What is the application of Boolean Algebra in Computer Science?
State the principle of duality. Give the dual of the following Boolean relations: (i) $A + (A' . B) = A + B$ (ii) $A + 0 = A$
What is the principle of duality? Give one example. [11, 10SP, 04, 08]
What do you understand by the principle of duality? Give the dual of : $x + x' . y = x + y$
State the dual form of the following $X . Y' . (X . Y' . Z + X + X' . Z')$
Simplify and state the dual of the following expression. $X . Y' . (X . Y' . Z + X + X' . Z)$
Give the dual of the following: $(A' . B) + (C . 1) = (A' + C) . (B + C)$
State the dual for the following expression and also draw the logic gate diagram for the dual expression obtained using **NOR** gate only. $P = A . B + C . D$
State the two distributive laws of Boolean algebra. Use truth table to prove any one of them
Given : $a + (b . c) = (a + b) . (a + b)$ $x . (y + z) = x . y + x . z$ Name this law of Boolean algebra. Verify it using the truth table.
State the two Absorption Laws of Boolean Algebra. Verify any one of them using the truth table. [01, 06, 11]
State the two Idempotent Laws of Boolean Algebra. Verify any one of them using the truth table.
State the Involution law. Verify it using the truth table.
State the two complement properties of Boolean Algebra. Verify any one of them using the truth table.
State De Morgan's Laws. Verify one of the laws using truth tables.
Using Boolean Algebra show that the dual of exclusive OR is equivalent to the complement of exclusive OR
Show that dual of $P' Q R' + P Q' R + P' Q' R$ is equal to the compliment of : $P Q' R + Q . (P' R' + P R')$
Determine with the help of a truth table if the following rule is true $X + X' . Y = X + Y$ Give the dual of the rule stated above
Show that $A + A' B = A + B$ using the truth table.
Verify the following statement using truth tables: $(A + B) . (A' + B') = A . B' + A' . B$
Verify the following using the truth table $a.(a'+b) = a.b$
Use a truth table to show that : $p = p . q + p . q'$
Use the truth table to show that : $(A + B)' + (A + B')' = A'$
Verify that $(Z + X) . (Z + X' + Y) = (Z + X) . (Z + Y)$

Verify that $(Z + X) . (Z + X' + Y) = (Z + X) . (Z + Y)$
Verify if, $X'.Y.Z + X.Y'.Z + X.Y.Z' + X.Y.Z = XY + YZ + ZX$
Verify if, $(A + B).(A' + C) = (A + B + C).(A + B + C').(A' + B + C).(A' + B' + C)$
State whether the following is true or false. $(x + y) . (y + z) . (x + z) = x . (y + z) + y . z$
If $X = A'BC + AB'C + ABC + A'BC'$ then find the value of X when $A = 1; B = 0; C = 1$

Verify the following law by using the truth table: $(a \oplus b) \oplus c = a \oplus (b \oplus c)$ What can you say about the input bits whenever the output is 1 ? Draw the logic gate circuit for $(a \oplus b) \oplus c$ using the XOR gates
Verify the following law by using the truth table: (A XNOR B XNOR C)' = A XNOR B XOR C
Verify the folowing law by using the truth table: (A XOR B XOR C)' = A XOR B XNOR C
Verify the following law by using the truth table : : (A XNOR B) XNOR C = A XNOR (B XNOR C)
Show that (X NOR Y) NOR Z $\neq$ X (Y NOR Z)
Verify the following using the truth table. $A \oplus B \oplus C = (A \oplus B) \oplus C$
Verify the following Boolean expression with the help of a truth table $A \oplus (B \odot C) = A \odot (B \oplus C)$
Verify using a truth table if: $(A \odot B \odot C)' = A \oplus B \oplus C$
Name the gate and draw its logic gate symbol: (i) Its output is 0 when both its inputs A and B are 1. (ii) Its output is 1 when either its input A or B but not both A and B , is 1
A combinational logic circuit with three inputs W, X, Y produces output 1 if and only if an odd number of inputs is 1. Show its truth table.