

TED	(15) -	6132
(REVI	SION —	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.

 $(5 \times 2 = 10)$

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.

 $(5 \times 6 = 30)$



		PART — C	Mark
		(Maximum marks: 60)	
		(Answer one full question from each unit. Each full question carries 15 marks.)	
	,	Unit — I	
Ш	(a)	Explain Harvard memory Architecture in AVR with the help of diagram.	9
	(b)	Describe the various unconditional branch instructions in AVR.	ϵ
		Or	
IV	Wit	h 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	
III	(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	
lΧ	Exp	lain interfacing of keyboard with AVR with the help of diagram.	15
		OR	
X	Sho	w ATMEGA32 connection to RS232.	15