GANPAT UNIVERSITY
B. TECH SEM. V ELECTRONICS & COMMUNICATION ENGINEERING
CBCS REGULAR EXAMINATION NOVEMBER/DECEMBER-2013
2EC501 MICROCONTROLLERS AND INTERFACES

TIME: 3 HOURS   TOTAL MARKS: 70

INSTRUCTIONS:
1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

Que.-1	(A)	Draw and explain interfacing of external memory with 8051 with necessary diagram.	6
	(B)	Explain following instructions:	6
		1. MOVC A, @A+DPTR	
		2. ADDC A,@R1	
		3. MOV @R0,81H	
		4. SUBB A,#35h	
		5. JNB tf0,radd	
		6. XCHD A , @R1	

OR

Que.-1	(A)	Draw and explain different modes of serial communication of 8051.	6
	(B)	Count the number of 1s and 0s from the number stored in register R3 and put the count of 1s in R1 and count of 0s in R2.	6

Que.-2	(A)	Write a program that displays 'Y' at port 0 and 'N' at port 2 and also generates a square wave of 10KHz, with timer 0 in mode 2 at port pin P1.2. XTAL=12MHz.	6
	(B)	Draw and explain Port 0 as an I/O port, address bus and data bus of 8051.	5

OR

Que.-2	(A)	Treat R0 and R1 as 16 bit registers, and rotate them one place to the left; bit7 of R0 becomes bit0 of R1, bit7 of R1becomes bit0 of R0, and so on.	6
	(B)	What is difference between RET and RETI instructions?	2
	(C)	Draw and explain various parts of internal RAM of 8051.	3
Que.-3	(A)	List the values of P0-P3, PSW, SP and DPTR on reset the 8051.	4
	(B)	Square the contents of R3; put the result in R0 (high byte) and R1 (low byte).	4
	(C)	Explain TCON and TMOD function registers of 8051.	4

Que.-4 **(A)** Write a program to generate two square waves- one of 5KHz frequency at pin P1.3, and another of frequency 25KHz at pin P2.3.Assume XTAL=12MHz. — 6

(B) Draw and explain timer counter control logic. — 3

(C) Enlist and explain any three Logical instructions of 8051 with suitable example. — 3

OR

Que.-4 **(A)** Write an assembly language program to compare the contents of A with the contents of 20H.If the contents are equal, store 00H in 21H location, else store FFH in 21H. — 6

(B) Explain PUSH and POP instructions with example. — 3

(C) Enlist and explain any three Arithmetic instructions of 8051 with suitable example. — 3

Que.-5 **(A)** An 8 bit code word has been stored in location 1000H of external data memory. Code word is valid, if three MSBs are zero and it contains two ones in the remaining five bits. If code word is valid , Store FFH, else store 00H in 1001H. — 7

(B) Explain RL A, RLC A, RR A, RRC A. — 4

Que.-5 **(A)** Assume that INT1 pin is connected to Switch that is normally high. Whenever it goes low, it sends turn on an LED. The LED connected to P1.3 and normally off. When it turned on it should stay on for a fraction of second. As long as the switch is pressed low, the LED should stay on. — 7

(B) Define priority and explain various priority levels of different interrupts in 8051. — 2

(C) Show different ways to set double the baud rate in 8051. — 2

Que.-6 **(A)** Explain each bit of IE and IP registers for 8051. — 4

(B) Briefly explain how low level triggering and edge triggering works for external hardware interrupt and also define role of IE0 and IE1 bits. — 4

(C) Explain the various pins of LCD and also show how the LCD can be interface with 8051 with necessary diagram. — 4

End of Paper