N19 - 0A114

TED (15) – 6132

(REVISION — 2015)

Reg. No.....

Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 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. Distinguish between LDI and LDS.
2. Write the data formats used in AVR assembler.
3. Name the ports available in ATMega32 and its width.
4. Define Interrupt priority in AVR.
5. Define resolution of ADC in AVR. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Differentiate microcontrollers and microprocessors.
2. List the data types used in C.
3. With example explain bit wise logic operators in c.
4. Explain about external hardware interrupts in AVR.
5. Draw TCCR0 register and write the purpose of each bit.
6. With necessary diagram explain ATMega32 connection to RS232.
7. Write the purpose of RS, E, R/W pins of LCD. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) With block diagram explain the architecture of AVR microcontroller. 8

(b) List any 7 conditional branch instructions. 7

OR

IV (a) Explain the different call instructions in AVR microcontroller. 10

(b) Describe the role of stack in microcontroller. 5

UNIT — II

V (a) Write an AVR C program to convert the given ASCII digits '5' and '9' into packed BCD and sent the result through PORTC. 9

(b) State the different ways to create delay in C. 6

OR

VI (a) Write an AVR program in C to turn ON and OFF an LED connected to PORTB,2 continuously with a delay of 2S. 8

(b) Name the registers associated with ports and its function. 7

UNIT — III

VII With necessary diagram explain the function of Timer0 and the registers associated with it. 15

OR

VIII (a) Write the steps to generate a square wave using Timer0, Normal mode. 8

(b) Write the steps in executing an interrupt. 7

UNIT — IV

IX (a) Explain keyboard interfacing using AVR. 8

(b) Describe the interfacing of temperature sensor LM 34 to AVR. 7

OR

X (a) Explain the interfacing of LCD to AVR with suitable diagram. 8

(b) With a neat diagram explain DAC interfacing with AVR. 7