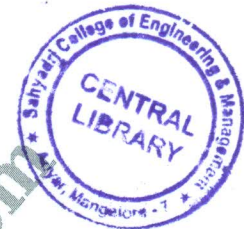


CBCS SCHEME



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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019 MSP430 Microcontroller

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the architecture of MSP430 microcontroller with its functional block diagram. (10 Marks)
b. Show the memory map of MSP430 and explain it briefly. (06 Marks)

OR

- 2 a. Explain the common peripherals included in the microcontrollers. (04 Marks)
b. Explain the bits of the status register with its format. (06 Marks)
c. Explain the Harvard and Von-Neumann architectures of a system. (06 Marks)

Module-2

- 3 a. Explain the following instructions :
i) RRC src
ii) Swpb src
iii) bic.w src, dst
iv) DECD.w dst
v) PUSH.w src
vi) DADD.w src, dst (06 Marks)
b. Explain the addressing modes of MSP430 microcontroller and give an example each. (10 Marks)

OR

- 4 a. Write a program to exchange n bytes of data between two memory locations 20h and 30h. (08 Marks)
b. Explain the machine code format – 1 instruction of MSP430 and also generate the machine code for the instruction ADD.W R5, R6. (08 Marks)

Module-3

- 5 a. Explain the clock system of MSP430 with the help of its simplified block diagram. (10 Marks)
b. Explain the various low power operating modes of MSP430 Microcontroller. (06 Marks)

OR

- 6 a. Draw the simplified block diagram of Basic Timer – 1 and explain its operation. Also draw its control register BTCTL. (08 Marks)
b. Explain the two control register used in Timer_A along with their formats. (08 Marks)

Module-4

- 7 a. Explain the architecture of Comparator_A+ of MSP430 with neat diagram. (08 Marks)
b. Draw the block diagram of Sigma – Delta ADC and explain its operation. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.



OR

- 8 a. List the principal distinctions between the ADC10 and ADC12 Successive Approximation ADC's. (06 Marks)
- b. Explain the design of simple PWM along with the program. (10 Marks)

Module-5

- 9 a. Explain the working principle of serial peripheral interface (SPI) between a master and a single slave along with the diagram. (08 Marks)
- b. Explain the functions of different registers associated with the digital Input/output pins of port P1 of MSP430 Microcontroller. (08 Marks)

OR

- 10 a. Explain the format of asynchronous serial data communication with an example. (08 Marks)
- b. Write the flow diagram for lighting LED when button B1 is pressed for single loop containing a decision and also write the C program. (08 Marks)
