2 MARKS:

1.   List the number systems?
i)   Decimal Number system
ii)   Binary Number system
iii)   Octal Number system
iv)   Hexadecimal Number system

2.   Define binary logic?
Binary logic consists of binary variables and logical operations. The variables are designated by the alphabets such as A, B, C, x, y, z, etc., with each variable having only two distinct values: 1 and 0. There are three basic logic operations: AND, OR, and NOT.

3. What is a Logic gate?
Logic gates are the basic elements that make up a digital system. The electronic gate is a circuit that is able to operate on a number of binary inputs in order to perform a particular logical function.

4. What are the basic digital logic gates?
The three basic logic gates are:
1.   AND gate
2.   OR gate
3.   NOT gate

5.Which gates are called as the universal gates? What are its advantages?
The NAND and NOR gates are called as the universal gates. These gates are used to perform any type of logic application.

6.What are the applications of octal number system?
The applications of octal number system are:
i. It is used for entering the binary data and displaying certain information's.
ii.   It is very important for the efficient use of microprocessors and other digital circuits.

7.Why is a hexadecimal number system called as an alpha numeric number system?
Hexadecimal number system has the base as 16 and therefore it requires 16 distinct symbols to represent the numbers. These are numerals 0 to 9 and alphabets A to F. Since both numeric digitals and alphabets are used to represent the digits in hexadecimal number system, it is also called as an alphanumeric number system.

8. What are basic properties of Boolean algebra?
The basic properties of Boolean algebra are commutative property,associative property and distributive property.

9. State the commutative property of Boolean algebra?
The commutative property states that the order in which the variables are ORed makes no difference. The commutative property is:
i). A+B=B+A
ii). AB = BA

10. State the distributive property of Boolean algebra.

The distributive property states that AND ing several variables and OR ing the result with a single variable is equivalent to OR ing the single variable with each of the several variables and then AND ing the sums. The distributive property is:
i). A+BC = (A+B) (A+C)
ii). A (B+C) = AB + AC

11. What is meant by karnaugh map or K-Map method?
A karnaugh map or k map is a pictorial form of truth table, in which the map diagram is made up of cells, with each cell representing one minterm or maxterm of the function. This method straight forward procedure provides a simple for minimizing Boolean function.

12. State the limitations of karnaugh map.

i) Generally it is limited to six variable map (i.e.) more then six variable involving expressions are not reduced.

ii) The map method is restricted in its capability since they are useful for simplifying only Boolean expression represented in standard form.

13. Define Duality Theorem.

The Duality theorem states that starting with a Boolean relation we can derive another Boolean relation by:
i). Changing OR (operation) i.e., + (Plus) sign to an AND (operation) i.e., (dot) and Vice-versa.
ii). Complement any 0 or 1 appearing in the expression i.e., replacing contains 0 and 1 by 1 and 0 respectively.

14. Define Pair, Quad, and Octet.

i). Pair: A group of two adjacent cells in a karnaugh map. A pair cancels one variable in a K-Map simplification.
ii). Quad: A group of four adjacent cells in a karnaugh map. A quad cancels two variable in a K-Map simplification.
iii). Octet: A group of eight adjacent cells in a karnaugh map. A pair cancels three variable in a K-Map simplification.

15. What are called don't care conditions?

In some logic circuits certain input conditions never occur, therefore the corresponding output never appears. In such cases the output level is not defined, it can be either high or low. These output levels are indicated by 'X' or 'd' in the truth tables and are called don't care conditions or incompletely specified functions.

16. What is an essential prime implicant?
The Essential Prime Implicant is a prime implicant in which one or more minterms are unique , it contains at least one minterm which is not contained in any other prime implicant.