CBCS SCHEME

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15EC42

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.

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-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:
i) READY ii) NMI iii) $\overline{DEN}$ **(03 Marks)**

OR

2 a. Explain the following addressing modes of 8086; with example.
i) Immediate ii) Direct iii) Register iv) Register Indirect v) Register Relative vi) Relative Based Indexed. **(09 Marks)**

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)**

OR

6 a. List the techniques used to pass parameters to a procedure. Explain the passing of parameters using CPU resister with an example program. **(06 Marks)**

b. Distinguish between a procedures 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)**

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