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

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Explain the functions of the following units of 8086 CPU :
i) Instruction queue ii) Pointer and Index registers in EU iii) Segment registers. (10 Marks)
b. Identify the addressing mode and calculate the physical address resulting from the following instructions : i) XLAT ii) NEG [BX + DI + 1234 + 1] iii) ROL [BP + 80H] , CL.
Given BX = A2B3H DI = 2DC5H BP = 2B3CH AL = 05H DS = 2BC4H SS = D1E3H. (10 Marks)
- 2 a. Op code for ADD instruction is 000000 (six zeros) and Add immediate with accumulator is 0000010. Determine the machine language code (Also in Hex) for the following instructions : i) ADD [BX + 10H] , DX ii) ADD AL, 01 (in short form). (04 Marks)
b. Mention the operation of the following instructions and status of flags after the execution of each instruction : i) SAHF ii) AAD iii) TEST iv) SCAS v) LOOPE. (10 Marks)
c. Write an 8086 ALP, with assembler directives and proper comments, to count the number of 1s and 0s in a 16-bit data and store the count values in memory. (06 Marks)
- 3 a. Explain REP , REPZ and REPNZ instructions in detail. (09 Marks)
b. Write an 8086 ALP, with assembler directives to convert an unpacked BCD to seven – segment display code (for common cathode display) using look – up table. (07 Marks)
c. List the differences between procedures and macros. (04 Marks)
- 4 a. Name the three sources of interrupts of 8086. When does 8086 checks for interrupt request? If requested, list the steps the 8086 does to respond to an interrupt. (10 Marks)
b. List the dedicated interrupts and explain any two dedicated interrupts in detail. (10 Marks)

PART - B

- 5 a. Mention the three tasks involved to get correct key press data from a keyboard. Explain through interface diagram and flowchart the software method of interfacing keyboard to a microcomputer. (12 Marks)
b. Write an 8086 ALP to interface the stepper motor to a microcomputer and rotate it 180° clockwise and then 90° counter – clockwise in full step mode. (08 Marks)
- 6 a. Explain the different data formats that the 8087 is designed to work with. (10 Marks)
b. Describe the following instructions of 8087 :
i) FST ii) FSCALE iii) FYL2X. (10 Marks)
- 7 a. Explain Minimum mode signal with a neat diagram of minimum mode interface diagram. (12 Marks)
b. List the features of USB. Explain NRZI encoding used with the USB. (08 Marks)
- 8 a. Explain the control register structure of 80386 processor. (06 Marks)
b. Explain the internal programming model of 80486 processor. (08 Marks)
c. Briefly explain the features of Pentium processor. (06 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.