Seat No._____

GANPAT UNIVERSITY

B. Tech. Semester V Electronics and Communication Engineering

Regular Examination (CBCS) Nov–Dec 2014

2EC501 Microcontrollers & Interfaces

Time: 3 Hours   Total Marks: 70

Instruction: 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 the Block Diagram of 8051 Microcontroller.	5
	(B)	Define following instructions : (1) XCHD A , @R1 (2)MOVX A,@DPTR (3) INC @R0 (4)ADDC A,@R1	4
	(C)	Copy program bytes from external ROM locations 0100h to 0102h into internal RAM locations 20h to 22h.	3

OR

Que. – 1	(A)	Explain different timer modes of 8051.	6
	(B)	Treat registers R0 and R1 as 16-bit registers, and rotate them one place to the left ; bit 7 of R0 becomes bit 0 of R1, bit 7 of R1 becomes bit 0 of R0, and so on.	4
	(C)	How can we set double the baud rate in 8051?	2

Que. – 2	(A)	Write a program to generate square wave of 72 Hz frequency on pin P2.3. XTAL = 11.0592 MHz. Use Timer 0 and show the calculation.	5
	(B)	Draw and explain different modes of 8051 for serial communication.	6

OR

Que. – 2	(A)	Write a program to transfer the message "HELLO" serially at 4800 baud, 8-bit data, 1 stop bit. Do this continuously.	5
	(B)	Define addressing modes of 8051 microcontroller with example.	4
	(C)	Explain PUSH and POP instructions.	2

Que. – 3	(A)	Write a program that continuously gets 8-bit data from port P2 and sends it to port P0 while simultaneously creating square wave of 400 µs period on pin P1.2. Use Timer 1 in mode 2 to create the square wave. Assume that XTAL = 11.0592 MHz.	6
	(B)	Draw and explain interfacing of external memory with 8051.	4
	(C)	How can we represent -55d in hex.	2

Section- II

Que. – 4 **(A)** Program the 8051 microcontroller to receive bytes of data serially, and put them in port P1. Set the baud rate at 4800, 8-bit data, and 1 stop bit. XTAL = 11.0592 MHz. 6

(B) Explain different types of interrupt in 8051. 4

(C) What is difference between RET and RETI instructions? 2

OR

Que. – 4 **(A)** Write a program to transfer the message "best of luck" serially at 4800 baud rate to COM port, 8 bit data, and 1 stop bit. Do this continuously. XTAL=11.0592MHz. Use timer 1 in mode2. 6

(B) Draw and explain external interrupts in 8051. 4

(C) What is the range of SFRs? 2

Que. – 5 **(A)** Briefly explain timer and serial communication interrupts. 4

(B) Draw and explain Port 0 as GPIO, lower bits address bus and data bus. 4

(C) Write a program to increment the DPTR from any initialized value to CDEFh. 3

OR

Que. – 5 **(A)** Draw and explain TCON and TMOD registers. 5

(B) Put a random number in internal RAM location 20h and increment it until it equals to the random number stored in register R5. 4

(C) List the values of P0-P3, PSW, SP and DPTR on reset the 8051. 2

Que. – 6 **(A)** How to interface single key with 8051? Explain. 5

(B) Draw and explain keypad interfacing flowchart. 4

(C) List out differences between micro processor and micro controller. 3

End of Paper