CBCS SCHEME

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17EC46

Fourth Semester B.E. Degree Examination, Aug./Sept. 2020
Microprocessors

Time: 3 hrs. Max. Marks: 100

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 with neat diagram, the flag register of 8086 processor. **(08 Marks)**

b. Show with an example, how the physical address is calculated for an instruction in 8086. **(04 Marks)**

c. Write an ALP to add a sequence of 10-8 bit numbers and save that result in memory location RESULT. Ensure carry is properly handled. **(08 Marks)**

OR

2 a. Draw a neat architectural diagram of 8086 processor and explain each block. **(10 Marks)**

b. Explain the immediate and register addressing mode of 8086 with one example. **(04 Marks)**

c. Write an ALP to find the absolute difference between registers AX and BX and place the result in DX. **(06 Marks)**

Module-2

3 a. Explain the working of following instructions with examples RCR, DAA, IMUL, DIV and SCAS. **(10 Marks)**

b. Write an ALP to find the number of EVEN and ODD numbers from a sequence of 20-8 bit numbers. In the memory and save the result COUNT at EVEN and ODD. **(10 Marks)**

OR

4 a. Explain the working of following instructions with examples: XLAT, AAA, REP, LOOP and ROL. **(10 Marks)**

b. Write an ALP to find the number of positive and negative numbers from a sequence of 20-8 bit numbers in the memory and save the counted result at NEG and POS. **(10 Marks)**

Module-3

5 a. Explain any four differences between MACRO and PROCEDURE. **(04 Marks)**

b. Write an ALP to convert a two digit ASCII number saved in memory into its equivalent binary number with a macro ASC2BIN. **(12 Marks)**

c. Explain the working of stack memory of 8086 with an example. **(04 Marks)**

OR

6 a. Write procedure to generate a delay of 20 msec using 8086 processor running at 10 MHz. Show the calculations for the delay. **(08 Marks)**

b. Explain the interrupt vector table of 8086 briefly. **(04 Marks)**

c. Explain the interrupt acknowledgement cycle of 8086 with a neat diagram. **(08 Marks)**

Module-4

7 a. Sketch the minimum mode operation of 8086 and explain its operation. **(10 Marks)**

b. Interface two 4K × 8 EPROM and two 4K × 8 static RAM chips to 8086. Address of ROM at FE000H and RAM at FC000H. **(10 Marks)**

OR

8 a. Explain mode 0 and BSR mode of operation of 8255 PIO device with neat diagram of control register. **(10 Marks)**

b. In an 8086 system, 8255 is mapped at IO location con. Read the 4 bit port PC4-7 of the 8255 and output the values to the LED connected on PCO-3. Write the ALP for this along with appropriate setup. **(10 Marks)**

Module-5

9 a. Write an ALP to rotate the stepper motor in clockwise direction by 180° and then in anticlockwise direction by 180° with suitable "delay" procedure. **(08 Marks)**

b. Write an ALP to generate a triangular wave of 500 Hz using the DAC0800 interface to the 8086 CPU at 8 MHz. Amplitude of triangular wave should be +5 V. Show the interface diagram. **(12 Marks)**

OR

10 a. Explain the following DOS function calls of INT21H:
(i) Function 01H (ii) Function 02H (iii) Function 4CH
(iv) Function 06H (v) Function 09H **(10 Marks)**

b. Mention 4 differences between RISC and CISC architecture. **(04 Marks)**

c. Explain how to generate interrupt on terminal count using a 8254 timer with a diagram. **(06 Marks)**

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