C.U.SHAH UNIVERSITY
Summer Examination-2019

Subject Name: Microcontrollers & Its Applications
Subject Code: 4TE05MCA1   **Branch: B.Tech (EC)**
Semester: 5   **Date: 14/03/2019**   **Time: 10:30 To 01:30**   **Marks: 70**

Instructions:
(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1	**Attempt the following questions:**	**(14)**
a)	What is the function of T0 pin in 8051 microcontroller?	
b)	What is the function of Tx pin in 8051 microcontroller?	
c)	How many clock signals are possessed by each machine cycle of 8051 microcontroller?	
d)	How many port registers possessed by 8051 microcontroller?	
e)	Which type of digital circuit is used by timer/counter of 8051 microcontroller?	
f)	Which I/O port of 8051 microcontroller has no alternate function?	
g)	Which I/O port of 8051 microcontroller has Tx, Rx etc. alternate functions?	
h)	State size of DPTR register.	
i)	Which source of pulses used when we used timer/counter circuit used as a timer?	
j)	Which SFR contains TR bit?	
k)	State the function of SBUF register.	
l)	Which instruction is used for external ROM data move operation?	
m)	Write a single instruction to decrement data value stored in register A by one.	
n)	Write a single instruction to exchange lower nibbles of data bytes.	

Attempt any four questions from Q-2 to Q-8

Q-2	**Attempt all questions**	**(14)**
a)	Explain in detail with diagram the internal RAM organization of 8051 microcontroller.	**07**
b)	Explain in detail TCON and TMOD SFRs with diagrams.	**07**
Q-3	**Attempt all questions**	**(14)**
a)	Draw and explain in detail internal circuitry of Port-0 and Port-2.	**07**
b)	Draw the timer/counter logic circuit. Explain in detail with diagrams timer modes 0 and 1.	**07**
Q-4	**Attempt all questions**	**(14)**
a)	Explain in detail with examples different arithmetic instructions.	**07**
b)	Write an ALP to find out largest number from the given array of 8-bit data.	**07**
Q-5	**Attempt all questions**	**(14)**
a)	Explain in detail with examples different logical instructions.	**07**
b)	Write an ALP to find out smallest number from the given array of 8-bit data.	**07**

Q-6		**Attempt all questions**	**(14)**
	a)	Explain in detail with diagrams stack operation using PUSH and POP instructions.	**07**
	b)	Write an ALP to add two 32-bit data. Assume result is more than 32-bit	**07**
Q-7		**Attempt all questions**	**(14)**
	a)	Explain in detail with examples different jump and call instructions.	**07**
	b)	Write a C program for 8051 to transfer the messages "ON" and "OFF" serially at 2400 baud rate continuously. Use 8-bit data and 1 stop bit.	**07**
Q-8		**Attempt all questions**	**(14)**
	a)	Explain in detail with diagrams IE and IP SFRs.	**07**
	b)	Draw the pin diagram of LCD. Explain the function of each pin of LCD.	**07**