

CBCS SCHEME



15CS44

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Microprocessor and Micro Controller

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. With neat internal block diagram of 8088/86 CPU, explain the working of EU and BIU. (08 Marks)
- b. What is stack and why is it needed? (04 Marks)
- c. Assuming that SP = 1236H, AX = 24B6H, DI = 85C2H and DX = 5F93H, with supporting diagram show the contents of the stack as each of the following instruction is executed:
PUSH AX
PUSH DI
PUSH DX (04 Marks)

OR

- 2 a. Assume that the register have the following values and that CS = 1000H, DS = 2000H, SS = 3000H, SI = 4000H, DI = 5000H, BX = 6080H, BP = 7000H, AX = 25FFH, CX = 8791H and DX = 1299H. Calculate the physical address of the memory where the operand is stored and the contents of the memory location in each of the following addressing examples:
 - i) MOV [SI], AL
 - ii) MOV [SI + BX + 8], AH
 - iii) MOV [DI] [BX] + 28, CX
 - iv) MOV [BP] [SI] + 10, DX
 - v) MOV [BP] + 200, AX
 - vi) MOVI [BP + 100], AX (06 Marks)
- b. With neat diagram discuss the steps to create a program. (06 Marks)
- c. Differentiate between EXE and .COM File format. (04 Marks)

Module-2

- 3 a. Explain the working of following instruction along with change in flag bits:
 - i) ADC
 - ii) SBB
 - iii) DIV
 - iv) DAA
 - v) CMP (10 Marks)
- b. Write a program that calculates the total sum paid to a salesperson for eight months. The following are monthly paychecks for those months (in Rs): 2300, 4300, 1200, 3700, 1298, 4323, 5673, 986. (06 Marks)

OR

- 4 a. Write a program that:
 - i) Cleans the screen
 - ii) Set the curser at row = 8 and column = 14
 - iii) Displays the string "What is your Name?" (06 Marks)
- b. With neat diagram illustrate the interrupt vector table. (06 Marks)
- c. Write short note on the following: i) Type 0 and ii) Type 2 interrupts. (04 Marks)

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-3

- 5 a. Write a program to find the average of following signed numbers:
+13, -10, +19, +14, -18, -9, +12, -19, +16 (08 Marks)
- b. Assume that we have 4 bytes of data: 25H, 62H, 3FH and 52H.
- Find the checksum byte
 - Perform the checksum operation to ensure data integrity
 - If the second byte 62H been changed to 22H, show how checksum detects the error. (08 Marks)

OR

- 6 a. Outline the control word format of 8255 PPI with neat diagram. (06 Marks)
- b. Demonstrate the following with example: i) IN ii) OUT. (04 Marks)
- c. Find the control word if Port A = out, Port B = in, Port C (lower) = in and Port C (upper) = out. Program the 8255 to get data from Port A and send it to Port B. In addition data from Port C (lower) is sent out to the Port C (upper). Use port addresses of 300H-303H for the 8255 chip. (06 Marks)

Module-4

- 7 a. Distinguish between micro processor and microcontroller. (05 Marks)
- b. With supporting diagram demonstrate the RISC design philosophy. (05 Marks)
- c. Explain the memory remapping of embedded system software for initialization (Boot) code. (06 Marks)

OR

- 8 a. Explain with neat diagram, ARM core dataflow model. (08 Marks)
- b. With neat diagram illustrate the seven processor modes. (08 Marks)

Module-5

- 9 a. Demonstrate the working of barrel shifter with help of example. (06 Marks)
- b. Illustrate the following instruction with an example:
i) RSB ii) SUB iii) EOR iv) CMN v) TST. (10 Marks)

OR

- 10 a. Write ARM assembly language program for data transfer, arithmetic and logical operation. (08 Marks)
- b. Demonstrate the following load-store instructions:
- LDR r0, [r1, #4]!
 - LDR r0, [r1, #4]
 - LDR r0, [r1], #4 (08 Marks)
