(CSE-4-23-4) Roll No. .....

PAPER ID—21142

B. Tech. (Computer Sciences Engineering) EXAMINATION, 2024

(Fourth Semester)

MICROPROCESSOR AND MICRO-CONTROLLER

Time : 3 *Hours* *Maximum Marks :* 70

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

1. (a) How many address lines does an 8086 have ? How many memory addresses does this number of address lines allow the 8086 to access directly ? 2

(b) List the major steps in developing an assembly language programming. 2

(c) Why are the port lines of programmable port devices automatically put in the input mode when the device is first powered up or reset ? 2

(d) What do you understand by the term Multiprogramming ? Explain briefly. 2

(e) List and describe in general terms the steps an 8086 will take when it responds to an interrupt. 2

(f) Which register bank conflicts with the stack in 8051 ? Justify your answer. 2

(g) Explain MOV A,@r_0 instruction of 8051. Which addressing mode is used in this instruction ? 2

Unit I

2. (a) What do you understand by memory Segmentation in 8086 ? Explain in detail. 7

   (b) Show the 8086 instruction or group of instructions which will : 7

   (i) Initialize the stack segment register to 4000H and the stack pointer register to 8000H.

   (ii) Call a near procedure named FIXIT.

   (iii) Save BX and BP at the start of a procedure and restore them at the end of the procedure.

   (iv) Return from a procedure and automatically increment the stack pointer by 8.

3. (a) With the help of neat diagram, explain the block diagram of 8086 microprocessor. 7

(b) Write an assembly language program to find the largest number in an array of 8 bit numbers. 7

Unit II

4. (a) Explain the following signals of 8086 : 7

$\overline{ALE}$ M/$\overline{IO}$ $\overline{TEST}$ $\overline{INTA}$ $\overline{LOCK}$

(b) With the help of a neat diagram explain the 8086 bus activity during a read machine cycle. 7

5. (a) In what ways are a standard microprocessor and a coprocessor different from each other ? Explain in detail. 7

(b) What do you understand by closely coupled and loosely coupled configurations ? Explain. 7

Unit III

6. Draw and explain 8086 based traffic light control system in detail. 14

7. Explain the 8279 Keyboard/Display controller with neat block diagram. 14

Unit IV

8. (a) Explain the RAM structure of 8051 in detail. 7

   (b) Discuss all the Jump instructions of 8051 microcontroller. 7

9. (a) Discuss various addressing modes of 8051 taking a suitable example. 7

   (b) Write shortly on the various operating modes for serial port of 8051 microcontroller. 7