

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.