Reg No.:_____                          Name:_____

# APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
## FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018
### Course Code: CS305
### Course Name: MICROPROCESSORS AND MICROCONTROLLERS (CS, IT)

Max. Marks: 100                                                    Duration: 3 Hours

## PART A
### *Answer all questions, each carries 3 marks*
Marks

| | | |
|---|---|---|
| 1 | What are the different flag bits available within the flag register of 8086? | (3) |
| 2 | With the help of a timing diagram show the transition of control signals involved in the I/O read operation of 8086 in minimum mode. | (3) |
| 3 | With the help of an example state the differences in the functioning aspects of the instructions SHR and SAR of 8086. | (3) |
| 4 | Describe any three addressing modes used in 8086. | (3) |

## PART B
### *Answer any two full questions, each carries 9 marks*

| | | |
|---|---|---|
| 5 | Explain the physical and logical memory organization of 8086? | (9) |
| 6 | What are the different techniques of passing parameters to subroutines in assembly language programs? Give the detailed description. | (9) |
| 7 | Write an 8086assembly language program to check whether a string is palindrome or not. Assume that the string and its length are stored at known memory locations. | (9) |

## PART C
### *Answer all questions, each carries 3 marks*

| | | |
|---|---|---|
| 8 | What are the disadvantages of polling scheme over interrupt scheme? | (3) |
| 9 | What is an Interrupt Vector Table (IVT)? Provide a diagrammatic representation of the IVT of 8086. | (3) |
| 10 | What are the three different I/O modes supported by 8255? | (3) |
| 11 | What is DMA? State the sequence of operations performed by a DMA controller in a DMA transfer operation. | (3) |

## PART D
### *Answer any two full questions, each carries 9 marks*

| | | | |
|---|---|---|---|
| 12 | | With the help of a diagram explain the different blocks of 8259 Programmable Interrupt Controller. | (9) |
| 13 | | What are the different operational modes of 8279? | (9) |
| 14 | a) | What are the five dedicated interrupts of 8086? | (5) |

b) List any four features of 8257 DMA Controller. (4)

## PART E
### *Answer any four full questions, each carries 10 marks*

15 a) What is a microcontroller? Distinguish between a microcontroller and a (5)
microprocessor.

b) What are the five different addressing modes available in 8051 microcontroller? (5)

16 With the help of a block diagram describe the different components of 8051. (10)

17 Consider four LEDs connected to the lower 4 bits of Port P0 of 8051 (10)
microcontroller. Assume that the LEDs shall glow if the corresponding bit is 1.
Write an 8051 program which makes the group of LEDs to function as 4-bit Ring
Counter. The program should iterate to display the Ring Counter sequence five
times continuously and then exit. (Hint: 4bit Ring Counter sequence is 1000,
0100, 0010, 0001)

18 Describe the architecture and functionalities of 8253 interval timer. (10)

19 What are the five different categories of 8051 instruction set? Explain each (10)
category with appropriate examples.

20 a) What are the five different interrupts in 8051? (5)

b) Write an 8051 program to find the sum of digits of an 8bit unsigned decimal (5)
number.

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