Printed Pages: 02 **Sub Code: NBM602**

Paper Id: | 1 | 0 | 1 | 6 | 0 | 2 | **Roll No.** | | | | | | | | | | |

B.Tech.
(SEM VI) THEORY EXAMINATION 2017-18
Microcontroller & Bio-Medical Application

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a) Discuss the criteria for selecting a microcontroller device?
b) Draw the block diagram of Microcontroller?
c) Explain the difference between MOVX and MOV instruction?
d) What are the functions of the assembler and linker?
e) What do you mean by contact debounce?
f) What do you mean by bipolar mode of ADC?
g) What is the use of latch in 8051?
h) What is the effect of finite word length of registers in microcontroller?
i) List the different assemble directive?
j) What is RS-232?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a) What do you mean by the term addressing modes? What are the different addressing mode supported by 8051? Explain in brief.
b) Discuss the advantages of microcontrollers over microprocessors in control application?
c) Write a simple 8051 program for adding two 16-bit numbers. Assemble and link it?
d) Explain the timing Diagram to access external memory in 8051?
e) Draw and explain DSP processor?

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a) What happens in the following examples-?
   (i) SJMP $
   (ii) MOV SP, #74
   (iii) CPL 91H
   (iv) JC 02
   (v) DEC 51H
b) What is the difference between a long jump (LJMP), a short jump (SJMP) and absolute jump (AJMP)? Explain the following Instructions-
   (i) RR
   (ii) RL
   (iii) ACALL
   (iv) ADDC A, direct
   (v) ANL A, R

4. Attempt any *one* part of the following: 10 x 1 = 10

a) Explain the various flags in PSW register? Why is a register different from a memory location? Explain.
b) Explain the domestic applications where microcontrollers would be possibly useful or do better?

5. Attempt any *one* part of the following: 10 x 1 = 10

a) Discuss the various timer modes supported by 8051? What is special about the auto-reload mode?
b) How do you decide the edge and level triggered configurations of external interrupts INT0 and INT1? Also write a program to measure the width of a pulse appearing at the pin INT0?

6. Attempt any *one* part of the following: 10 x 1 = 10

a) What is the exact role of pull-up resistor while interfacing push buttons, keyboard with microcontroller? Why do you need a delay of around 1 sec while sending a new 7-segment code each time to a 7-segment display?
b) Discuss the various selection criteria between an LCD and an LED display?

7. Attempt any *one* part of the following: 10 x 1 = 10

a) Explain the application of Microcontroller and computers in Biomedical Engineering?
b) Explain the architecture of microcontroller in embedded biomedical application?