

GANPAT UNIVERSITY**B. Tech. Sem. V (EC)****Regular Examination November/December-2012****2EC501: Microcontrollers & 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

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|---|--|---|
| 1 | (A) Explain TCON and TMOD function registers. | 4 |
| | (B) Draw and explain Internal RAM organization of 8051 microcontroller. | 4 |
| | (C) Define following instructions : | 4 |
| | 1. MOV DPTR , #1234H, 2. XCHD A, @R1 3. SETB C 4. SWAP A | |
| | OR | |
| 1 | (A) Draw and Explain the Timer / Counter control logic. | 4 |
| | (B) Give the difference between interrupt method and polling method. | 4 |
| | (C) Define following instructions : | 4 |
| | 1. MOVX @R0,A 2. XCH A,R7 3. SETB 00H 4. INC @R0 | |
| 2 | (A) Draw and Explain the Block Diagram 8051 Microcontroller. | 6 |
| | (B) Explain byte level logical instruction set. | 5 |
| | OR | |
| 2 | (A) Draw and Explain the Pin Diagram 8051 Microcontroller. | 6 |
| | (B) Explain bit level logical instruction set. | 5 |
| 3 | (A) Square the contents of R5; put the result in R0(high byte) and R1(low byte). | 4 |
| | (B) Count the number of 1's and 0's in any number, which is stored in external RAM location 0100h . | 4 |
| | (C) Find the smallest number from the numbers stored in external RAM locations starting from 0100h to 0109h. | 4 |

SECTION-II

- 4 (A) Explain the concept of look-up table with PC as a base address. 4
(B) Define subroutine in detail. 4
(C) Write a program to get the contents of PC into DPTR. 4
OR
- 4 (A) Explain PUSH and POP instructions with example. 4
(B) Define memory mapped I/O in detail. 4
(C) Write a program to unpack the packed BCD number stored in register A and put the result into R0 and R1. 4
- 5 (A) Write a program to transfer the message "YES" serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously. 6
(B) Write a program to generate square wave of 72 Hz frequency on pin P2.3. 5
XTAL = 11.0592 MHz. Use Timer 0 and Mode 2.
- OR
- 5 (A) Write a program to transfer the message "HELLO" serially at 4800 baud, 8-bit data, 1 stop bit. Do this continuously. 6
(B) Write a program to generate square wave of 2 kHz frequency on pin P1.5. 5
XTAL = 11.0592 MHz. Use Timer 1 and Mode 1.
- 6 (A) Draw and explain the pin description of LCD. 6
(B) Draw the flow chart for keyboard interfacing and describe each block. 6

END OF PAPER