

CBCS SCHEME

17EC46

USN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Fourth Semester B.E. Degree Examination, July/August 2021 Microprocessors

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

1. a. What advantage does 8086 processor have by having two independent units Bus Interface Units (BIU) and Execution Unit (EU)? (04 Marks)
b. With suitable examples, explain various addressing modes of 8086 processor. (08 Marks)
c. The machine code of an instruction is 8907H, explain how these two bytes are interpreted? What is the Instruction? Given, Opcode of MOV instruction '100010'. (08 Marks)
2. a. Explain the following :
i) Offset address ii) Physical address
iii) Paragraph Boundary iv) Memory relocation. (04 Marks)
b. Explain the (MOD – REG – R/M) byte of an 8086 instructions. (08 Marks)
c. At a certain instant during the execution of a program the 8086 processor has the following data in the registers AX = 1234H , BX = 5678H , SI = 1200H , DI = ABCDH , CS = AB00H and IP = 789AH , DS = ES = 4567H.
State the addressing modes and find physical addresses of source and destination of data, when each of the following instruction is executed.
i) MOV BX , AX ii) MOV [BX + DI + 120FH] , AB46H
iii) MOV AX, [1200H] iv) LODSW. (08 Marks)
3. a. Use appropriate logical instruction which performs :
i) Set higher nibble of AL register ii) Clear AX register
iii) Invert even bits of BX register iv) Clear 5th and 6th bits of CH register. (04 Marks)
b. Write an 8086 ALP to transfer a block of data stored at SRC to another memory area DST. The length of the block is specified at location BLK – LEN. (08 Marks)
c. Consider the registers of 8086 loaded with the following data :
ES = 1234H , DS = 1224H , DI = 200H , SI = 100H , CX = 10H , DFlag = '1'.
If now, the instruction REP MOVSW is completely executed workout the contents of above defined registers after the execution of the REP MOVSW instruction. (08 Marks)
4. a. What are Assembler directives? With examples, explain the data definition directives DB, DW and DD. (04 Marks)
b. Write an 8086 ALP to arrange an array of 'N' bytes in ascending order. (08 Marks)
c. Explain five string primitives of 8086. Also specify necessary initializations to be done before using the string instructions. (08 Marks)
5. a. Distinguish between MACROS and Procedures. (04 Marks)
b. Explain working of Interrupt and Trap flags of 8086 processor. Write a procedure to set trap flag and procedure to reset trap flag. (08 Marks)
c. With neat schematic, explain generation of NMI interrupt during power failure. (08 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.

- 6 a. Explain how the 8086 processor finds the address of interrupt service subroutine for particular interrupt. (04 Marks)
- b. Explain Interrupt system of 8086 processor. Write the sequence of events takes place when an interrupt occurs. (08 Marks)
- c. What is meant by Modular Programming? Also write a procedure to generate a delay of 2 msec, for the 8086 operated at 5 MHz. (08 Marks)
- 7 a. Compare memory mapped I/O and I/O mapped I/O interfacing schemes. (04 Marks)
- b. Why the address demultiplexing is required in 8086 processor? Explain how it is done for minimum mode of operation. (08 Marks)
- c. What is Wait State? How do you introduce it? Explain with necessary timing diagram with respect to 8086 processor. (08 Marks)
- 8 a. Explain the function of following 8086 pins :
i) $\overline{\text{BHE}}$ ii) ALE iii) INTR iv) $\text{DT}/\overline{\text{R}}$. (04 Marks)
- b. Sketch memory read bus cycle of 8086 and explain. (08 Marks)
- c. Explain 8255 modes of operations. (08 Marks)
- 9 a. Write 8255 control word to set PC_5 . (04 Marks)
- b. Interface a stepper motor to 8086 processor using 8255 and write an ALP to it for 180° in clock wise direction. (08 Marks)
- c. Explain Mode - 0 and Mode - 3 operations of 8254. (08 Marks)
- 10 a. Bring out the differences between CICS and RISC processors. (04 Marks)
- b. Describe any five DOS functions related with INT21H. (08 Marks)
- c. Using DOS functions write an 8086 ALP to read a two digit hexadecimal number and display the same on the console. (08 Marks)
