

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2021**

MICROCONTROLLERS

[Maximum Marks: 75]

[Time: 2.15 Hours]

PART-A

(Answer *any three* questions in one or two sentences. Each question carries 2 marks)

- I. 1. Mention any two conditional branch instructions.
2. State the significance of SBIC instruction.
3. List the I/O registers associated with each port.
4. Name the mode of operation in Timer0.
5. Define framing in serial communication. (3 x 2 = 6)

PART-B

(Answer any *four* of the following questions. Each question carries 6 marks)

- II. 1. Compare microprocessor and microcontroller.
2. Explain the AVR status register.
3. Discuss the ways to access the I/O registers associated with the port.
4. Write an AVR C program to display 0x00 to 0xFF through PORTB.
5. Discuss the steps to program Timer0.
6. Describe the connection of Atmega32 to RS232.
7. Describe the different data transmission methods. (4 x 6 = 24)

PART-C

(Answer *any of the three units* from the following. Each full question carries 15 marks)

UNIT – I

- III. (a) Demonstrate the data memory in AVR. (9)
(b) List the AVR features. (6)

OR

- IV. (a) Explain the Harvard architecture in AVR. (9)
(b) Discuss the different AVR data format representations. (6)

UNIT – II

- V. (a) Write an AVR program to convert ASCII digits ‘3’ and ‘5’ to packed BCD and display them of PORTC (9)
(b) Discuss the different ways to generate time delay in AVR C. (6)

OR

- VI. (a) Write an AVR program to convert packed BCD to ASCII. (9)
(b) Describe the different I/O bit manipulation instruction used in AVR. (6)

UNIT- III

- VII. (a) Explain the different registers supported for Timer0 operations in Atmega32. (9)
(b) Differentiate between interrupts and polling. (6)

OR

- VIII. (a) Describe the block diagram of Timer1 and Atmega32. (9)
(b) Discuss the external hardware interrupts in AVR. (6)

UNIT - IV

- IX. Discuss the LCD interfacing for a 8-bit data connection to AVR. (15)

OR

- X. Discuss the registers supported for ADC interfacing in AVR. (15)
