

--	--	--	--	--	--	--	--	--	--

**B.TECH**  
**(SEM VI) THEORY EXAMINATION 2018-19**  
**MICROCONTROLLER FOR EMBEDDED SYSTEMS**

**Time: 3 Hours****Total Marks: 70****Note:** 1. Attempt all Sections. If you require any missing data, choose suitably.

**SECTION A**

1. Attempt *all* questions in brief. **2 x 7 = 14**
- In accessing external stored program code the PSEN is always activated, explain why?
  - Which port of 8051 provides A8-A15?
  - Compare 8051 and MSP430x5xxx main features.
  - Write down any four GPIO registers of MSP430.
  - What is RTC?
  - Differentiate between Synchronous and Asynchronous communication.
  - What is an Embedded Wi-Fi?

**SECTION B**

2. Attempt any *three* of the following: **7 x 3 = 21**
- Generate a square wave with an ON time of 2ms and OFF time of 8 ms on all pins of port 0. Assume that the clock frequency supplied is 22 MHz.
  - Explain in detail about the interrupts of MSP430 microcontroller.
  - Explain in detail about various operating modes of MSP430 microcontroller.
  - Explain UART and its various protocols in detail.
  - Describe wireless sensor networks with design examples.

**SECTION C**

3. Attempt any *one* part of the following: **7 x 1 = 7**
- Draw the architecture of 8051 and explain its memory organization.
  - Enlist the steps to generate a time delay using the timer's mode 2. Also draw the structure of TMOD register.
4. Attempt any *one* part of the following: **7 x 1 = 7**
- Draw the functional block diagram of MSP430x5x series. Discuss the on-chip peripherals that are provided in MSP430x5x series.
  - Describe the Instruction set of MSP430 microcontroller.
5. Attempt any *one* part of the following: **7 x 1 = 7**
- What are the system clocks present in the MSP430 microcontroller? Explain them briefly.
  - Discuss the Watch Dog Timer present in MSP430 microcontroller in detail.

6. Attempt any *one* part of the following:

7 x 1 = 7

- (a) Interface MSP430 to an external device using SPI protocol.
- (b) 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.

7. Attempt any *one* part of the following:

7 x 1 = 7

- (a) What is IoT? Draw the architecture of IoT and list its applications.
- (b) Explain briefly Bluetooth and ZigBee.

FirstRanker.com  
www.FirstRanker.com  
/ 09-May-2019 13:36:37 | 45.115.62.2