

CBCS SCHEME



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17EC46

Fourth Semester B.E. Degree Examination, Feb./Mar. 2022 Microprocessors

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Draw the internal architecture of Intel 8086 and explain in brief. (10 Marks)
- b. What is meant by demultiplexing technique? How it is used in 8086 microprocessor? Explain with neat figure. (05 Marks)
- c. Determine the effective and physical address if:
 - i) Disp = 1B57H, DS = 2100H
 - ii) DI = 1045H, DS = 2100H
 - iii) BP = 8000H, DS = 5000H, SS = 1000H, Disp = 2345H
 - iv) BX = 0158H, SI = 1045H, DS = 2100H, SS = 1400H
 - v) BP = 0720H, Disp = 1000H, DS = 2000H, SS = 4000H. (05 Marks)

OR

- 2 a. Define addressing mode. Explain any four addressing modes with an example to each. (08 Marks)
- b. Explain the control word register of 8086 microprocessor. (08 Marks)
- c. Interpret the following instructions:
 - i) SUB and CMP
 - ii) AND and TEST. (04 Marks)

Module-2

- 3 a. Write ALP to move 16 bytes of string of data from the memory address 0200H to 0300H. (10 Marks)
- b. Identify the operation of the following instructions:
 - i) NEG ii) CBW iii) DAA iv) AAD v) SAHF. (05 Marks)
- c. What are assembler directives? Explain the following assembler directives:
 - i) Model ii) Assume iii) DB iv) DUP v) END. (05 Marks)

OR

- 4 a. Tell the functions of the rotate and shift instructions with an example. (10 Marks)
- b. Develop ALP to convert 8 digits packed BCD number to 16 digits unpacked BCD number. (10 Marks)

Module-3

- 5 a. What is stack? Explain the working of PUSH and POP instructions. (05 Marks)
- b. Write ALP to find the factorial of an 8-bit number. (10 Marks)
- c. Explain the maskable and non-maskable interrupt of Intel 8086. (05 Marks)

OR

- 6 a. Explain the interrupt cycle of 8086. (10 Marks)
 b. Develop ALP to generate a delay of 100ms using an 8086 system that runs on 10MHz frequency. (10 Marks)

Module-4

- 7 a. Draw the pin configuration of Intel 8086 microprocessor and explain the operation of pins in maximum mode of operation. (10 Marks)
 b. Interface two 4K × 8 EPROM and two 4K × 8 RAM chips with 8086. Show the memory mapping. (10 Marks)

OR

- 8 a. With neat block diagram of Intel 8255 explain the operation of each unit in detail. (10 Marks)
 b. Interface 8 seven segment display using 8255 with 8086. Write ALP to display 1, 2, 3, 4, 5, 6, 7, 8 over the 8 seven segment display continuously. (10 Marks)

Module-5

- 9 a. Interface stepper motor with 8086 write ALP to rotate shaft of four phase stepper motor.
 i) Clockwise 5 rotations
 ii) Anticlockwise 5 rotations. (10 Marks)
 b. Interface 8 bit ADC 0808 through 8255 to 8086. Write ALP to accept the channel number through keyboard ($O_0 - O_7$), convert analog i/p of selected channel to digital o/p and store the result as a digital data. (10 Marks)

OR

- 10 a. Write ALP to generate a square waveform using DAC 0800 through 8255 to 8086. (08 Marks)
 b. Interpret the following INT 21 H DOS function:
 i) Function 09H
 ii) Function 4CH (06 Marks)
 c. Give the comparison between Von-Neumann and Harvard CPU architecture. (06 Marks)
