D 31793 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2022

Electronics

ELE 3C 04—DIGITAL ELECTRONICS

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A

Answer the following questions (1-12) each carrying 2 *marks.*

1. Why is binary number system used in digital systems ?
2. What are the basic operations of Boolean Algebra ?
3. How can a NAND gate be used as an OR gate ?
4. How do you find the dual of an expression ?
5. What is multiplexing ?
6. What is a decoder ?
7. Explain the operation of S-R flip-flop.
8. How will you use a shift register to multiply or divide a binary number by 2 ?
9. What is the modulus of a counter ?
10. What is an EEPROM ?
11. Distinguish between EPROM and PROM.
12. What is a dynamic RAM ?

(Ceiling : 20 marks)

Section B

Answer the following questions (13-19) each carrying 5 *marks.*

13. State and prove De-Morgan's Theorem.
14. Simplify : $f = (B + BC)(B + \bar{B}C)(B + D)$.
15. Explain with diagrams the operation of a 4 : 1 MUX.

Turn over

16. Minimize the following function : $f_1 = \sum m\ (0, 2, 6, 10, 11, 12, 13) + d(3, 4, 5, 14, 15)$.

17. With neat diagrams, explain the operation of a serial in, parallel out shift registers.

18. With neat diagrams, explain the operation of a 2 bit asynchronous counter.

19. Write a note on ROMs.

(Ceiling : 30 marks)

Section C

Answer any **one** *question (20-21) each carrying* 10 *marks.*

20. Explain with truth table and design a full adder. How subtraction can be accomplished using full-adders ?

21. Design a modulo - 6 synchronous up counter.

(1 × 10 = 10 marks)