M. Sc. (Electronics) (Sem. IV) Examination

August - 2020

Embedded Programming using AVR : Paper - 14

Faculty Code : 003
Subject Code : 1154002

Time : $2\frac{1}{2}$ Hours]   [Total Marks : **70**

Instructions : (1) All question carry equal marks.

(2) Figures on right hand side indicate marks.

1 Answer the following in brief : (Any **Seven**)   **14**

(1) List the three major components of a computer system.

(2) What is the purpose of the instruction decoder?

(3) What does the term embedded system mean?

(4) List the three embedded products attached to a PC.

(5) What do RISC and CISC stand for?

(6) Write a time delay function for 100ms.

(7) What is the status of the RESET pin when it is not activated?

(8) For counter 0, which pin is used for the input clock?

(9) For ATmega32, what pins are assigned to INTO-INT2?

(10) What are the line drivers such as MAX232 used for?

2 Answer Any **Two** :   **14**

(1) Draw the simplified block diagram of Timer 1 and explain each part.

(2) Explain various types of memory used in AVR microcontroller

(3) Write a not on choosing a microcontroller.

3   Answer the following :   **14**

   (1)   Write a note on brief history of the AVR microcontroller.

   (2)   Write an AVR C program to toggle all bits of Port B
         100,000 times.

                                OR

3   Answer the following :   **14**

   (1)   Write note on RS232 hand-shaking signals.

   (2)   Write an AVR C program to get the status of bit 5 of
         port B and send it to bit 7 of port C continuously.

4   Answer the following :   **14**

   (1)   Explain the difference between Interrupts Vs Polling
         with example.

   (2)   LEDs are connected to pins of PORT B. Write an AVR
         C program that shows the count from 0 to FFH
         (0000 0000 to 1111 1111 in binary) on the LEDs.

5   Answer the following : (Any **Two**)   **14**

   (1)   Using Timer1, write a program that toggles pin PORTB.5
         every second, while at the same time transferring data
         from PORTC to PORTD. Assume XTAL = 8 MHZ.

   (2)   Write a C program to toggle only the PORTB.4 bit
         continuously every 2 ms. Use Timer1, Normal Mode,
         and n0 pre-scaler to create the delay. Assume XTAL=8
         MHz.

   (3)   Write a note on LCD Interface.

   (4)   Draw and explain matrix keyboard connection to ports.

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