Registration No.: | | | | | | | | | | |

Total Number of Pages: 02 **Course: IDD (B.Tech and M.Tech)**
Sub_Code: REC5C003

6th Semester Regular/Back Examination: 2024-25
SUBJECT: Microprocessors and Microcontrollers
BRANCH(S): EEE, ELECTRICAL
Time: 3 Hours
Max Marks: 100
Q.Code: S087

Answer Question No.1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part-I

Q1 **Answer the following questions:** **(2 x 10)**

a) What is the significance of the clock in a microprocessor?
b) What is instruction pointer and what is its significance in a microprocessor?
c) What is bus cycle in 8086? In a 5 MHz 8086 system what is the duration of bus cycle?
d) How many instruction types are supported by 8086 microprocessor? Mention at least two types.
e) What is the role of PPI 8255 in a microprocessor system?
f) How many ways the keyboard can be interfaced with the processor?
g) The internal data memory of 8051 is divided in to how many groups? Mention the groups.
h) How many SFR are in 8051 microcontroller? Specify the address range.
i) Mention the modes of operation of 80386 processor.
j) 8279 keyboard and display interface can support how many maximum keys and how many digits of display?

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) Describe and explain the internal architecture of 8086 Microprocessor with neat diagram.
b) Compare the 8086 and 80486 microprocessors for their major features.
c) Explain in brief about the structure of 8086 interrupt vector table with neat sketch.
d) Write in brief the various registers present in 8051 microcontroller.
e) Write an 8086 assembly language programme to sort an array of ten bytes in ascending order. Mention clearly the comments to your Program.
f) Describe the different modes of operation of timers/counters in 8051 with its associated register.
g) Mention the control word format of 8255 and explain how each bit is programmed.
h) Mention the maskable and non-maskable interrupts available in 8086.

i) Briefly explain the concept of pipelining in 8086 and discuss its advantages and disadvantages.

j) Using an 8-bit microprocessor design interface an 8K × 8 EPROM and 8K × 8 RAM.

k) Distinguish between memory mapped I/O and peripheral I/O.

l) Explain how interrupts are prioritized in 8051 controller.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four) **(16 x 2)**

Q3 With suitable diagram explain the DAC interfacing with 8051 microcontroller. **(16)**

Q4 Explain the signals in interfacing the bus controller with 8086 microprocessor in maximum mode operation. **(16)**

Q5 Explain with neat diagram for 7 segment LED interface with a 16 bit microprocessor. **(16)**

Q6 Draw the schematic for interfacing a dc motor with 8051 microcontroller and write 8051 ALP for servo motor control. **(16)**