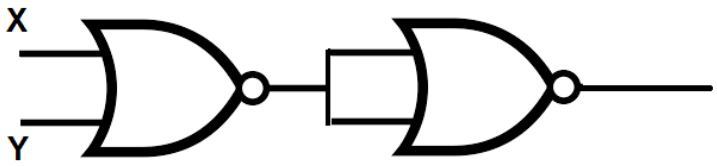
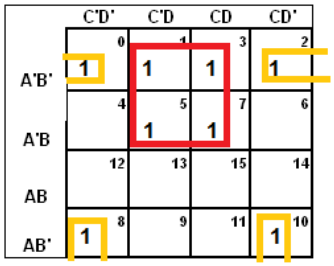
Time: 40 minutes Marks : 35

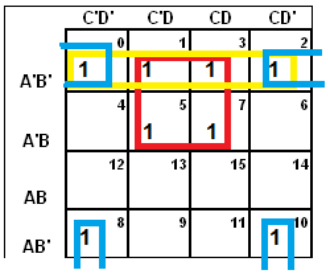
1. The dual of (X+Y').Z.1= X.Z +Y'.Z is.....
   **a)** (X'+Y).Z'.0=X'.Z'+Y.Z' **b)** (X'.Y)+Z'+0=X'+Z'.Y+Z' **c)** (X.Y')+Z+0=X+Z.Y'+Z **d)** (X'+Y)+Z'.1=X'+Z'.Y+Z'
2. If A=1, B=0 then (A'+1).B is.....
   **a)** 0 **b)** 1 **c)** A **d)** B
3. If A=1, B=0, C=1, D=1 then its maxterm is .....
   **a)** (A'+B+C'+D') **b)** (A+B'+C+D) **c)** (A'.B.C'.D') **d)** (A.B'.C.D)
4. (P→Q)v(Q→P) is a .....
   **a)** Tautology **b)** Contradiction **c)** Contingency **d)** WFF
5. The complement of F= A.B'.C + A.B + B.C' is .....
   **a)** F= (A+B'+C) .( A+B . B+C') **b)** F= (A'+B+C') . A'+B' . B'+C **c)** F= A'.B.C' + A'.B' + B'.C **d)** F= A.B'.C + A.B + B.C'
6. Name the logic gate for the following circuit diagram.

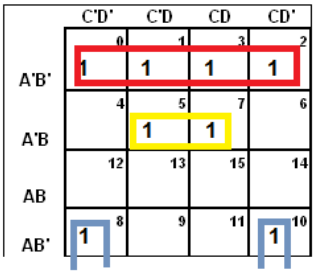


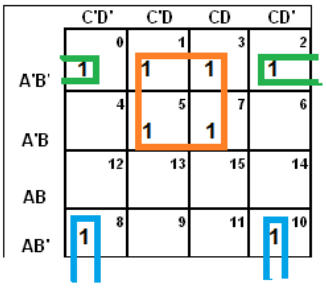

   **a)** NAND **b)** NOR **c)** AND **d)** OR

7. Choose the optimal K-Map grouping from the following.

A)


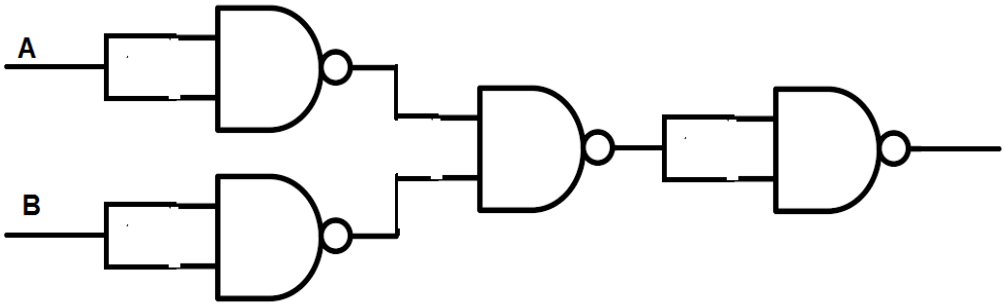

B)



C)



D)



   **a)** A **b)** B **c)** C **d)** D

8. The output of the following logic circuit diagram represents which of the logic gate?



**a)** NAND **b)** NOR **c)** OR **d)** AND

9. Which of the following logic gates provide output as ZERO when both inputs are same (either Zero or One)?
   **a)** XOR **b)** XNOR **c)** NAND **d)** NOR
10. How many inputs and outputs will a decimal to binary encoder have?
    **a)** 2 inputs and 4 outputs **b)** 4 inputs and 10 outputs **c)** 10 inputs and 3 outputs **d)** 10 inputs and 4 outputs
11. Which of the following hardware circuit converts 'n' inputs to '$2^n$' outputs?
    **a)** Encoder **b )** Decoder **c)** Multiplexer **d)** None of the above
12. If A,B and C are the inputs of a full adder, then the sum and carry are given as follows.
    **a)** A **XOR** B **XOR** C , A.B **+**B.C**+**A.C **b)** A **+** B **+** C , A.B **+**B.C**+**A.C **c)**A.B.C , A.B+B.C **d)** A **+** B **+** C , (A+B) .(B+C).(A+C)
13. The binary number designations of the rows and columns of the K-map are in
    **a)** BCD **b)** GRAY CODE **c)** OCTAL **d)** ASCII
14. How many 2 input AND and OR gates required to realize the function F= A.B + C.D+ E
    **a)** 2 AND, 1 OR **b)** 2 AND, 2 OR **c)** 2 OR, 1 AND **d)** 3 AND, 3 OR
15. How many NOR gates required to obtain an AND gate?
    a) 2 b ) 3 c) 4 d) 1
16. What is the return type of Math.round() function in java?
    a) double b) int c) float d) long
17. What is the numerical range of a char data type in Java?
    A. -128 to 127
    B. 0 to 256
    C. 0 to 32767
    D. 0 to 65535
    a) A b) B c) C d) D
18. What will be the output of the following Java program?

```
class Test {
 public static void main()
 {
    char a = 'B';
    a++;
   System.out.print((int)a);
 }
}
```

a) 99 b) 67 c) C d) B

19. If an expression contains double, int, float, long the whole expression will be promoted into which of these data types?
    a) double b) int c) float d) long
20. Modulus operator (%) can be applied to which of these?
    a) Integers only b) All primitive datatypes c) floating point numbers d) both integers and floating point numbers
21. What will be the output of the following java program?

```
class Test2
{
 public static void main()
 {
    int x = 3>>1;
    int y = 9<<1;
    int z;
    z = x > y ? x : y;
    System.out.print(z);
 }
```

```
  }
```

a) 18 b) 9 c) 27 d) 3

22. What will be the output of the following java program?

```
class Test2
{
  public static void main()
  {
        int a[]={0,2,4,6,8};
        a[3]=3;
        System.out.println(a[2+1]);
  }
}
```

a) Compile error b) 6 c) 4 d) 3

23. What will be the output of the following code?

```
int m= 14,n=10,p=12;    m+= m++ + ++n + 7*p;    System.out.println(m);
```

a) 109
b) 123
c) 124
d) 122

24. What will be the output of the following?

```
int a, b;
for (a = 6, b = 4; a <= 24; a = a + 6)
{
  if (a % b == 0)
        break;
}
System.out.println(a);
```

a) 6 b) 12 c) 24 d) 18

25. What will be the output of the following?

```
class Test2
  {
    public static void main()
    {
      short b=10;
      System.out.println(b*5);
    }
  }
```

a) 5 b) 0 c) Possible loss of precision error d) 50

26. Which of the following will do the implicit conversion?
    a) int to byte b) int to short c) int to long d) float to long
    b)

27. Fill the missing parts in the following program.

```
public int binarySearch(int[] inputArr, int key)
   {
     int start = 0;
     int end = inputArr.length - 1;
     while (start <= end) {
       int mid = (start + end) / 2;
        if (key == inputArr[mid]) {
          return mid;
       }
       if (key < inputArr[mid]) {
```

```
            end = _________;
          }
    else {
            start = _______;
          }
       }
       return -1;
   }
```

a) mid+1, mid-1 b) mid-1, mid+1 c) mid, mid d) mid/2, mid/2+1

28. Each element of an array A [-15….. 20, 20….. 45] requires 4 bytes for storage. Find the number of rows and number of columns for the given array A.
    a) 36,26 b) 20, 45 c) -15, 20 d) 20,45
29. When does the ArrayIndexOutOfBoundsException occur?
    a) during compilation b)during run time c) not an error d) None of the mentioned
30. Which of these is used to access a member of class before object of that class is created?
    a) public b) private c) static d) default
31. What will be the output of the following code?

```
int a= 56;  int b=-8;  int c= a%b;  int d=b%a;  System.out.println(c +", "+ d);
```

    a) -7,-8
    b) -0,8
    c) 0,-8
    d) 0 ,8
32. Which of the following statement in java can skip processing remainder of code in its body for a particular iteration?
    a) end
    b) return
    c) break
    d) continue
33. if ((a>b) && (b>c)&&(c>d)) means
    a) d is the greatest number.
    b) d is the smallest number
    c) a is the smallest number
    d) None of the above.
34. What will be the output of the following code?

```
class Test {
  public static void main()
  {
    int a=10;
    int b=5;
    if((b=10)== a)
      System.out.print(b);
    else
      System.out.print(++b);
  }  }
```

    a) 10
    b) 11
    c) 6
    d) Compile Time error

35. What will be the output of the following code?

```
int a=9;      final int b=10;
switch(a)
    {
      case 9: System.out.print("Nine ");
      case b: System.out.print("Ten"); break;
    }
```

a) Compile Time error
b) Ten
c) Nine Ten
d) Nine

Answer Key

| | |
|---|---|
| 1) Option c | 19) Option a |
| 2) Option d | 20) Option d |
| 3) Option a | 21) Option a |
| 4) Option a | 22) Option b |
| 5) Option b | 23) Option b |
| 6) Option d | 24) Option b |
| 7) Option a | 25) Option d |
| 8) Option b | 26) Option c |
| 9) Option a | 27) Option b |
| 10) Option d | 28) Option a |
| 11) Option b | 29) Option b |
| 12) Option a | 30) Option c |
| 13) Option b | 31) Option c |
| 14) Option a | 32) Option d |
| 15) Option b | 33) Option b |
| 16) Option b | 34) Option a |
| 17) Option d | 35) Option c |
| 18) Option b | |