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)**

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