TED (15)6132
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N22 – 02344

Reg. No……………………
Signature ………………….

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2022

MICROCONTROLLERS

[Maximum Marks: **100**]   [Time: **3** Hours]

PART-A
[Maximum Marks: **10**]

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

1. Name data formats of AVR.

2. State the use of SRAM.

3. State the use of SBIS instruction with example.

4. List uses of AVR timers.

5. Give the use of RS232 standards.   (5 x 2 = 10)

PART-B
[Maximum Marks: **30**]

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

1. Differentiate between Microcontrollers and Microprocessors.

2. List features of AVR.

3. Describe any three data types in AVR C with example.

4. Describe different ways to create delays in AVR C.

5. Describe how timer is used as counter in AVR.

6. Illustrate sensor interfacing with AVR using diagram.

7. Describe the use of DAC with its block diagram.   (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) Illustrate memory organization of AVR with necessary diagrams.   (9)

  (b) Describe Branch instructions in AVR.   (6)

OR

IV. (a) Describe RISC and Harvard architecture in AVR with necessary diagram. (8)

(b) Describe call instruction and stack. (7)

UNIT – II

V. (a) Illustrate I/0 port registers and its use with example. (8)

(b) Write an AVR C program to convert ASCII digits of 3 and 6 to packed BCD and display them on PORTC. (7)

OR

VI. (a) Write an AVR C program to read a value from PORTA and display it on PORTB. (8)

(b) Write an AVR C program to toggle only bit 3 of PORTD continuously using logic operators. (7)

UNIT- III

VII. (a) Illustrate basic registers and their use of Timer0 with diagram.. (10)

(b) Write about Interrupt priority in AVR. (5)

OR

VIII. (a) List steps to Program AVR timer0. (5)

(b) Describe Programming of External Hardware interrupts in AVR. (10)

UNIT - IV

IX. (a) Illustrate .interfacing of LCD to AVR with diagram. (10)

(b) Give the pin description of LCD. (5)

OR

X. (a) Explain the interfacing of keyboard to AVR with diagram. (10)

(b) Describe features of ADC· (5)

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