

GANPAT UNIVERSITY

B. Tech. Semester: VI (Biomedical & Instrumentation) Engineering

Regular Examination April – June 2016

2BM604 Microcontroller Applications

Time: 3 Hours

Total Marks: 70

Instruction:

1. All the questions are compulsory.
2. Answer of each section must be written in separate answer books.
3. Figure to the right indicate marks.
4. Assume data, if needed.
5. Conventional terms / notations are used.

Section - I

- | | | |
|----------|--|----|
| Que. – 1 | | 12 |
| a). | Draw neat block diagram and pin diagram of 8051. | 6 |
| b). | Discuss: 1). INC @Ri (2) JBC bit, target
(3) XCHD A, @Ri (4) SWAP A
(5) RR A (6) DIV AB | 6 |
| | OR | |
| Que. – 1 | | 12 |
| a). | Describe RAM organization of 8051. | 6 |
| b). | Discuss: (1) MOV SBUF, A (2) SETB TR1
(3) LJMP loop (4) INC DPTR
(5) RR A (6) DJNZ R1, loop | 6 |
| Que. – 2 | | 11 |
| a). | Discuss various timer modes in 8051. | 6 |
| b). | Describe the bits pattern of PSW. Also explain how to select register bank using PSW? | 5 |
| | OR | |
| Que. – 2 | | 11 |
| a). | Draw and explain oscillator circuit and timing diagram of the 8051. | 6 |
| b). | 1. The 8051 DIP package is a _____ pin package.
2. What bit addresses are assigned to P2?
3. Give another instruction for “CLR C”.
4. What do the mnemonics “LCALL” stand for?
5. What is the size of ROM in 8051? | 5 |
| Que. – 3 | Answer any two. | 12 |
| a). | Write a Program to Generate delay of “20 msec” in 8051. Draw the flow chart for the same. | 6 |
| b). | Write an ALP (Assembly language program) to generate continuous square wave of 50% duty cycle using auto-reload mode. Assume Crystal frequency of 11.0592Mhz. | 6 |
| c). | Differentiate Microprocessor and Microcontroller. | 6 |

Section – II

- Que. – 4 12
- a). Describe the use of SCON and PCON registers in 8051. 6
 - b). List and discuss various interrupts of 8051. 6

OR

- Que. – 4 12
- a). Explain serial data communication techniques and data framing for 8051. 6
 - b). What is stack? Explain PUSH and POP instruction with example. 6

- Que. – 5 11
- a). Explain 8 bit ADC and Explain interfacing of same with 8051. Write the codes for the same. 6
 - b). Explain IE register. Also write the steps in enabling interrupts. 5

OR

- Que. – 5 11
- a). Interface a 4x4 Matrix Keyboard with 8051 and draw the flow chart to detect a switch pressing. 6
 - b). 5
 - 1. List the 8051 interrupt priority upon RESET (highest to lowest priority).
 - 2. When does OV flag set?
 - 3. What do you understand by NOP?
 - 4. In multiplication of two bytes in the 8051 in the 8051, we must place one byte in registerand the other in register
 - 5. The address of P1 is.....

- Que. – 6 Answer any two. 12
- a). Write a program to read the data from P1 and write its to P2 continuously by serial com port. XTAL=11.0592MHz. Baud rate=9600 6
 - b). Explain with diagram interfacing stepper motor with 8051 microcontroller and code a program to rotate it continuously. 6
 - c). Write a note on Addressing Modes of 8051 6

END OF PAPER