22 Csc (T) 24/16(I)

2016

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.* 1×4=4

1. A constructor that takes no argument is called

   (a) default constructor

   (b) parameterized constructor

   (c) copy constructor

   (d) destructor

P.T.O.

2. Sorted arrays are required for the following method(s)

   (a) binary search

   (b) merging

   (c) both *(a)* and *(b)*

   (d) none of the above

3. The theorem $a + ab = a$ is known as

   (a) involution

   (b) absorption

   (c) idempotency

   (d) De-Morgan

4. The type of transmission which is always fixed in one direction all the time is known as

   (a) full duplex transmission

   (b) half duplex transmission

   (c) simplex transmission

   (d) none of the above

Give very short answers to the following questions ***(5-14)*** *:* 1×10=10

5. What are the ways of initializing the members of structure elements ?
6. Why is scope resolution operator used in a class ?
7. Give the reason for using virtual base class in derive class.
8. Assume that you are declaring a structure and it contains an element that refers to itself. Which type of structure are you going to use ?

9. Write the drawback of bubble sort.

10. If you are creating a virtual table from an existing table, then write the SQL command to delete the virtual table.

11. What is karnaugh map ?

12. What are the required logic circuits to construct a full adder by using half adders ?

13. What do you mean by the 3000 baud ?

14. While accessing internet in the computers, the network is attacked by its own IP address. What is the possible term for this attack ?

Give short answers to the following questions (15-24) : 2×10=20

15. Write the general form of class declaration.

16. Draw the labelled diagrams of single inheritance and multi-level inheritance.

17. Give one point of similarity and difference between ios::ate and ios::app file modes.

18. Differentiate between & and * with respect to pointer.

19. Give the difference between linear search and binary search.

20. Explain the conditions arised on stack operations.

21. Consider the circular queue A[50]. Find the number of elements in A if
    (i) Front = 42, Rear =18
    (ii) Front = 15, Rear =39

22. What are primary key and candidate key ?

23. State the principle of duality and find the dual of $a+bc=(a+b)(a+c)$.

24. Draw the bus topology and tree topology of networking.

Give short answers to the following questions (25-31) : 3×7=21

25. Write the major advantages of OOP.

26. Define a class *worker* with the following specifications :

Private members of class *worker*

wno	integer
wname	25 characters
hrwrk, wgrate	float (hours worked and wage rate per hour)
totwage	float (hrwrk * wgrate)
calwg( )	A function to find hrwrk * wgrate with float return type

Public members of class *worker*

in_data ( )	A function to accept values for wno, wname, hrwork, wgrate and invoke calwg ( )
out_data ( )	A function to display all the data members on the screen.

Definitions of the functions used should also be given.

27. What are the characteristics of static data member ?

28. Give the significance of different visibility modes in inheritance.

29. What are the limitations of using array ?

30. Differentiate between boolean algebra and real algebra.

31. What are the various requirements that become essential for networking ?

Give answers to the following questions (32-34) : 5×3=15

32. What is an overloaded function ? What are the steps involved in selecting a function from overloaded functions ? Explain.

33. Write a C++ program to implement bubble sort technique.

34. Consider the following two tables A and B and write the outputs of the command given below :

A

Name	Age	Class
A	15	XI
B	16	XI
C	17	XII
P	17	XII
Q	18	XII

B

Name	Age	Class
X	16	XI
Y	17	XII
Z	18	XII
P	17	XII
Q	18	XII

(i) $A \cap B$

(ii) $B - A$

(iii) q class = 'XII' (A)

(iv) q class = 'XII' $\wedge$ Age > 17(B)

(v) r Name, class (A)