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C23-EE–504

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BOARD DIPLOMA EXAMINATION, (C-23)

MARCH/APRIL—2026

DEEE –FIFTH SEMESTER EXAMINATION

DIGITAL ELECTRONICS AND MICROCONTROLLERS

Time : 3 Hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

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1. Write 2's complement of $(1011010)_2$.

2. Convert given Decimal number $(99.35)_{10}$ to Binary number.

3. Draw the Half-Adder Circuit using NAND gates.

4. State any three applications of Decoders.

5. State the need of Clock pulse in digital circuits.

6. State any three applications of Flip-Flops.

7. State the basic functions of Program Counter and DPTR.

8. State any three special Function Registers of 8051 Microcontroller.

9. State the function of CPL instruction in 8051 Microcontroller.

10. Define the terms Opcode and Operand of 8051 Microcontroller.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. State and Prove De-Morgan's Theorems.

12. Explain the working of 4-bit parallel adder using full adders.

13. Explain 1×4 De-Multiplexer with logic circuit.

14. Draw and explain working of level clocked JK flip-flop.

15. Explain the working of 4-bit shift left Register with circuit diagram.

16. Draw and explain the PIN diagram of 8051 Microcontroller.

17. Explain the addressing modes of 8051 Microcontroller.

18. Write a program to perform summing-up of given N-numbers.

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