

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER - 2024**

EMBEDDED SYSTEM

(Maximum Marks:100)

(Time: 3 Hours)

PART - A

(Maximum Marks : 10)

Marks

I. Answer **all** the questions in one or two sentences. Each question carries 2 marks.

1. List any two AVR families.
2. List any two logical instructions available in AVR.
3. Name any two data types used in AVR C programs.
4. List any two features of embedded system.
5. Define embedded system.

(5 x 2 = 10)

PART - B

(Maximum Marks: 30)

II Answer **any five** questions from the following. Each question carries 6 marks.

1. List the features of AVR family.
2. Compare SRAM and EEPROM of ATmega 32.
3. Compare Subroutines with macros.
4. Explain rotate instructions.
5. Explain logic operators in AVR C.
6. Explain AVR serial communication.
7. List some applications of embedded systems.

(5 x 6 = 30)

PART – C

(Maximum Marks: 60)

(Answer **one full** question from each unit. Each full question carries 15 marks.)

UNIT - I

III (a) Draw and explain the status register of ATmega 32.

(8)

(b) Explain direct addressing mode of ATmega 32 microcontroller. (7)

OR

IV Draw and explain the architecture of ATmega 32. (15)

UNIT – II

V (a) Write an Assembly Language Program to convert the ASCII value 0x34 and 0x37 to packed BCD. (7)

(b) Explain the logical instructions with example. (8)

OR

VI (a) Write an assembly language program to add 3529H and 4C35H and store the result in SRAM locations 0x65 and 0x66 (7)

(b) Explain different steps to create and execute an assembly language program. (8)

UNIT – III

VII (a) Draw and explain Timer0 programming. (8)

(b) Write an AVR C-program to convert ASCII digits '5' and '7' to packed BCD and display them on PORT C. (7)

OR

VIII (a) Write an AVR C program to toggle bits of PORT C continuously with a 10ms Delay. (7)

(b) Explain different steps enabling an interrupt in ATmega 32. (8)

UNIT – IV

IX. (a) Draw and explain hardware architecture of Embedded systems. (9)

(b) Explain different types of Embedded operating system. (6)

OR

X (a) Draw and explain general architecture of an Embedded OS. (10)

(b) List the features of Arduino development board. (5)
