

7649

BOARD DIPLOMA EXAMINATION, (C-20)

DECEMBER—2022

DEEE - FIFTH SEMESTER EXAMINATION

DIGITAL ELECTRONICS AND MICRO CONTROLLERS

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.

1. Write 2's complement for the binary number 1000.
2. Realize the OR operation using NAND gates only.
3. Draw the half-adder circuit using NOR gates only.
4. Compare the performance of serial and parallel adders in any three aspects.
- * 5. Draw the symbol of edge triggered D flip-flop and write its truth table.
6. State the need of a register.
7. List any six special function registers of 8051 micro controller.
8. State the function of the program counter.
9. Define fetch cycle and execution cycle.
10. Write about instruction format of 8051 micro controller.

PART—B

8×5=40

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- Instructions :** (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** (a) Perform the subtraction using 2's complement method for $(1101101)_2 - (1010)_2$.
(b) Convert hexadecimal number $(9A3B)_{16}$ into binary number.

(OR)

Explain AND, OR, NAND, NOR gates with truth table.

- 12.** (a) Draw and explain 4-bit parallel adder using full adders.

(OR)

- (b) Draw and explain 2's complement parallel adder/subtractor circuit.

- 13.** (a) Explain master slave JK flip-flop with circuit diagram.

(OR)

- (b) Draw and explain the working of parallel-in parallel-out shift register.

- 14.** (a) Draw the block diagram of 8051 micro controller and explain the function of each block.

(OR)

- (b) Explain internal memory, external memory and ports of 8051 micro controller.

- 15.** (a) Explain any four instructions from logical group with examples of 8051 micro controller.

(OR)

- (b) Explain interrupts in 8051 micro controller.

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PART—C

10×1=10

- Instructions :** (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 16.** Write an assembly language program to find biggest data value in a data array of 8-bit numbers. Let the length of the array be stored at 8100H and assume the array stored from 8101H.

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