Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Summer Examination-2020

Subject Name: Microcontrollers & Its Applications

Subject Code: 4TE05MCA1 **Branch: B.Tech (EC)**

Semester : 5 **Date : 26/02/2020** **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) State any four features of 8051 µC.
b) Calculate the time required for one machine cycle for 8051 µC which operates at 24MHz frequency.
c) How many T-state possessed by one machine cycle in 8051 µC?
d) State the name of flag which is possessed by 8051 µC for BCD arithmetic.
e) What is the function of EA' pin in 8051 µC?
f) What is the function of ALE pin in 8051 µC?
g) What is the function of Rx pin in 8051 µC?
h) Which timer mode is called as split timer mode?
i) State the size of stack memory in 8051 µC.
j) How many SBUF registers possessed by 8051 µC?
k) Which bit of IE SFR must be set to enable all interrupts?
l) Write a single instruction to exchange lower nibbles of data bytes.
m) Which instruction is used for external ROM data move operation?
n) Write a single rotate instruction to double given data byte value stored in register A.

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

Q-2 **Attempt all questions** **(14)**

a) Explain in detail with diagram internal RAM organization of 8051 microcontroller. **07**
b) Draw the timer/counter logic circuit. Explain in detail with diagrams timer modes 1 and 2. **07**

Q-3 **Attempt all questions** **(14)**

a) Draw and explain internal circuitry of Port-1 and Port-3. **07**
b) Explain in detail TMOD and TCON SFRs with diagrams. **07**

Q-4 **Attempt all questions** **(14)**

a) Explain in detail IE and IP SFRs with diagrams. **07**
b) State different addressing modes used in 8051 microcontroller. Explain in detail with example each of them. **07**

Q-5 **Attempt all questions** **(14)**

a) Explain in detail with examples different bit / byte logical instructions. **07**

	b)	Write an ALP to find out largest number from the given array of bytes.	**07**
Q-6		**Attempt all questions**	**(14)**
	a)	Explain in detail with examples different arithmetic instructions.	**07**
	b)	Write an ALP to find out smallest number from the given array of bytes.	**07**
Q-7		**Attempt all questions**	**(14)**
	a)	Explain in detail with example different bit / byte JUMP instructions.	**07**
	b)	Write an 8051 C program to toggle only pin P1.0 continuously every 50 ms. Use Timer 0, mode 2 (8-bit auto-reload) to create the delay.	**07**
Q-8		**Attempt all questions**	**(14)**
	a)	Write a C program for 8051 to transfer the message "WHY CCET EC?" serially at 2400 baud rate continuously. Use 8-bit data and 1 stop bit.	**07**
	b)	Draw the pin diagram of LCD. Explain the function of each pin of LCD.	**07**