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**BTECH**  
**(SEM VI) THEORY EXAMINATION 2021-22**  
**MICROCONTROLLER & EMBEDDED SYSTEM DESIGN**

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**Time: 3 Hours****Total Marks: 100****Note:** Attempt all Sections. If you require any missing data, then choose suitably.**SECTION A**

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

Qno	Questions	CO
(a)	Describe the term Microprocessor and its applications.	1
(b)	Define the working of EEPROM.	1
(c)	Describe instruction set for any microcontroller.	2
(d)	Differentiate between Memory Mapped and I/O Mapped peripherals.	2
(e)	Define the term Timer and its applications.	3
(f)	Describe the Data Acquisition Process.	3
(g)	Describe Interfacing process in any processor.	4
(h)	Define the term Wireless Networking.	4
(i)	Define the term IoT (Internet of Things).	5
(j)	Describe the applications of Bluetooth in Microcontrollers.	5

**SECTION B**

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

Qno	Questions	CO
(a)	Define the Block Diagram of 8051 Microcontroller.	1
(b)	Describe the Addressing Modes of MSP 430 Microcontroller.	2
(c)	Differentiate between Timer and Real Time Clock Applications.	3
(d)	Describe the operations and working of USB Protocol communication.	4
(e)	Define the block diagram of Wi-Fi connectivity protocol.	5

**SECTION C**

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

Qno	Questions	CO
(a)	Describe the process of generating PWM signal, as per the microcontrollers.	1
(b)	Define different peripherals, with their applications, that are interfaced to Microcontrollers.	1

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

Qno	Questions	CO
(a)	Describe the block diagram of an MSP 430 Microcontroller.	2
(b)	Describe the interrupts associated with MSP 430 and how they can be programmed for better performance of the controller.	2



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

Qno	Questions	CO
(a)	Define the DMA operation and associated modes in MSP 430.	3
(b)	Describe the applications, Modes and different control words associated to Watchdog Timer interfacing with MSP 430.	3

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

Qno	Questions	CO
(a)	Define the interfacing process and different modes associated to SPI interfacing with MSP 430.	4
(b)	Define the interfacing process and different modes associated to I2C interfacing with MSP 430.	4

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

Qno	Questions	CO
(a)	Define the working of CC3100 user API for connecting sensors.	5
(b)	Describe the Zig-Bee communication modes and applications.	5