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17CS44

Fourth Semester B.E. Degree Examination, July/August 2021 Microprocessors and Microcontrollers

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

1.
 - a. Define Microprocessor. Recall the various registers of 8086 with diagram. (08 Marks)
 - b. With neat diagram explain flag register of 8086. (08 Marks)
 - c. Write a note on different memory segments of 8086. (04 Marks)

2.
 - a. Explain with example various addressing modes of 8086. (08 Marks)
 - b. Write an ALP to find the Fibonacci series of first seven numbers. (08 Marks)
 - c. Write the four differences between Com and Exe file. (04 Marks)

3.
 - a. Explain the following instruction with syntax :
(i) DAA (ii) RCR (iii) CLC. (03 Marks)
 - b. Write an ALP with algorithm to calculate the sum of (13h – 23h) using sub instructions and store the result at offset address 0010h. (09 Marks)
 - c. With the help of ADC instruction write a program to calculate the total sum of 5 bytes of data. The decimal data are 125, 235, 197, 91, 48. (08 Marks)

4.
 - a. Explain the following instruction with example :
(i) SBB (ii) RCL (iii) SHL (03 Marks)
 - b. Write an ALP to
(i) Convert ASCII NO '23' to packed BCD.
(ii) ADD the BCD Number 23 with 45
(iii) Convert the Result of above addition to ASCII. (09 Marks)
 - c. Write an ALP to
(i) To clear the screen
(ii) To set the cursor at center of screen
(iii) To Display a string "VTU WELCOMES YOU" on the screen. (08 Marks)

5.
 - a. Explain the following instruction with syntax :
(i) IMUL (ii) CLD (iii) STOSB (iv) SCASB (06 Marks)
 - b. Write an ALP to check whether a given string is a palindrome or not? (07 Marks)
 - c. Find the control word if PA = out, PB = in, PC₀ – PC₃ = in, PC₄ – PC₇ = out and write the program to get the data from port B and send it to port A. Use port address of 300H-303H for 8255 chip. (07 Marks)

6.
 - a. Explain the following instruction with syntax:
(i) IDIV (ii) STD (iii) OUT (iv) LODSB (06 Marks)
 - b. Write an ALP to check whether two strings are equal or not and display the corresponding message such as "STRINGS ARE EQUAL"..... etc. (07 Marks)
 - c. Design a memory interface which uses 8 numbers of 2764 EPROM chip for 64×8 memory for the address range between F000H to FFFFH. (07 Marks)



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- 7 a. With neat diagram explain ARM core data flow model. (07 Marks)
b. With neat diagram, summarize the complete set of Registers of ARM. (07 Marks)
c. With neat diagram outline the various functional block of embedded system. (06 Marks)
- 8 a. Compare the difference between RISC and CISC design philosophy. (07 Marks)
b. With neat diagram explain the various fields of CPSR. (07 Marks)
c. With neat diagram summarize the pipeline mechanism in RISC processor. (06 Marks)
- 9 a. Explain Branch and Data processing Instruction of ARM processor with example. (10 Marks)
b. Explain logical instruction of ARM processor, with syntax and example. (10 Marks)
- 10 a. With neat diagram explain the functions of Barrel shifter in ARM. (10 Marks)
b. Explain different compare and multiply instructions of ARM with examples. (10 Marks)

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