Printed Pages : 1 **Roll No.** | | | | | | | | | | | **NEC022R**

B.TECH.

THEORY EXAMINATION (SEM–VI) 2016-17

MICROCONTROLLERS FOR EMBEDDED SYSTEMS

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

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Explain the following: **10 x 2 = 20**

(a) Define the use of MOVX and MOVC instruction in 8051 Microcontroller.

(b) Define bit addressable RAM in 8051 Microcontroller.

(c) Define Pullup/Pulldown resistor concept in MSP430 Microcontroller.

(d) Compare 8051 and MSP430x5xxx main features.

(e) What are the various transfer modes in DMA controller of MSP430.

(f) Define how data acquisition is done.

(g) Write down any four GPIO registers.

(h) Define functionality of WDTPW and WDTNMI.

(i) What are the various serial communication interfaces available in MSP430 Microcontroller.

(j) Enlist the features of ADC10 of MSP430 Microcontroller.

SECTION – B

2. Attempt any five of the following questions: **5 x 10 = 50**

(a) Write down the differences in Memory mapped peripherals and Input output mapped Peripherals.

(b) What are the various addressing modes in 8051 .

(c) Explain the block diagram of RTC (Real Time clock) with its modes of operation. What are the applications of RTC.

(d) Explain the working of PWM (Pulse width modulation) with its block diagram.

(e) Write a program using MSP430x5xx to toggle two LED connected at port P1.5 and P1.7. Use a pull down switch connected at port P1.2 for toggling these LED.

(f) Write a program to vary the intensity of LED connected at port P1.2 using PWM method.

(g) Explain the flow chart of receiving single byte from slave having address 0*32H using USCI_Bx.

(h) What do you mean by ZigBee wireless module ? Explain ZigBee device block diagram.

SECTION – C

Attempt any two of the following questions: **2 x 15 = 30**

3 (i) Write an assembly language code to send command to LCD display from 8051 to display any string.

(ii) Explain the working of maskable interrupt in MSP430.

4 (i) Explain the Data frame format in I2C communication

(ii) What are the various GPIO resistors in MSP430x5xx ? Explain each resistors briefly.

5 (i) What do mean by Near Field Communication (NFC) ? Explain different modes of NFC device.

(ii) What are the different transfer mode in the DMA? Explain in brief.