

USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

17CS44

Fourth Semester B.E. Degree Examination, July/August 2022 Microprocessors and Microcontrollers

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. With a neat block diagram, explain the architecture of 8086. (10 Marks)
b. Explain the flag register of 8086 microprocessor. (05 Marks)
c. Assume that $S_p = 1236$, $A_x = 24B6$. $DI = 85C2$ and $DX = 5F93$. Show the contents of the stack for each of the following instructions are executed.
PUSH DX
PUSH DI
PUSH DX. (05 Marks)

OR

- 2 a. Explain the following addressing modes
i) Register Indirect
ii) Base relative
iii) Indexed Relative
iv) Based Index Relative
v) Immediate. (10 Marks)
b. What is an assembler directives? With example explain the following assembler directives:
i) Assume ii) ORG iii) db iv) EQU. (10 Marks)

Module-2

- 3 a. Describe the following instructions with example:
i) LEA ii) XCHG iii) DAA iv) MUL v) ADD. (10 Marks)
b. Write an ALP to convert packed BCD to ASCII conversion. (10 Marks)

OR

- 4 a. Explain shift and rotate instructions. (12 Marks)
b. Write an ALP that adds four words of data and stores the result. (08 Marks)

Module-3

- 5 a. Explain the following instructions with examples:
i) CBW ii) IDIV iii) CMPSB iv) XLAT v) MOVSW. (10 Marks)
b. Consider 4 bytes of hexa decimal data 25H, 62H, 3FH and 52H.
i) Find the checksum
ii) Perform checksum operation
iii) If 62H is changed to 22H show how checksum detects error. (10 Marks)

OR

- 6 a. Differentiate between memory mapped I/O and I/O mapped I/O. (08 Marks)
b. With a block diagram, explain 8255. (08 Marks)
c. Write the control word register of 8255. (04 Marks)

Module-4

- 7 a. Explain with neat diagram of ARM core registers bank in detail. (12 Marks)
b. Explain the typical embedded system software in detail. (08 Marks)

OR

- 8 a. Explain the interrupt vector table of ARM core and also explain the steps taken by ARM core when exception/interrupt occurs. (10 Marks)
b. Describe various modes of operations of ARM processor. (10 Marks)

Module-5

- 9 a. Explain the following ARM instructions with example:
i) MVN ii) RSB iii) ORR iv) MLA v) LDR. (10 Marks)
b. Explain the arithmetic instructions of ARM. (10 Marks)

OR

- 10 a. Describe load multiple and store multiple instructions of ARM processor with example. (10 Marks)
b. With example explain SWAP instruction of ARM. (04 Marks)
c. Explain the different barrel shifter operations. (06 Marks)
