



DAG-003-1154002

Seat No. _____

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

April - 2022

Embedded Programming Using AVR : Paper - 14

Faculty Code : 003

Subject Code : 1154002

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions 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 does “CPU” stands for ? Explain its function in a computer.
- (3) Give two factors that can affect the delay size.
- (4) List the three types of buses found in computer systems and state briefly the purpose of each type of bus.
- (5) An embedded system is also called a dedicated system. Why ?
- (6) What does the term embedded system mean ?
- (7) Which group of AVR has smaller packages ?
- (8) Why is the use of packed BCD preferable to ASCII ?
- (9) How many clock sources does the AVR have ?
- (10) How many timers do we have in the ATmega32 ?

2 Answer any two : **14**

- (1) Draw the simplified block diagram of an AVR microcontroller and explain in brief.
- (2) Explain RISC architecture and briefly describes its features.
- (3) Write brief note on AVR timers.

3 Answer the following : **14**

- (1) Write note on Criteria for choosing microcontroller”.
- (2) Write an AVR C program to send values of -4 to +4 to port B.

OR

3 Answer the following : **14**

- (1) What is mechatronics and how it is related with microcontrollers.
- (2) Write an AVR C program to toggle all bits of Port B 100,000 times.

4 Answer the following : **14**

- (1) Write brief note on AVR interrupts.
- (2) Explain basic of AVR serial communication.

5 Answer the following : **14**

- (1) Describe the function of various pins of LCD.
- (2) Write note on ADC characteristics.
- (3) Write a C program to toggle only the port B.4 bit continuously every second. Use Timer1, Normal mode, and 1:256 pre-scaler to create the delay. Assume XTAL = 8 MHz.
- (4) Assume that the INTO pin is connected to a switch that is normally high. Write a program that toggles Port C.3, whenever INTO pin goes low. Use the external interrupt in level triggered mode.
