**Printed Pages :** **NBM-602/EBM-602**

| (Following Paper ID and Roll No. to be filled in your Answer Books) | | | | | | | | | | |
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| **PAPER ID :** | **Roll No.** | | | | | | | | | |

# B.TECH.

## Theory Examination (Semester-VI) 2015-16

## MICROCONTROLLER & BIO-MEDICAL APPLICATIONS

***Time : 3 Hours*** ***Max. Marks : 100***

### Section A

**Q.1 Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2 x 10=20)**

(a) Differentiate microcontroller and microprocessor.
(b) List the features of 8051,8052 and 8031 microcontrollers.
(c) What is the specific role of port3 in 8051?
(d) Write down different branching instructions of 8051.
(e) What are the functions of following 8051 pins? Explain in brief.
(i) TXD (ii) $INT_0$
(f) What is the default location of stack in 8051?
(g) Name all the interrupts available in 8051.
(h) What is the role of SBUF register in serial communication?
(i) Show the contents of Accumulator after the execution of the following instructions.
MOV A,#0BFH
ADD A,#1BH.
(j) How the baud rate is defined in serial communication.

### Section B

**2. Attempt any 5 questions from this section. (10 x 5=50)**

a) Draw the internal Organization of Computers showing different buses and connections with peripherals.
b) Discuss various internal registers used in 8051 programming and also describe various Addressing modes of 8051 microcontrollers with examples.
c) What are the various steps needed to assemble and running of an 8051 program. Show the flow chart to create program.
d) Explain the LCD interfacing with 8051 microcontroller, giving LCD pin description and circuit diagram.
e) Discuss various applications of microcontrollers in embedded biomedical.
f) Draw the block diagram of 8255 PPI and give details about various modes of each port.
g) Explain how an interrupt can be enabled and disabled in 8051. Also discuss how the priority of these interrupts is decided.
h) Compare and contrast Timer mode1 and Mode 2 Operations.

## Section C

**Note: Attempt any 2 questions from this section.** **(15 x 2=30)**

Q.3 Write a program of sine wave generation using DAC. Also draw the circuit for DAC interfacing with 8051.

Q.4 What are RS-232 standards? How it can be interfaced with 8051. Draw the format of SCON register; also explain the meaning and uses of each bit.

Q.5 How the external data memory is interfaced with 8051? Illustrate each signal clearly. Show the instructions to read/write data from external data memory with suitable examples.