Reg No.:_____ Name:_____

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**
**V SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019**

**Course Code: MR303**

**Course Name: MICROPROCESSORS AND MICROCONTROLLERS**

Max. Marks: 100 Duration: 3 Hours

## PART A

***Answer all questions, each carries 5 marks.***

| | | | |
|---|---|---|---|
| 1 | | Elucidate about flag registers in 8086 microprocessor. | 5 |
| 2 | | Give a brief description about the string instructions used for programming 8086. | 5 |
| 3 | | What is the purpose of giving initialization command word and operational command word to 8259 while interfacing with 8086? | 5 |
| 4 | | Differentiate between microprocessor and microcontroller. | 5 |
| 5 | | Explicate about the function of TCON and TMOD registers in detail. | 5 |
| 6 | | Develop a program for 8051 microcontroller to find out how many equal bytes between two memory blocks 10H to 19H and 20H to 29H. | 5 |
| 7 | | Design the interfacing of serial ADC with 8051 microcontroller. | 5 |
| 8 | | How can we interface a LCD with 8051 microcontroller? | 5 |

## PART B

***Answer any three questions, each carries 10 marks.***

| | | | |
|---|---|---|---|
| 9 | a) | Sketch the architecture of 8086 microprocessor. | 5 |
| | b) | Illustrate about the interrupts of 8086 processor. | 5 |
| 10 | a) | Analyse the addressing modes of 8086 microprocessor with example | 6 |
| | b) | Distinguish between shift and rotate instructions with example. | 4 |
| 11 | a) | Design the interfacing of single 8255 with 8086 processor. | 5 |
| | b) | Interpret about the data transfer modes of 8255. | 5 |
| 12 | a) | Draw the architecture of 8051 microcontroller and clarify in detail. | 7 |
| | b) | What is the role of PSW 8-bit register in 8051 microcontroller? | 3 |
| 13 | a) | With a neat diagram demonstrate the working of 8086 in maximum mode configuration. | 7 |
| | b) | Develop a timing diagram to show the maximum mode read cycle. | 3 |

## PART C

***Answer any two questions, each carries 15 marks.***

| | | | |
|---|---|---|---|
| 14 | a) | Develop a program to generate a square wave of 1 KHZ from the pin P3.1 of 8051, using timer-1. Assume suitable crystal frequency. | 7 |
| | b) | Explain about the various interrupts handled by 8051 microcontroller. | 8 |
| 15 | a) | Justify various addressing modes of 8051 with an example. | 8 |
| | b) | What are the different types of jump and call instructions? Clarify each type in detail. | 7 |
| 16 | a) | Design the interfacing of 4x4 matrix keyboard with 8051 microcontroller. | 10 |
| | b) | How can we interface a DAC with 8051? | 5 |
| 17 | a) | Design an 8051 based system interfaced with external ROM and RAM without using internal memory. | 10 |
| | b) | Design the interfacing of serial ADC with 8051. | 5 |