

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fifth semester B.Tech degree examinations (S) September 2020

**Course Code: EC305****Course Name: MICROPROCESSOR & MICROCONTROLLER**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer any two full questions, each carries 15 marks.*

Marks

- 1 a) Draw the architecture of 8085 and describe the functions of blocks. (7)
- b) Describe the method of separating the lower order address and data lines from AD0-AD7 of 8085 with block schematic and timing diagrams. (8)
- 2 a) List and explain the addressing modes of 8085 with 2 instructions in each mode with syntax and purpose of instruction as examples. (10)
- b) Draw the structure and describe the significance of each bit in the flag register of 8085. (5)
- 3 a) Draw the functional block diagram of 8255 and explain the preferable mode (any one) of operation with control word register for interfacing 8 LEDs in port A pins. (8)
- b) Describe the functions of S0, S1 and IO/M signals related to the various operations of 8085. (7)

**PART B***Answer any two full questions, each carries 15 marks.*

- 4 a) Illustrate the important functional units of 8086. (5)
- b) Draw the memory map of 8051. Explain the internal RAM organization and functions of SFRs related to Timer. (10)
- 5 a) Classify the instructions of 8051 according to their functions and write at least 2 instructions with description in each group as examples. (8)
- b) Write an ALP to add two 8 bit numbers which are stored in the memory locations 4500 & 4501H. Result (carry, sum) should be stored in the locations 4502 & 4503H respectively. (7)
- 6 a) Differentiate between Microprocessors and Microcontrollers. (4)
- b) List the pin/signals of 8051 and describe the functions of any 8 important signals. (4)

- c) Write an ALP to find the largest among N (count) 8 bit numbers which are stored in the memory location starting from 4201H. Result should be loaded in the location 4300H and assume that the count is available in the memory location 4200H. (7)

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) List and describe the modes of operation of timers in 8051. (6)
- b) Describe the interrupt structure of 8051 with IE register and explain how the interrupts are prioritized in 8051. (7)
- c) List and describe the steps involved in the transmission and reception of data serially in 8051 using UART with relevant register details. (7)
- 8 a) Describe the interfacing of a stepper motor to 8051 with required diagrams and ALP to rotate the motor continuously in the clock-wise direction. Assume the required parameters and justify them. (10)
- b) Describe the interfacing of an 8 bit DAC to 8051 with required diagram and ALP for generating a stair-case waveform with 2 steps and equal time duration in each step. Justify the voltage levels and time period with relevant calculations/descriptions. (10)
- 9 a) Draw the structure and discuss the significance of each bit in SCON register. (5)
- b) For a crystal frequency of 12MHz, find the value to be loaded into TH register for the Baud rates of 9600 and 150. (5)
- c) Describe the interfacing of 8 DIP switches and 8 LEDs which are connected to Port 1 and Port 2 of 8051 respectively for reading and displaying the digital information with relevant diagrams and ALP. (10)

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