

TED (15)– 5041

(REVISION — 2015)

Reg. No. ....

Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

**EMBEDDED SYSTEM**

[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 AVR data transfer instructions.
2. List any two sub sections of ATmega32 data memory.
3. List any two conditional jump instructions in ATmega32.
4. List any two advantages of AVR C program compared to AVR assembly.
5. Name any two embedded operating systems.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Briefly explain the status register bits of AVR with bit format.
2. Explain looping in AVR assembly program.
3. Explain Macros in AVR.
4. Explain logic operators in AVR C.
5. Explain different AVR interrupt sources.
6. Explain the concept of embedded system.
7. Briefly explain raspberry pie development board.

(5×6 = 30)

## PART — C

(Maximum marks : 60)

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

## UNIT — I

- III (a) Compare different AVR families. 8  
 (b) Briefly explain different addressing modes of AVR microcontroller. 7

OR

- IV (a) With suitable block diagram explain ATmega32 microcontroller. 8  
 (b) List the features of ATmega32 microcontrollers. 7

## UNIT — II

- V (a) Write an AVR assembly program to add. two 8 bit numbers 5DH & F7H save Sum & carry at R20 & R21. 8  
 (b) Explain assembler directives in AVR. 7

OR

- VI (a) Write an AVR assembly program to monitor PBO if it is 0 turn off LED & if it is 1 turn on LED connected at PAO. 8  
 (b) Explain rotate and shift instructions in AVR. 7

## UNIT — III

- VII (a) Explain ATmega32 connection to RS 232. 8  
 (b) Explain different data types in AVR C. 7

OR

- VIII (a) A sensor is connected to pin0 of PORTA and a DC motor is connected at pin0 of PORTB. Write an AVR C program to turn on/off motor, if sensor output is I/O. 7  
 (b) Explain different data types in AVR C. 8

## UNIT — IV

- IX (a) Explain the architecture of an embedded system. 8  
 (b) Explain general architecture of an embedded OS. 7

OR

- X (a) Explain kernel architecture an embedded OS. 8  
 (b) Explain Arduino development board. 7