Printed Pages: 02 **Sub Code: NEC 022**

Paper Id: 131259 **Roll No.** | | | | | | | | | | |

B TECH
(SEM-VI) THEORY EXAMINATION 2018-19
MICROCONTROLLER AND ITS APPLICATIONS

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. Differentiate between the RISC and CISC architectures.
b. What do you mean by embedded system?
c. What is the function of PC and SP in assembly language programming?
d. Compare Microprocessor and Microcontroller.
e. Explain special purpose register.
f. Explain the functions of SCON and TCON registers.
g. What is the need of signal conditioning?
h. Explain program counter.
i. Name few general-purpose registers.
j. Define sensor interfacing.

SECTION B

2. Attempt any *three* of the following: 10x3=30

a. Discuss Von Neumann (Princeton) and Harvard architecture. What are the advantages and disadvantages of Von Neumann (Princeton) and Harvard architecture?
b. Classify instruction set of MCS-51 and explain with examples.
c. Write a program to subtract two 8-bit numbers & exchange the digits using 8051?
d. Describe PSW and Pointer registers in 8051 microcontroller.
e. Draw and explain interfacing diagram of DAC with 8051 microcontroller. Write a C program to generate triangular waveform at the output of DAC.

SECTION C

3. Attempt any *one* part of the following: 10x1=10

a. Draw and explain the block diagram of 8051 microcontroller. Also explain its memory organization.
b. What are the various addressing modes in 8051? Explain them with examples.

4. Attempt any *one* part of the following: 10x1=10

a. Explain stack and stack pointer. With the help of an example explain stack organization.
b. Explain the structure of assembly language. Write an ALP to arrange the given set of 'n' numbers in ascending order.

5. Attempt any *one* part of the following: 10x1=10

a. Explain different modes of Timer for 8051 microcontroller. Write a C program to show the use of INT0 and INT1 of 8051.

b. List the interrupts available in the 8051 microcontroller. Explain interrupt enable (IE) SFR and Interrupt priority (IP) SFR.

6. Attempt any *one* part of the following: 10x1=10

a. Discuss serial port programming. With a suitable diagram explain the interfacing of RS 232 with 8051.

b. Briefly explain the structure of TCON, SCON, TMOD and PCON register for 8051 Microcontroller.

7. Attempt any *one* part of the following: 10x1=10

a. Explain PPI (8255) with its block diagram. Also explain its operating modes.

b. Draw and explain in brief the interfacing diagram of different types of DC motors, Stepper and servomotor with 8051 Microcontroller.