Tutorial Unit 3

MCA I Semester

PS01CMC35: Computer Fundamentals

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Short Questions/Objective Questions

1. Define logic gate.

2. What is a truth table? Give example.

3. Define **OR** gates with logic circuit and truth table.
Same question may be asked for AND, NOT, NAND, NOR, XOR, XNOR, BUBBLLED OR, and BUBBLLED AND gates.

4. What is the only one input combination that will produce a high output of a six input AND gate?

5. Which logic gate is called
(a) any or all gate (b) all or nothing gate (c) inverter gate?

6. What is the minimum number of inputs that a NOT gate can take?

7. Why NAND gate is called universal gate?

8. What is the maximum number of output for any logic gate?

9. How many rows should be there in a truth table for three binary symbols?

10. How many digits a half adder can consider for addition at a time?

11. How many digits a full adder can consider for addition at a time?

12. List an application of AND gate.

13. List an application of OR gate.

14. List an application of XOR gate.

15. Define latch/flip-flop.

16. What is use of counter?

17. Draw the logic diagram and construct truth table for the following expression:

$X = \overline{A} + B + CD$

18. State only the DeMorgan's 1st law.

19. State only the DeMorgan's 2nd law.

20. How many flip-flops are required to store a 6 bit binary number?

Big questions:

1. What do you mean by logic gate? Define three basic gates with logic circuit and truth table.

2. Define NAND and NOR gates. Also give circuit diagram & truth table of both.

3. State DeMorgan's first and second laws. Prove them with truth table. Also give their logic circuits.

4. **Prove that** A(B+C)=AB+AC with help of truth table.

5. Draw a logic circuit for following and write its use in one line.

(i) Decimal to Binary Encoder.

(ii) To block/transmit word

(iii) Binary-to-decimal decoder

(iv) Odd parity generator

(v) A 4 to 1 multiplexer

(vi) Binary adder / 2's complement adder subtractor

Etc.