K26U 0831

Reg. No. : .....

Name : .....

Second Semester B.C.A. Degree (CBCSS – OBE – Supplementary) Examination, April 2026
(2020 to 2023 Admissions)
Core Course
2B02BCA : DIGITAL SYSTEMS

Time : 3 Hours Max. Marks : 40

PART – A

Answer **all** questions. **Each** question carries **one** mark.

1. What is the 2's complement of $(11100)_2$?
2. Convert (125) decimal to binary.
3. Draw the logic diagram of NAND gate.
4. Give the result of A.A.
5. What is the truth table for half adder ?
6. What is the purpose of K-map ? **(6×1=6)**

PART – B

Answer **any six** out of eight. **Each** question carries **two** marks.

7. Convert 131.5625 to binary.
8. a) 111011 × 11010
   b) Subtract 11011 from 10110 using 1's complement.
9. State De-Morgan's theorem.
10. What is BCD ?
11. What is D flip-flop ? Write its characteristic table.
12. Simplify A(A + B).
13. What is a decoder ?
14. Draw a 3 – variable K-map with squares indicating min terms. **(6×2=12)**

P.T.O.

PART – C

Answer **any four** out of six. **Each** question carries **three** marks.

15. Convert :
    a) $(545.375)_{10}$ to octal.
    b) $(2890)_{10}$ to hexadecimal.
    c) $(232.2)_8$ to binary.
    d) $(64AC)_{16}$ to decimal.

16. Simplify using K-map.
    $F(A, B, C, D) = \pi M(1, 3, 5, 7, 13, 15)$
    Draw the logic circuit using AND-OR gate.

17. Explain the universal property of NOR gates with diagrams.

18. Explain 3-bit asynchronous counter.

19. Explain the parity generators/checkers.

20. What is the difference between a synchronous counter and asynchronous counter ? **(4×3=12)**

PART – D

Answer **any two** out of four. **Each** question carries **five** marks.

21. Explain up/down synchronous counter.

22. Draw the logic circuit for the simplified form of expression.
    $F= AB + AC' + C + AD + AB'C + ABC$

23. Explain :
    a) Number system
    b) Code converter.

24. Explain multiplexers and demultiplexers with diagram. **(2×5=10)**