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C16-AEI-303

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BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—2022

DAEIE - 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. List the number of two input digital IC logic gates.
2. State De Morgan theorems.
3. Draw the full adder using basic gates.
4. Distinguish between serial and parallel adders.
5. Define counter.
6. Define sequential logic circuit.
7. State the race around condition.
8. List the applications of register.
9. List different ROM and RAM ICs.
10. State the need of A/D converter.

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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) Convert $10010_{(2)}$ to octal, hexadecimal and decimal. 5
(b) Convert $010110_{(2)}$ to 2's complement number. 5
12. (a) Simplify $\bar{A}B\bar{C} + \bar{A}\bar{B}C + ABC$ using Boolean algebra. 5
(b) State the use of alphanumeric codes (ASCII and EBCDIC). 5
13. Realize a half-adder using NAND gates and NOR gates only. 10
14. Explain 2's complement parallel adder/subtractor with diagram. 10
15. Explain asynchronous ripple counter (MOD-16) with truth table and timing diagram. 10
16. Explain the working of Ring counter and list the applications. 10
17. Explain the working of a universal shift register with diagram. 10
18. Explain D/A conversion using weighted register with diagram. 10

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