Ref. No.: Ex/ET/PC/B/T/311/2024(S)

Bachelor of Engg. (Electronics and Telecommunication Engg.) Exam., 2024
(3rd Year, 1st Semester Supplementary Examination, 2023-2024)

MICRPROCESSORS & MICROCONTROLLERS

Time: Three Hours Full Marks: 100

Answer ALL the Questions
(All Parts of the same question must be answered at one place only)

Module I – M1 (CO1)

1. (a) How many address lines are required on the chip of 10K Bytes of memory ?
(b) Specify the number of control signals commonly used by the 8085 Microprocessor Unit (MPU), and list the same. Explain the use of atleast one control signal in detail.
(c) What is the full form of ALE? Explain the functions of the ALE and IO / M signals of the 8085 MPU.
(d) Differentiate Absolute and Partial Select Decoding schemes.
(e) What are tri-state devices? Why are they important for Microcomputer system?
[4 X 5]

Module II (CO2)

2. (a) What is a Monitor Program?
(b) What is the function of the instruction MOV B,M? Identity the number of byte(s), number of Machine Cycle, and no. of T-states associated with each machine cycle. Also, identify the control signals associated with each machine cycle.
(c) Specify the Register contents and the flag status as the following instrctions are executed. Also, specify the output at Port 0:

Mnemonics	A 00	B FF	S 0	Z 1	CY 0
MVI A,F2H					
MVI B,7AH					
ADD B					
OUT PORT0					
HLT					

(d) A set of eight readings are stored in memory locations starting at location 9050H. Data (H): 48, 32, F2, 38, 37, 40, 82, 8A. Write an 8085 Assembly Language Program (ALP) to find the highest readings in the set, and display the same at an output Port. [3+5+4+8]

[Turn over

Module III (CO3)

3. (a) Differentiate Interrupt Process Vs Polled or Status Check I/O
   (b) How many steps are involved in the 8085 Interrupt Process and explain the same in detail.
   (c) Explain the process involved in DMA. Mention the situation where DMA is used. [5+10+5]

Module IV (CO4)

4. (a) Name the Widely used Programmable, Parallel I/O device. Draw the much simplified Block Diagram of the same indicating the elements of this device.
   (b) List and Explain the operational modes of this Programmable, Parallel I/O device.
   (c) Write initialization instructions for this Programmable, Parallel I/O device to set up (i) All Ports in output mode.
   (d) List the uses of 8253/8254 Programmable Interval Timer, and the elements associated with this device. Write the control word to generate a square wave from counter 0. Explain the mode of operation for generating the square wave using this Timer. [4+4+4+8]

Module V (CO5)

5. (a) With an example, illustrate the use of Look Up Table, for the suitable application of Microcomputer System Show the Block Diagram, ALP using LUT Procedure, and the Output.
   (b) Explain the difference between MPU and Microcontroller Unit (MCU). List the important features of MCS51 family of MCU. [15+5]