2019

COMPUTER SCIENCE

(Theory)

Full Marks : 70

Pass Marks : 21

Time : Three hours

All the questions are compulsory.

The figures in the right margin indicate full marks for the questions.

Select the correct answers from each of the following and rewrite it.

1. Which of the following is NOT a characteristic of a constructor function :   1

    A.   can have a default argument

    B.   have a return type

    C.   invoked automatically when objects are created

    D.   declare in the public section

2. Reverse Polish Notation is also called –   1

    A.   infix expression

    B.   prefix expression

    C.   postfix expession

    D.   arithmetic expression

3. There are two relations A and B which is having the same column - names. What is the command to retrieve all the common sets of tuples belonging to them ?

    1

    A. A ∪ B

    B. A ∩ B

    C. A−B

    D. A α B

4. Which of the following is NOT an unit for data transfer rate ?   1

    A. bps

    B. kbps

    C. mbps

    D. dps

    Give very short answers to the following questions :

5. Correct the following statement :   1

    int a = { 7, 9, 2, 4, 6, 8, } ;

6. What is data abstraction ?   1

7. Draw the diagram of inheritance which shows the transitive nature.   1

8. How does function overriding arise in inheritance ? 1

9. Why is binary search faster than linear search ? 1

10. Define degree of a relation. 1

11. Write an SQL command to list all the names of students whose name is ending with "A" from the table "STUDENT". 1

12. Write the SOP form of a Boolean function F which is represented by the following truth table : 1

INPUT			OUTPUT
U	V	W	F
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

13. Draw the network topology of tree topology. 1

14. What term we use for a software / hardware device, which is used to block unauthorised access while permitting authorised communications ? 1

Give short answer of the following questions :

15. How is a structure different from an array ?   2

16. What is eof( ) ? What are its values ?   2

17. Differentiate between & and * with respect to pointer.   2

18. Sort the following numbers manually using selection sort method :   2

     22   24   12   17   16   20   28   18

19. An array DATA[10] [10] requires 4 bytes of storage. If the base address is 1000, determine the location of DATA [4] [5], when the DATA is stored

     (i)   row wise

     (ii)   column wise   2

20. Define queue. Write the conditions arise while performing queue operations.   2

21. What is primary key ? Define the first normal form.   2

22. Prove one of the De Morgans theorem using truth table.   2

23. Reduce the Boolean Function $F(A,B,C,D) = \Sigma (0, 1, 2, 4, 5, 6)$ using k - map.

     2

24. What is an IP Address ? What are the types of IP addressing system ? 2

Give short answer to the following questions :

25 Detect the errors (if any) of the following C++ program and rewrite the corrected one : 3

```
# include < stdio.h >
void main ( )
{
    int x1, x2, sum;
    x1 = x2 =10;
    for (a = 0, a<11, a++ )
    {
        cin < < sum ;
        if (sum > 0 )
        x1 = + sum ;
    clse
        x2=1 sum ;
    }
    cont >> x1, x2;
}
```

26. What are the possible results found while calling an over loaded function ? 3

27. Write a user defined function in C++ to read the contents from a text file FUN. DAT, count and display the number of alphabets present in it. 3

28. Give the algorithm of linear search operation. 3

29. Writw any *four* points of advantages and any *two* points of disadvantages of DBMS.   3

30. State any *three* postulates of Boolean algebra.   3

31. Compare the different modes of transmission systems based on the direction of data transmission.   3

Answer the following questions.

32. Write a C++ program for exchanging the private data of two classes using a friend function.   5

33. Explain the different types of pointers.   5

34. Write a C++ program to delete an element from a given array.   5

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