



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 000010. 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)
