

**GANPAT UNIVERSITY**  
**B.Tech Sem. VI<sup>th</sup> Biomedical & Instrumentation Engineering**  
**CBCS Regular Examination April - June 2015**  
**2BM604 - MICROCONTROLLER APPLICATIONS**

Time: 3 Hours

Total Marks-70

**Instructions:-**

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 the circuit diagram of Port 0 and Port 1 and explain in detail.
- b). Describe RAM organization in 8051 microcontroller.

**OR****Que.1.****[12]**

- a). Draw and explain block diagram of 8051 micro controller.
- b). Discuss various addressing modes of 8051 with example.

**Que.2.****[11]**

- a). Discuss Interfacing of LCD with microcontroller and write basic codes for the same.
- b). Explain:
 

1). ADD A,R0	2). DIV A, B
3). CLR bit	4). DA A
5). DJNZ 40H,LABEL_1	

**OR****Que.2****[11]**

- a). Draw interfacing of 4\*4 keyboard with 8051 microcontroller and explain.
- b). Answer the following.
  1. The 8051 microcontroller is of \_\_\_ pin package.
  2. What is the address range of SFR Register bank?
  3. After reset, SP register is initialized to address \_\_\_\_\_.
  4. In 8051 which interrupt has highest priority?
  5. The I/O port that does not have a dual-purpose role is \_\_\_\_\_.



**Que.3. Answer any three. [12]**

- a). Divide the content of r0 by r1. Store the result in r2 (answer) and r3 (remainder). Then restore the original content of r0.
- b). List out the similarities and differences between microprocessors and microcontrollers.
- c). Write an ALP to do multiplication of two 8bit numbers without using MUL instruction.
- d). Write a program to generate a square wave of 50Hz frequency on pin P1.2. Use interrupts for timer 0. Assume XTAL=11.0592Mhz.

**Section – II**

**Que.4. [12]**

- a). Discuss various timer modes in 8051.
- b). Discuss various subroutine techniques in microcontroller.

**OR**

**Que.4. [12]**

- a). Explain data framing for asynchronous serial communication.
- b). Write an ALP to find largest and smallest delay for 8051.

**Que.5. [11]**

- a). What is the use of stack and stack pointer? Explain giving example.
- b). Discuss bits pattern of IE register.

**OR**

**Que.5. [11]**

- a). Draw the interfacing of stepper motor with 8051. Write the codes for the same.
- b). Describe various interrupts of 8051.

**Que.6. Answer any three. [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
- b). Write an ALP to store the higher nibble of R7 in to higher and lower nibbles of R6
- c). What is the purpose of lookup table technique? Explain with example.
- d). List out various features of 8051 microcontroller.

**END OF PAPER**