TED (15) 6132
(Revision-2015)

A23 – 00871

Reg.No.....
Signature.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2023

MICRO CONTROLLERS

[Maximum marks: 100] (Time: 3 Hours)

PART – A

Maximum marks : 10

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

1. What is the largest hex value that can be moved into an 8-bit register? What is the decimal equivalent of that hex value?
2. List any two ways available to microprocessor designer to increase the processing power of the CPU.
3. In Atmega32 how many pins are designed as I/O port pins?
4. What is Interrupt vector table?
5. State the importance of UCSR register in AVR. (5 x 2 = 10)

PART – B

Maximum marks : 30

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

1. Write about unconditional branch instructions in the AVR.
2. Describe Harvard architecture in the AVR with diagram.
3. Write an AVR assembly language program to toggle bit 2 of PORTB.
4. Describe different ways to create delay in AVR embedded C.
5. Write the steps in executing an interrupt.
6. What is the difference between RET and RETI instruction? Explain why we can't use RET instead of RETI as the last instruction of an ISR.
7. Write the sequence of steps to be taken to transfer character bytes serially. (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) Describe the functions of each bit in status register SREG. (10)

(b) Write the different data format representation in AVR with example. (5)

OR

IV. (a) Explain the data memory organization of AVR. (8)

(b) List and explain different AVR family members. (7)

UNIT-II

V. (a) Write an AVR C program to get a byte of data from PORTC, if it is less than 100, send it to PORTB Otherwise send it to PORTD. (10)

(b) What are the major reasons for writing programs in C instead of assembly? (5)

OR

VI. (a) Describe various bit manipulation instructions for I/O port programming with example. (9)

(b) Write an AVR C program to send 0x00-0xFF to PORTC. (6)

UNIT-III

VII.(a) Describe enabling and disabling of Timer0 overflow interrupt with instructions. (7)

(b) What are the different sources of interrupts in the AVR? (8)

OR

VIII.(a) List different registers in Timer1. (6)

(b) Explain the steps to be followed to program Timer0 in Normal mode. (9)

UNIT-IV

IX. (a) Illustrate how a 4x4 matrix keyboard is interfaced with AVR. (7)

(b) Explain the use of DAC and its interfacing with an AVR. (8)

OR

X. Write the pins details of LCD and explain LCD interfacing with diagram. (15)

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