Code: 15A04601 **R15**

B.Tech III Year II Semester (R15) Regular Examinations May/June 2018

MICROPROCESSORS & MICROCONTROLLERS

(Common to EEE, ECE & EIE)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What does the pin MN/MX do in 8086 processor?
(b) Give the format of the flag register in 8086 processor.
(c) What is the use of PUSH in 8086?
(d) Define immediate addressing mode of 8086 microprocessor with example.
(e) Differentiate between RISC and CISC processors.
(f) Which are the low power operating modes of MSP430?
(g) List clock circuit and registers used to control function of clock module of MSP430.
(h) Write an ALP to check whether the content of the register R4 of MSP430 is even/odd.
(i) Give the format of asynchronous serial data communication.
(j) Mention the purpose of CC3100.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain the functional block diagram of 8086 microprocessor with neat diagram.

OR

3 Draw the complete schematic of 8086 processor memory interface in minimum mode with the following specifications.
(i) 16 k of EPROM.
(ii) 32 k OF RAM.

UNIT – II

4 Clearly explain the addressing modes of the 8086 processor with suitable instruction examples.

OR

5 Write an 8086 program to perform unpacked BCD division. (e.g 75/2) (operands are stored in the memory).

UNIT – III

6 Sketch the functional block diagram of MSP430 microcontroller and briefly explain its architecture.

OR

7 (a) Show the memory map of F2013 MSP430 and explain it briefly.
(b) Briefly explain about the 16 registers of MSP430 CPU.

UNIT – IV

8 Explain the clock system of MSP430 with the help of its simplified block diagram.

OR

9 Interface a push button switch and a simple LED to MSP430 and write a C program to switch on the LED whenever the button is pressed.

UNIT – V

10 Explain briefly about the communication peripherals that are available in MSP430.

OR

11 (a) Explain serial communication SCI & SPI, compare the same.
(b) Explain CAN features and protocols.

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Code: 15A04601 **R15**

B.Tech III Year II Semester (R15) Supplementary Examinations December/January 2018/19

MICROPROCESSORS & MICROCONTROLLERS

(Common to EEE, ECE & EIE)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What is the basic clock frequency and maximum memory capacity of 8086?
(b) List out the interrupts and DMA control lines in 8086.
(c) What are macros & procedures?
(d) Which instruction mnemonics are used for multiplication and division of 8086?
(e) Write any four applications of MSP430G2XX family.
(f) Why BOR & WDT are used in MPS430?
(g) Explain about pull-up and pull-down resistors.
(h) Write any four differences between FRAM and FLASH.
(i) Explain half duplex and full duplex communication with example.
(j) Write any four features of CC3100.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Explain about each bit in flag register of 8086.
(b) Describe the architectural features of 8086.

OR

3 (a) Discuss the memory organization of 8086.
(b) Explain about registers in 8086.

UNIT – II

4 Discuss the addressing modes of 8086 with examples.

OR

5 (a) Write an ALP for finding the length of the string ‘MICROPROCESSOR’.
(b) Write an ALP for sorting all the even numbers from 1 to 20 in ascending order.

UNIT – III

6 Explain in detail about the on-chip peripherals of MSP430X5XX with applications.

OR

7 Explain about the GPIO register sets of MSP430.

UNIT – IV

8 (a) Explain about the low power modes of MSP430.
(b) Explain about modes of operation of Timer_A.

OR

9 Explain about the ADC10 interfacing in MSP430 with diagram.

UNIT – V

10 Write short notes on:
(a) UART protocol.
(b) 12C protocol.

OR

11 (a) Explain the implementation of SPI interface in MSP430.
(b) Explain about USCI_A in MSP430.

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Code: 15A04601 **R15**

B.Tech III Year II Semester (R15) Regular & Supplementary Examinations May/June 2019

MICROPROCESSORS & MICROCONTROLLERS

(Common to EEE, ECE & EIE)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What are the interrupts present in 8086?
(b) What is the maximum memory size that can be addressed by 8086?
(c) List the various addressing modes present in 8086.
(d) Write an ALP program to perform 16 bit addition.
(e) What are the arithmetic instructions present in MSP430 microcontroller?
(f) List the addressing modes supported by MSP430.
(g) What are the factors affects the accuracy of the ADC?
(h) What are the different ways to reset the timer?
(i) Give the format of asynchronous serial data communication.
(j) Sketch the block diagram of Email application using CC3100.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain the register organization of 8086 processor in detail.

OR

3 Discuss the functions of various flags of 8086 microprocessor.

UNIT – II

4 Explain byte and string manipulation instructions of 8086 with examples.

OR

5 (a) Write an assembly language program in 8086 to generate Fibonacci series.
(b) What are assembler directives? Explain them.

UNIT – III

6 Explain the architecture of MSP430 microcontroller.

OR

7 Briefly explain about various On-Chip peripherals present in MSP430 microcontroller.

UNIT – IV

8 With an example explain how a PWM wave can be generated using MSP430 CPU.

OR

9 Give a circuit diagram using MSP430F2002 to measure an analog voltage and explain the scheme of measurement.

UNIT – V

10 Describe the SPI protocol in detail with an example.

OR

11 Elaborate the concept of embedded Wi-Fi in detail.

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Code: 15A04601 **R15**

B.Tech III Year II Semester (R15) Supplementary Examinations December 2019

MICROPROCESSORS & MICROCONTROLLERS

(Common to EEE, ECE and EIE)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What is the function of parity flag?
(b) What are the advantages of using memory segmentation in 8086?
(c) What are called assembler directives? Give two examples.
(d) Why do we use macros?
(e) Sketch the CPU block diagram of MSP430 microcontroller.
(f) List the features of MSP430.
(g) What are the features of real time clock?
(h) What is FRAM?
(i) What are the blocks present in embedded Wi-Fi?
(j) What are serial ports and parallel ports?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 With a neat diagram, explain the internal architecture of 8086 microprocessor.

OR

3 Explain the interrupt structure of an 8086 microprocessor.

UNIT – II

4 Explain various addressing modes of 8086 microprocessor with examples.

OR

5 Write an assembly language program in 8086 to search the largest number in an array of numbers.

UNIT – III

6 Describe the instruction set of MSP430 microcontroller.

OR

7 Explain the MSP430 microcontroller addressing modes.

UNIT – IV

8 Explain the clock system of MSP430 with the help of its simplified block diagram.

OR

9 Explain in detail about the interrupts of MSP430 microcontroller.

UNIT – V

10 Describe the UART protocol in detail with an example.

OR

11 Write a program to demonstrate the interfacing of external device using I2C protocol.

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Code: 15A04601 **R15**

B.Tech III Year II Semester (R15) Regular & Supplementary Examinations October/November 2020

MICROPROCESSORS & MICROCONTROLLERS

(Common to EEE, ECE & EIE)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Write the features of 8086.
(b) Draw the pin diagram of 8086.
(c) Write the advantages of macros.
(d) What is branch instruction?
(e) Discus about MSP430 Arithmetic Logic Unit (ALU).
(f) Write the advantages of MSP430 concept.
(g) What is Real Time Clock (RTC) of MSP430 microcontroller?
(h) Write the features of MSP430.
(i) Write the features of UART.
(j) What is synchronous serial communication?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) What is microprocessor? Explain the evolution of microprocessor.
(b) Explain, why 8086 internal architecture is divided into BIU and EU? Discuss A-bus, B-bus, and C-bus and their uses.

OR

3 (a) What is memory segmentation? Explain the use of segmentation in different applications. Explain how segmentation provides effective task switching mechanism.
(b) Explain the interrupt structure of 8086.

UNIT – II

4 (a) Explain about instruction format of 8086 with suitable examples.
(b) Write an ALP in 8086 to find average of two numbers.

OR

5 (a) Explain the physical address formation in 8086.
(b) Explain the different logical instructions of 8086 microprocessor.

UNIT – III

6 (a) Draw the architecture of MSP430 and explain it.
(b) Compare MSP430X2X and MSP430X4X of MSP430 family.

OR

7 (a) Draw the MSP430X5X series block diagram and explain it.
(b) What are the different addressing modes of MSP430? Explain them.

UNIT – IV

8 (a) When to use pull up/down resistors? Explain it.
(b) What is clock system? Explain how it works in MSP430 microcontroller.

OR

9 (a) Discuss briefly about Low Power Modes (LPMS) of MSP430.
(b) Explain working producer of ADC (Analog to Digital converter) in MSP430 microcontroller.

UNIT – V

10 (a) Explain the basics of serial communication in MSP430.
(b) Compare UART and I2C protocols.

OR

11 (a) What is SPI? Compare SPI with UART.
(b) Explain how to implement embedded Wi-Fi using CC3100.

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