

CBCS SCHEME

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15CS44

Fourth Semester B.E. Degree Examination, Aug./Sept.2020 Microprocessors and Microcontrollers

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. With a neat diagram, explain architecture of 8086-Microprocessor. (08 Marks)
b. Explain the following addressing modes
i) Immediate addressing mode
ii) Register addressing mode
iii) Direct memory addressing mode
iv) Base relative addressing mode. (08 Marks)

OR

- 2 a. What is assembler directives? Explain any three assembler directives. (08 Marks)
b. If DS = 5000H and the offset is 1950H. Calculate:
i) Physical address
ii) Logical address
iii) Lower range of the data segment
iv) Upper range of the data segment. (04 Marks)
c. Write assembly language program to add 4 bytes of data stored in data segment. (04 Marks)

Module-2

- 3 a. Explain the following instructions with an example:
i) INC ii) DAA iii) CMP iv) MUL. (08 Marks)
b. Write an ALP to sort a given set of 16 bit numbers in ascending order using Bubble sort. (08 Marks)

OR

- 4 a. Explain with example shift and rotate instructions. (08 Marks)
b. Write a code to perform the following:
i) Clear the screen
ii) To set the cursor
iii) To display simple message 'welcome to microprocessor'. (08 Marks)

Module-3

- 5 a. Explain the syntax of the following instructions with example:
i) STOSB ii) CMPSB iii) CBW iv) XLAT. (08 Marks)
b. Explain 74138 decoder configuration to enable the memory address F0000H to F3FFFH to 16 × 8 ROM (08 Marks)

OR

- 6 a. Write an assembly language program to move string of data from one memory location STR₁ to another memory location STR₂. (06 Marks)
- b. For the given set of hexadecimal data find the checksum byte
34H, 54H, 7FH, 11H, E6H, 99H (04 Marks)
- c. i) Find the control word port A as input, port B as output, port C as output. Use port addresses of 310H to 313H for the 8255 chip.
ii) Program the ports to input data from port A and send it to both port B and C. (06 Marks)

Module-4

- 7 a. Explain briefly the embedded system hardware components. (06 Marks)
- b. Explain the registers of the ARM core processor. (06 Marks)
- c. Differentiate between RISC and CISC processor. (04 Marks)

OR

- 8 a. Explain ARM core data flow model with a neat diagram. (08 Marks)
- b. Explain the condition flags of ARM processor. (04 Marks)
- c. Explain the concept of pipeline in ARM processor. (04 Marks)

Module-5

- 9 a. Explain the following instructions: i) LSL ii) RSB iii) ORR iv) MLA (08 Marks)
- b. Write an assembly language program to using ARM instructions to copy a block of data to another block. (08 Marks)

OR

- 10 a. Explain software interrupt instruction of ARM processor. (06 Marks)
- b. Explain Branch instruction of ARM controller. (04 Marks)
- c. Explain various types of multiply instructions with example. (06 Marks)

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