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Total Number of Pages: 02

Course: IDD (B.Tech and M.Tech)  
Sub\_Code: REC5C003

6<sup>th</sup> 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)**

- What is the significance of the clock in a microprocessor?
- What is instruction pointer and what is its significance in a microprocessor?
- What is bus cycle in 8086? In a 5 MHz 8086 system what is the duration of bus cycle?
- How many instruction types are supported by 8086 microprocessor? Mention at least two types.
- What is the role of PPI 8255 in a microprocessor system?
- How many ways the keyboard can be interfaced with the processor?
- The internal data memory of 8051 is divided in to how many groups? Mention the groups.
- How many SFR are in 8051 microcontroller? Specify the address range.
- Mention the modes of operation of 80386 processor.
- 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)**

- Describe and explain the internal architecture of 8086 Microprocessor with neat diagram.
- Compare the 8086 and 80486 microprocessors for their major features.
- Explain in brief about the structure of 8086 interrupt vector table with neat sketch.
- Write in brief the various registers present in 8051 microcontroller.
- Write an 8086 assembly language programme to sort an array of ten bytes in ascending order. Mention clearly the comments to your Program.
- Describe the different modes of operation of timers/counters in 8051 with its associated register.
- Mention the control word format of 8255 and explain how each bit is programmed.
- 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  $8K \times 8$  EPROM and  $8K \times 8$  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)