2017

COMPUTER SCIENCE

(Theory)

Full Marks - 70

Pass Marks - 21

Time : Three Hours and *Fifteen Minutes

(*15 minutes are given as extra time for reading questions)

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 (1-4) and rewrite it.

$1 \times 4 = 4$

1. When a derived class inherits from a class that itself inherits from another class, it is known as

    (a) Single Inheritance

    (b) Multiple Inheritance

    (c) Hierarchical Inheritance

    (d) Multi-level Inheritance

2. The number of elements in a circular queue Q[20] for the values of REAR=5 and FRONT=12 is

   (a) 7

   (b) 13

   (c) 15

   (d) 17

3. Absorption theorem means

   (a) $a(a+b)=ab$

   (b) $a+a=a$

   (c) $a+a \cdot b=a$

   (d) $a+1=1$

4. Which of the following is not a web browser ?

   (a) Google Mail

   (b) Mazilla Firefox

   (c) Internet Explorer

   (d) Netscape Navigator

Give very short answers to the following questions (5-14) : $1 \times 10 = 10$

5. What are the two ways to avoid duplicate set of members inherited in the derived class from a base class ?

6. "Binary files are more flexible than text file and admired by programmers". Why ?

7. Give the *two* member functions common to the classes if stream and of stream.

8. What is reference operator (*) with respect to the pointer ?

9. Write one point of advantage of using linear search over binary search.

10. What are the operatons performed on queue ?

11. What is meant by data redundancy ?

12. What factors will you keep in mind while making a decision regarding the frequency of master file updating ?

13. Give one point of difference between equi join and natural join.

14. What is RJ45 ?

Give short answers to the following questions (15-24) in about 40-50 words each.
$$2\times10=20$$

15. Consider the structure definition defined below :
    Struct student
    {
    int rollno;
    char name [20] ;
    short standard ;
    float marks ;
    char grade ;
    } stud 1 ;
    Initialize the details of one student of structure variable stud1 by giving possible values in different ways of initialization.

16. Differentiate between structure and class by giving two points.

17. What are constructor and destructor ?

18. An array A[1..10] [1..15] requires 8 bytes of storage. The first element is stored at a location 1000. Calculate the location of A[5,7] when array is stored (i) row wise and (ii) column wise.

19. What are the services given by a database or an organised information in DBMS ?

20. Draw a diagram of 2 to 4 decoder.

21. Convert the expression $x + y$ into minterms.

22. A transmission medium is going to set up between two different locations having a distance about 100km to send data at a transmission rate of about 16 gigabits per second. Suggest one of the best possible medium of transmission by giving reason.

23. Draw a labelled block diagram of how modem works.

24. What is an IP address ? What are the different types of IP addressing system ?

*Give answers to the following questions (25-31) in about **50-60** words each.*

3×7=21

25. Explain all the possible results while calling an overloaded function.

26. What is friend function ? Write any two characteristics of a friend function.

. Give the significances of visibility mode.

. Write the algorithm of deleting an element from a given array.

. What are the three different forms of writing arithmetic expressions ? Explain them with appropriate examples.

. Write the SQL commands based on the relation STUDENT having fields- Rollno, Name Dob, Class, Stipend and Stream, to

(a) count all the students of class 12

(b) calculate the average stipend of students of science stream

(c) display all the names of students whose name include the substring 'am' or 'un'.

. Give a conclusion from the De Morgan's theorems about any logical binary expression. Write the similarity of it with the principle of duality.

ve answers to the following questions (32-34) in about 100-120 words each.
$$5 \times 3 = 15$$

. Write a C++ program to perform addition of

(i) two integers

(ii) three integer

(iii) one integer and one double, using an overloaded function called add ( ).

. Explain the different types of pointers in C++.

. Write a C++ program to sort the elements of a given array using bubble sort technique.

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