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C16-EC-303

6234

BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—2022

DECE - THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

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. Convert $(234)_{10}$ into (a) octal and (b) hexa-decimal.
2. What is the importance of parity bit?
3. Realize $Y = AB + BC + AC$ using basic logic gates.
4. List different logic families.
- * 5. Draw half-adder circuit using basic logic gates with truth table.
6. Draw the block diagram of 4×1 multiplexer.
7. What is a sequential logic circuit?
8. Draw the logic circuit of clocked D flip-flop with truth table.
9. List any three commonly used IC numbers in digital circuits.
10. Distinguish between ROM and RAM .

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PART—B

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.** (a) Subtract 1010.101 from 1001.001 using 2's complement method. 4
(b) Simplify $Y = A\bar{B}\bar{C} + A\bar{B}C + AB\bar{C} + ABC$ using Karnaugh's map. 6
- 12.** (a) Draw XOR gate with NOR gates. 4
(b) List various postulates of Boolean algebra. 6
- 13.** Draw and explain CMOS NAND gate. 10
- 14.** Draw and explain 4-bit 2's complement adder/subtractor. 10
- 15.** Draw and explain the working of two-bit digital comparator. 10
- 16.** Draw and explain the working of clocked RS flip-flop with timing diagrams. 10
- 17.** Draw and explain the working of MOD-10 counter with timing diagrams. 10
- * **18.** (a) Draw and explain diode ROM. 7
(b) Distinguish between flash ROM and NV RAM. 3

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