

- (iii) What are the blocks present in Embedded internet ?
- (iv) Explain the concepts of I/O pull up/down resistors and various registers associated with it.
- (v) Compare Port I/O and Memory Mapped I/O.
- 3×5=15**

Roll No.

Total Pages : 04

J-21-0049

B. Tech. EXAMINATION, 2021

Semester V (CBCS)

INTRODUCTION TO MICROCONTROLLERS FOR
EMBEDDED SYSTEMS

EC-506

Time : 2 Hours

Maximum Marks : 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D.
Q. No. **9** is compulsory.

Section A

1. Write various applications of Embedded System.
Explain Embedded System Architecture. **15**

2. (a) Compare Harvard vs. Von-Neumann Memory Architectures. $7\frac{1}{2}$
- (b) Explain the architecture of MSP430 microcontroller. $7\frac{1}{2}$

Section B

3. (a) Briefly explain about various On-Chip peripherals present in MSP430 microcontroller. $7\frac{1}{2}$
- (b) Briefly explain any sample embedded system based on MSP430 microcontroller. $7\frac{1}{2}$
4. (a) Explain the CPU of MSP430 microcontroller. $7\frac{1}{2}$
- (b) Write a short note on TIMER and various types of timers in MSP430 microcontroller. $7\frac{1}{2}$

Section C

5. (a) Generate Memory and I/O control signals using any logic GATES. $7\frac{1}{2}$
- (b) Draw the memory mapping of Memory mapped I/O and I/O mapped I/O. $7\frac{1}{2}$

6. (a) Write about Program Counter (PC) register of MSP430 microcontroller with an example. $7\frac{1}{2}$
- (b) Sketch the instruction formats of MSP430 microcontroller. $7\frac{1}{2}$

Section D

7. (a) Explain the configurations and operations of DMA controller. $7\frac{1}{2}$
- (b) Explain any *one* of ADC techniques in detail with the help of program. $7\frac{1}{2}$
8. (a) Write a program to generate the various timing using any of the timers in MSP430. $7\frac{1}{2}$
- (b) Explain IOT architecture with the help of a diagram. $7\frac{1}{2}$

(Compulsory Question)

9. Answer the following :
- (i) Write a program of CC3100 network processor based any IOT application.
- (ii) Sketch connection Diagram for CC3100 and MSP430F5529 via SPI interface.