Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018
Course Code: EC305
Course Name: MICROPROCESSOR & MICROCONTROLLERS

Max. Marks: 100   Duration: 3 Hours

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

1   a)   Draw the architectural diagram of 8085 microprocessor and explain   (10)

     b)   Explain the comparative features of memory mapped I/O and I/O mapped I/O   (5)
         interfacings to 8085 microprocessor along with its proper control signals
         required.

2   a)   Draw and explain the timing diagram of MVI B, data. If the clock frequency is 6   (10)
         MHz, how much time is required for the execution of this instruction?

     b)   Explain the purpose of the following signals in 8085 (i) READY (ii) AD0-AD7   (5)
         (iii)HOLD (iv) IO/ M (v) INTR

3   a)   Give the advantage of using 8279 for keyboard/display interface? What are scan   (10)
         lines used for? Explain (i) Encoded Scan Mode and (ii) Decoded scan mode

     b)   Draw and explain the schematic of latching low-order address bus in 8085   (5)
         microprocessor.

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

4   a)   An array of 10 numbers is stored in the internal data RAM starting from location   (10)
         30 H. Write an assembly language program to sort the array in ascending order
         starting from location 40 H.

     b)   What are different segments of memory with which 8086 can work? List the   (5)
         advantages of segmented memory. How is physical address determined from an
         offset address?

5   a)   Explain the following instructions: (5)
         MOV A, @R1
         MOVC A, @A+DPTR
         MOVX A, @DPTR
         DJNZ R0, BACK
         DAA

b) Draw the memory map and briefly explain the memory organization for 128 byte internal RAM of 8051 microcontroller.   (10)

6   a) Explain the functions of ports in 8051 microcontroller. How can P1 be used as both output and input port?   (10)

b) List the addressing modes of 8051 with proper examples.   (5)

PART C
Answer any two full questions, each carries 20 marks.

7   a) Explain, with necessary diagrams, how a 4-winding stepper motor can be interfaced and rotated in steps. Assume norma14-step sequence data as 09H, OCH, 06H and 03H respectively.   (10)

b) Draw and explain the formats of TMOD, TCON, SCON, IE and IP registers of 8051 microcontroller.   (10)

8   a) Write an assembly language program using 8051 microcontroller instructions to generate a square wave at port 1, pin 0. The frequency of the generated square wave is to be 1 kHz.   (10)

b) Draw and explain interfacing diagram of DAC with 8051 microcontroller. Write program to generate square wave of 40 % duty cycle at the output of DAC.   (10)

9   a) Write program to transfer the message "KTU" serially at 4800 baud rate, 8-bit data, 1 stop bit.   (10)

b) Explain the interfacing of 8 bit ADC using 8051 microcontroller.   (10)

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