

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER-2020**

EMBEDDED SYSTEMS

[Maximum marks: 100]

(Time: 3 Hours)

PART – A

[Maximum marks: 10]

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

- I. (1). Define embedded systems.
(2). List any two applications of embedded systems.
(3). What are assembler directives? write any example.
(4). What are two types of data serialization in AVR.
(5). What you mean by conversion time of ADC. (5 x 2 = 10)

PART – B

[Maximum marks: 30]

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

- II. (1). Compare microcontrollers and general purpose microprocessors.
(2). Draw status register of Atmega32 explain flag bits.
(3). ALP to multiply two 8 bit numbers stored at [86]h and [87]h – result at [88]h& [89]h
(4). Differentiate macros and sub routines.
(5). Explain different data types used in embedded C.
(6). Draw connection diagram of 16 x 2 LCD module with AVR.
(7). How the temperature sensor can be interfaced with AVR? (5 x 6= 10)

PART – C

[Maximum marks: 60]

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

UNIT –I

- III. (a). Compare any three families of AVR. (9)
(b). Explain any six features of Atmega32. (6)

OR

- IV. (a). Draw the general block diagram of AVR and explain its block. (9)
(b). Explain the criteria for choosing a Microcontroller. (6)

UNIT-II

- V. Explain any three addressing modes of AVR detail. (15)

OR

- VI. Explain the instructions of AVR with at least five examples from each of following
- (a). Arithmetic and logic instructions. (5)
 - (b). Branching instruction. (5)
 - (c). Data transfer instructions. (5)

UNIT-III

- VII.(a). With diagram explain the blocks of Timer 0 (9)
(b). Write a c program to toggle all bits of port B 200 times. (6)

OR

- VIII. (a). Explain sources of interrupts in AVR (4)
(b). Describe the steps for executing interrupts. (5)
(c). Draw the diagram to interface Atmega 32 with RS232. (6)

UNIT-IV

- IX, (a). Explain the characteristics of ADC with AVR. (6)
(b). With diagram explain PWM speed control for DC motor. (9)

OR

- X. (a). With diagram explain DAC interface with AVR. (9)
(b). Draw diagram to interface matrix keyboard with AVR. (6)
