**Printed Pages:01** **Sub Code: REC401**

**Paper Id:** 238581 **Roll No.** | | | | | | | | | | | | | |

**B.TECH**

**(SEM IV) THEORY EXAMINATION 2022-23**

**MICROPROCESSOR & MICROCONTROLLER**

***Time: 3 Hours*** ***Total Marks: 70***

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt *all* questions in brief. 2 x 7 = 14**

(a) Explain the Von Neumann (Princeton) and Harvard architecture.
(b) Explain the term microprocessor.
(c) Write various applications of Embedded System?
(d) What is the need for STACK pointer register?
(e) Explain the instruction RIM and SIM with example.
(f) Explain the instruction formats of MSP430 microcontroller.
(g) What is the purpose of Watchdog Timer?

**SECTION B**

**2. Attempt any *three* of the following: 7 x 3 = 21**

(a) What are interrupt? Explain different types of interrupt in 8085
(b) Explain the various generations of microprocessor. Provide examples of each generation.
(c) Explain the all 6 operating modes of 8253/54.
(d) Draw the architecture of MSP430 and explain the features
(e) What are the various GPIO resistors in MSP430x5xx? Explain each resistor in brief.

**SECTION C**

**3. Attempt any *one* part of the following: 7 x 1 = 7**

(a) Draw the architecture of 8085 Microprocessors also explain the features of 8085.
(b) Differentiate between (1) POP and PUSH (2) CALL and Return.

**4. Attempt any *one* part of the following: 7 x 1 = 7**

(a) Explain the format of flag register used in MSP430. Explain each in brief.

(b) List all the conditional Call and Conditional Jump instructions with its T-sates and machine cycles.

**5. Attempt any *one* part of the following: 7 x 1 = 7**

(a) With the help of a functional block diagram and working of 8257 DMA controller.
(b) Design an interface circuit needed to connect DIP switch as an input device and display the value of the key pressed using a 7 segment LED display. Using 8085

**6. Attempt any *one* part of the following: 7 x 1 = 7**

(a) What are the operating modes of Timers in MSP430x5xx microcontroller?

(b) Explain the interfacing of 8259 interrupt controller with 8085 microprocessor

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

(a) Explain the low power modes of MSP430.
(b) Explain the architecture of 8255 PPI with neat diagram and explain its BSR and I/O modes.