Library

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)

Munshi Nagar, Andheri (West), Mumbai – 400058.

Re Exam

June 2017

Max. Marks: **100** Duration: **3 hrs**

Class: **SY B. Tech** Semester: **IV** Program: **Electrical Engineering**

Name of the Course: **Microprocessor and Microcontroller** Course Code : **BTE231**

MASTER FILE

Instructions:

- Question no 1 is compulsory
- Attempt any FOUR questions out of the remaining SIX questions
- Assume suitable data if required.
- Answers to all sub-questions should be grouped together.

Question No		Module No.	Maximum Marks	Course Outcome Number
Q1 a)	How is stack used in the case of CALL instruction?	3	5	2
b)	Write a program to create a square wave of 50% duty cycle on bit 0 of port 1 of 8051 microcontroller.	5	5	3
c)	Compare Harvard and Von Neumann architecture.	1,4	5	1
d)	List the special function registers of 8051 microcontroller.	4	5	2
Q2 a)	Compare microprocessors and microcontrollers.	4	5	2
b)	Write a program to transfer an array of 10 bytes stored in RAM locations starting from 8000H to RAM locations starting from 9000H.(8051 microcontroller)	6	10	3
c)	Assume the 5 BCD data items are stored in RAM locations starting at 46H, write an assembly language program to find the sum of all numbers write an ALP. The result must be in BCD.	5	5	3

Memory Location	Data
46	71
47	11
48	65
49	59
50	37

Q3 a)	Explain the various addressing modes for accessing memory of 8051 microcontroller with examples.	4	10	2
b)	Explain 8255 PPI with block diagram, modes of operation and its control register format.	6	10	2
Q4				
a)	Write a short notes on timer registers of 8051.Explain how to generate time delay using mode 2 of the timer. Write an assembly language program for the same.	4	12	2,3
b)	Draw and explain the interfacing of Digital to Analog Converter with 8051.Write a program to generate a saw tooth waveform.	7	8	3,4
Q5 a)	Draw and explain internal structure of CPU(Von Neumann architecture)	1	5	1
b)	Explain any 10 byte level (arithmetic, logical and rotate) instructions of 8051 microcontrollers	5	10	3
c)	Explain the following pins of 8051 microcontroller. ALE,XTAL, RXD,$\overline{RD}$, $\overline{INT0}$	4	5	2
Q6 a)	Write short notes on the different modes of data transfer between computer and I/O devices.	2	10	1

b)	Show the contents of the PSW register after the execution of the following instructions:
	MOV A,#0BFH
	ADD A,#1BH
		4	5	2,3

c)	What is a machine cycle? List the various machine cycles of 8085 microprocessors.	1,3	5	2
Q7 a)	Draw and explain the architecture of 8051 microcontroller with neat diagram.	4	10	2
b)	Write short notes on any one: i)interfacing of ADC converter with 8051 microcontroller ii) Stepper motor interfacing with 8051 microcontroller.	7,6	10	3,4