

OR

4 a. What is an interrupt vector table? Explain the steps a 8086 will take when it responds to an interrupt. **(08 Marks)**

b. With example explain the following instructions of 8086.
(i) MUL (ii) DAA (iii) CWD (iv) STD **(06 Marks)**

c. Write a program to find the value of $x^2 + 2x + 5$, where x is 8 bit input hex number. **(06 Marks)**

Module-3

5 a. What is data integrity? Explain the methods used for data integrity in Ram and ROM. Also find the checksum byte for 34H, 54H, 7FH, 11H, E6H and 99H. **(08 Marks)**

b. Explain how signed numbers are represented in 8086. Also explain the significance of overflow flag. **(06 Marks)**

c. Explain IN and OUT instructions. Show the design of an output port with an I/O address of 99H using 74LS373. **(06 Marks)**

OR

6 a. Differentiate between memory mapped I/O and I/O mapped I/O. Explain the control word format of 8255. (08 Marks)
b. With example explain any five string manipulation instructions of 8086. (06 Marks)
c. Write a program to find average of n different temperatures. (06 Marks)

Module-4

7 a. Differentiate between RISC and CISC. (06 Marks)
b. With a neat block diagram explain ARM core data flow model. (06 Marks)
c. Explain the different operating modes of Arm. Also explain the complete ARM register set. (08 Marks)

OR

8 a. With a block diagram explain typical ARM based embedded system. (06 Marks)
b. With the help of bit layout diagram explain current program status register of ARM. (06 Marks)
c. Explain the concepts of core Extensions and Pipeline in ARM processor. (08 Marks)

Module-5

9 a. With example explain MOV and MVN instructions of ARM. (06 Marks)
b. Explain the different barrel shifter operations. (06 Marks)
c. Explain the arithmetic instructions of ARM. (08 Marks)

OR

10 a. Explain multiply, branch and load store instructions of ARM. (10 Marks)
b. With example explain SWAP instruction of ARM. (04 Marks)
c. Write ARM assembly language program to add two 32 bit numbers. (06 Marks)

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