



End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Course and semester: BCA IIIrd sem

Name of the Paper: Digital Logic Design

Paper Code: TBC 303

Time: 3 hour

Maximum Marks: 100

Note:

- (i) All the questions are compulsory.
- (ii) Answer any two sub questions from a, b and c in each main question.
- (iii) Total marks for each question is 20 (twenty).
- (iv) Each sub-question carries 10 marks.

- Q1. (2X10=20 Marks)
- a. Perform the following operations (CO1)
 - i. $(35)_{10} - (27)_{10}$, using 2's complement method.
 - ii. $345+675$ perform BCD addition.
 - b. Convert the following in required base (CO1)
 $(56)_8 = (\quad)_5 = (\quad)_{16}$
 - c. $Y = A + B'C$ implement using NAND gate only. (CO1)
- Q2. (2X10=20 Marks)
- a. Minimize the Boolean function $F(A,B,C,D) = \Sigma(0,2,4,8,9,10,12,13)$ using a 4-variable K-map. (CO2)
 - b. Explain Boolean theorems and postulates. Prove DeMorgan's theorems. (CO2)
 - c. $Y = AB + BC$ find its Canonical SOP and POS. (CO2)
- Q3. (2X10=20 Marks)
- a. Draw and explain circuit of Full Subtractor. (CO3)
 - b. Differentiate between Combinational and sequential circuits give example of each. (CO3)
 - c. Design BCD to GRAY code converter. (CO3)
- Q4. (2X10=20 Marks)
- a. Explain operation of SISO shift register. (CO4)
 - b. Design a MOD-5 Asynchronous counter. (CO4)
 - c. Explain Excitation table of JK Flip Flop. (CO4)
- Q5. (2X10=20 Marks)
- a. Explain Difference between RAM and ROM. (CO5)
 - b. Implement full subtractor using PLA. (CO5)
 - c. What is the Difference between PLA and PAL? (CO5)