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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

Course Code: CS305

Course Name: MICROPROCESSORS AND MICROCONTROLLERS

Duration: 3 Hours

Max. Marks: 100

PART A

Answer all questions, each carries 3 marks.

- | | | Marks |
|---|---|-------|
| 1 | Differentiate minimum mode and maximum mode operations of 8086. | (3) |
| 2 | Draw the architecture of 8088. | (3) |
| 3 | Explain the uses of stack in 8086. | (3) |
| 4 | What is a Macro? How can we define a macro? | (3) |

PART B

Answer any two full questions, each carries 9 marks.

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|---|---|-----|
| 5 | a) Outline any five minimum mode signals and their functions. | (5) |
| | b) Explain the physical memory organization of 8086. | (4) |
| 6 | a) Write an 8086 assembly language program to count the number of 1's and 0's in a binary string. | (6) |
| | b) List any three assembler directives and write their functions. | (3) |
| 7 | a) Write an 8086 assembly language program to find the number of positive and negative numbers from a given series of signed numbers. | (5) |
| | b) List the control flags in 8086 and write their functions. | (4) |

PART C

Answer all questions, each carries 3 marks.

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|----|---|-----|
| 8 | Write short note on classification of 8086 interrupts. | (3) |
| 9 | Explain interrupt service routines. | (3) |
| 10 | While interfacing a static memory with 8086, which address range will be normally assigned to EPROMS and why? | (3) |
| 11 | Name the given ICs
(i) 8255 (ii) 8257 (iii) 8279 | (3) |

PART D

Answer any two full questions, each carries 9 marks.

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| 12 | Explain the architecture of 8259 with diagram. | (9) |
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- 13 a) Suppose an external device interrupts the processor at the interrupt pin NMI, write down the steps to be performed by 8086 in response. (4)
- b) Write the different input modes of programmable keyboard and display interface. (5)
- 14 a) Explain the architecture of 8257 with diagram. (6)
- b) Explain the major features of mode 2 in 8255 (3)

PART E

Answer any four full questions, each carries 10 marks.

- 15 a) Classify the microcontrollers based on their types. (5)
- b) Draw and explain the internal data memory structure of 8051. (5)
- 16 a) List any five applications of microcontrollers. (5)
- b) Name the 16 bit registers in 8051 and write its function. (5)
- 17 a) Explain the architecture of 8051. (7)
- b) How the stack operations differ in 8086 and 8051? (3)
- 18 a) Explain the timers in 8051 with their special function registers. (6)
- b) Write an 8051 program to find the transpose of a 2X2 matrix stored sequentially from 30H. Results should be stored from location 50H. (4)
- 19 a) Explain the architecture of 8254 with neat diagram. (6)
- b) Write any four addressing modes of 8051. (4)
- 20 a) Write an 8051 program to compute x to the power n where both x and n are 8 bit numbers given by users and result should not be more than 16 bits. (6)
- b) Explain the IO ports in 8051. (4)
