

CBCS SCHEME

15EC42



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Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Microprocessors

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the architecture of 8086 micro processor with a neat block diagram. (10 Marks)
- b. Explain any three advantage of segmented memory. (03 Marks)
- c. Explain the significance of following pins of 8086: (03 Marks)
 - i) READY
 - ii) NMI
 - iii) $\overline{\text{DEN}}$

OR

- 2 a. Explain the following addressing modes of 8086; with example. (09 Marks)
 - i) Immediate
 - ii) Direct
 - iii) Register
 - iv) Register Indirect
 - v) Register Relative
 - vi) Relative Based Indexed.
- b. Explain the physical address formatting in 8086 with an example. Also, if CS = 0000H, DS = 1000H, SS = 2000H, ES = 3000H, AX = 1000H, BX = 2000H, find the physical address of the following instruction MOV AX, [BX]. (04 Marks)
- c. The opcode for MOV instruction is "100010". Determine machine language code for the following instructions: i) MOV BL, CL ii) MOV [SI], DL. (03 Marks)

Module-2

- 3 a. Explain the following instructions with example: i) LOOP ii) XALT iii) DAA iv) AAM v) IMUL. (10 Marks)
- b. Write an ALP to find out the largest number from a given twenty unordered array of 8-bit numbers, stored in the locations starting from a known address. (06 Marks)

OR

- 4 a. Explain the following assembles directives with example: i) EVEN ii) EXTRN and PUBLIC iii) PROC. (06 Marks)
- b. Explain any three string manipulation instructions in 8086. (06 Marks)
- c. Write an ALP to move a string of data words from offset 2000H to offset 3000H the length of the string is OFH. (04 Marks)

Module-3

- 5 a. Explain the stack structure of 8086 and the operations of PUSH and POP instructions. (06 Marks)
- b. Explain interrupt response sequence of 8086. Also draw the structure of interrupt vector table. (06 Marks)
- c. Write any four differences between non maskable interrupt and maskable interrupt. (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.

OR

- 6 a. List the techniques used to pass parameters to a procedure. Explain the passing of parameters using CPU register with an example program. (06 Marks)
b. Distinguish between a procedure and a macro (Any four). (04 Marks)
c. Write a program to generate a delay of 100ms using an 8086 system that runs on 10MHz frequency. Indicate the calculation for the delay. (06 Marks)

Module-4

- 7 a. Explain memory read cycle of 8086 with a timing diagram. (08 Marks)
b. Explain the different modes of operation of 8255, and the control word format. (08 Marks)

OR

- 8 a. Explain the minimum mode configuration of 8086 with a neat diagram. (08 Marks)
b. Interface 4 × 4 keyboard with 8086 using 8255 and write the flowchart for the same. (08 Marks)

Module-5

- 9 a. Explain the working of ADC 0808/0809 with a neat block diagram. Also draw the timing diagram. (08 Marks)
b. Design a stepper motor controller and write an ALP to rotate shaft of a 4-phase stepper motor. i) In clockwise 5 rotations ii) In anticlockwise 5 rotations. Assume procedure DELAY is available for this 1.8° stepper motor. (08 Marks)

OR

- 10 a. Explain control word register of Timer 8253/8254 with bit definitions. (05 Marks)
b. Explain the architecture of NDP 8087. (08 Marks)
c. Differentiate between: RISC and CISC architecture. (03 Marks)
