**ATOMIC ENERGY CENTRAL SCHOOL , ANUPURAM**
TOPIC : COMPUTER ORGANISATION
SUB TOPIC: BOOLEAN ALGEBRA
WORKSHEET 6 (Module 6)

Sub: Computer Science   **Class : XI**

1. Which gates are known as fundamental gates?
2. A NAND gate is equivalent to a _____ gate.
3. An AND gate can be replaced by two _____ gates.
4. State DeMorgan's Theorem. Verify one of them using truth table.
5. Verify the following algebraically
   $(A'+B').(A+B)=A'.B+A.B'$

6. Simplify the Boolean expression XYZ + XYZ' + XY'Z' + X'Y'Z + X'YZ' + X'YZ
7. Why are NAND and NOR gates called Universal gates?
8. Draw a logic circuit diagram for the boolean expression $E(A,B,C) = A'.(B + C')$
9. Verify the following using laws of Boolean algebra.
   $X + Y' = X.Y + X.Y' + X'.Y'$
10. Write the equivalent boolean expression for the following logic circuit:
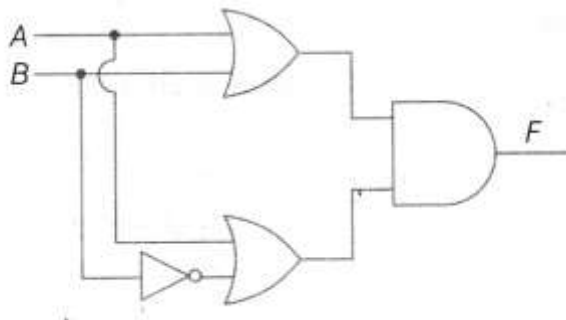
11. Represent the Boolean expression $(X + Y')Z$ using NAND gates only.
12. Prove that $(A' +B')(A' +B)(A + B') = A'B'$
13. Draw a logic circuit for the Boolean expression

(i) XY' + (Y+Z') (ii) $F(X,Y,Z) = (X+Y) . (X'+Z') . (Y+Z)$

14. Draw all the fundamental gates circuit diagram using **NOR gates.**

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