TED (15) – 6132

(REVISION — 2015)

Reg. No..

Signature ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

MICROCONTROLLERS

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. Name any two groups of AVR family.

2. List any four data types in AVR C.

3. Give any two applications of Timer0.

4. Give instructions used to enable and clear the interrupts globally.

5. Mention the advantage of serial communication.   (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Compare Microprocessor and Microcontroller.

2. List the features of RISC.

3. Describe different bit oriented instructions in AVR.

4. Write a C program to toggle only bit 5 of PORTB continuously without disturbing the rest of the pins of PORTB.

5. Differentiate between TIMER0 and TIMER2.

6. Show the bit status of TIFR register and mention the function of each bit.

7. Write a short note on ADC.   (5×6 = 30)

[198]

[P.T.O.

Marks

PART — C

(Maximum marks : 60)

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

Unit — I

III (a) Explain Harvard memory Architecture in AVR with the help of diagram.   9

    (b) Describe the various unconditional branch instructions in AVR.   6

Or

IV With a block diagram explain the architecture of AVR microcontroller.   15

Unit — II

V (a) Write AVR C program to toggle all bits of PORTB 50000 times.   6

   (b) Write AVR C program to get a byte of data from PORTB. If it is less than 50 send to PORTA else send to PORTC.   9

Or

VI (a) Explain the logical bytewise and bitwise operators in AVR embedded C.   6

    (b) Write an AVR C program to convert ASCII to packed BCD and display them on PORTC.   9

Unit — III

VII (a) Draw and explain the block diagram of Timer1.   8

    (b) Describe the purpose of ISR and explain steps in Executing an interrupt.   7

Or

VIII (a) Give steps to program Timer0 in Normal mode with the help of an example.   7

     (b) Illustrate Edge triggered and level triggered interrupts.   8

Unit — IV

IX Explain interfacing of keyboard with AVR with the help of diagram.   15

Or

X Show ATMEGA32 connection to RS232.   15