Reg. No. : ....

Name : ....

IV Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2024
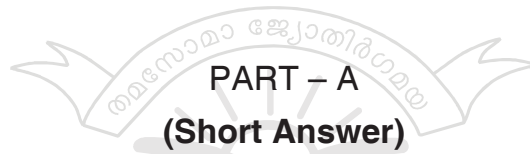## (2019 to 2022 Admissions)
GENERAL AWARENESS COURSE IN COMPUTER SCIENCE
4A13CSC : Digital Electronics
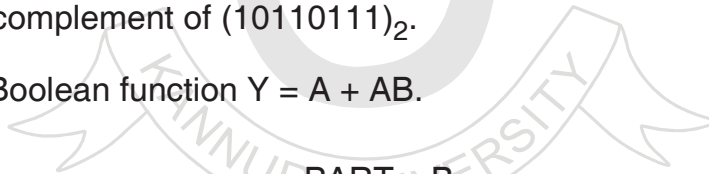
Time : 3 Hours

Max. Marks : 40

PART – A
(Short Answer)

Answer **all** questions.

(6×1=6)

1. What is the BCD representation of the decimal number 12 ?

2. Give truth table of a NAND gate.

3. Which logic gates are known as Universal Gates ?

4. Explain the purpose of Flip-flops in digital circuits ?

5. Give the 1's complement of $(10110111)_2$.

6. Simplify the Boolean function $Y = A + AB$.

PART – B
(Short Essay)

Answer **any six** questions.

(6×2=12)

7. Convert $(427)_{10}$ to Hexadecimal.

8. State De-Morgan's Theorem.

9. Draw the Combinational Circuit of a Half Adder.

10. Give any two differences between Latches and Flip-flops.

P.T.O.

11. Explain Gray Code.

12. Apply De-Morgan's Theorem and reduce the Boolean Function $Y = \overline{AB\overline{C}}$.

13. Differentiate Multiplexers and Demultiplexers.

14. Differentiate Combinational Circuits and Sequential Circuits.

PART – C
(Essay)

Answer **any four** questions.   **(4×3=12)**

15. Write note on ASCII and UNICODE.

16. What are SOP and POS expression formats ?

17. What are Parity Generators ? What is its role in Digital Data Transmission ?

18. Explain the working of JK Flip-flop with suitable diagram.

19. Draw the sequential circuit for a 4 bit asynchronous counter.

20. Design a 4 to 2 Encoder.

PART – D
(Long Essay)

Answer **any two** questions.   **(2×5=10)**

21. Explain with an example how binary subtraction can be performed using 1's and 2's complement addition.

22. Minimize the following Boolean function using K-Map
    $0F(A, B, C, D) = \Sigma m(0, 1, 3, 5, 7, 8, 9, 11, 13, 15)$.

23. Realise the universal property of any one of the Universal Gate.

24. Explain various Shift Registers in detail.

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