# 2022

Choose the correct alternative for the following: 1*35=35

1. C++ is an extension to …….programming language.
   (1) Pascal (2) Java
   (3) C (4) B
2. main() is a / an
   (1) Object (2) File
   (3) Function (4) None of these
3. If a function does not return a result, then its return type is
   (1) void (2) int
   (3) float (4) None of these
4. Data item that never change their value during a program run is called
   (1) Keyword (2) Identifier
   (3) Literals (4) Operators
5. '\a' is used for
   (1) Form feed (2) Horizontal tab
   (3) Audible sound (4) none of these
6. Which of the following is/ are valid character literal?
   (1) 'ABC' (2) "ABC"
   (3) 'C' (4) None of these
7. In C++, a single line comment begins with
   (1) / (2) //
   (3) * (4) $
8. The prefix increment /decrement operators follow
   (1) Change-then- use rule (2) use then change rule
   (3) Change-then-throw rule (4) None of these
9. A pointer is a variable that holds
   (1) memory address of another variable (2) File address
   (3) local address (4) None of these
10. What will be the value of following expression
    (5* ++j)%6, if j=5 initially?
    (1) 1 (2) 0
    (3) 0 (4) None of these
11. A set of logical operators is
    (1) + ,- ,* , / , % (2) >, < , >=, <=, ==, !=
    (3) &&,||, ! (4) ? :

12. In C++ array index starts from
    (1) 0 (2) 2
    (3) n (4) None of these
13. What is the output of the following code fragment?
    for(int I=1;i<10;i++);
    cout<<i;
    (1) 10 (2) 1 to 10
    (3) 11 (4) None of these
14. The do – while loop is a / an …….controlled loop.
    (1) entry (2)exit
    (3) count (4) None of these
15. In C++ programming strcmp() function is used for
    (1) Count length of a string (2) copy string
    (3) Compare two strings (4) Concatenate two strings
16. Which of the following is extraction operators in C++?
    (1) ^ (2) v
    (3) << (4) >>
17. Which is not a loop structure?
    (1) while (2) Do-while
    (3) For (4) Repeat until
18. Which of the following is not a feature of C++ ?
    (1) Encapsulation (2) Inheritance
    (3) Abstraction (4) Distributive law
19. OOP means
    (1) Object oriented programming ` (2) Object output programming
    (3)Object oriented power (4) None of these
20. …….is the way of representing essential feature without including the background details.
    (1) Inheritance (2) Encapsulation
    (3) Abstraction (4) None of these
21. Class represents
    (1) A group of similar objects (2) A group of different objects
    (3) A group of problems (4) None of these

22. Encapsulation is a way to implement
    (1) Inheritance (2) modularity
    (3) Data abstraction (4) None of these

23. Which header file belongs to the function isupper() ?
    (1) ctype.h (2) math.h
    (3) string.h (4) conio.h
24. Which of the following keywords is used to control access to a class member ?
    (1) default (2) Break
    (3) Private (4) Access
25. A class supports OOP features
    (1) Encapsulation (2) Abstraction
    (3) Data hiding (4) All of these
26. By default the members of a class are
    (1) Private (2) Public
    (3) Protected (4) None of these
27. Which of the following data members of a class can be shared by all the objects of its class ?
    (1) Friend (2) Static
    (3) Abstract (4) None of these
28. A class definition ends with
    (1) D,(comma) (2) .(Dot)
    (3) :(colon) (4) ;(semicolon)
29. Base class is
    (1) Normal class (2) Derived class
    (3) Child class (4) None of these
30. If a class A needs to be derived from a class B, which of the following ways is correct to do so?
    (1)class A:public B (2) class A:derive public B
    (3)class B:public A (4) None of these
31. Which of the following cannot be inherited from the base class?
    (1) Constructor (2) Destructor
    (3) Both (1) and (2) (4) None of these
32. In private inheritance, a protected data member of a base class will be treated in a derived class as
    (1) Public (2) Private
    (3) Protected (4) None of these
33. A constructor is invoked when
    (1) an object is created (2) an object is moved
    (3) an object is copied (4) None of these

34. A constructor taking no argument is called
    (1) copy constructor (2) default constructor
    (3) parameterized constructor (4) None of these
35. A destructor can have which of the following characteristics?
    (1) It has the same name as of its class name
    (2) Its name is preceded by tilde (~) sign
    (3) It has no return type
    (4) All of these

**Computer Science XII**

**Section A**

Answer any five questions. **1*5=5**

1) Define the term Data Structure.
2) What is meant by Base Address of an Array?
3) What do you mean by PUSH and POP operation associated with stack?
4) What are the two components of node in the linked list?
5) What is primary key in a table?
6) What is Data Redundancy?
7) What is Hub?

**Section- B**

**Short Answer type Questions: 3*5=15**

8) What are primitive and non-primitive data types? Explain with example.
9) What is the difference between linear and binary search?
10) What is Queue? In a Queue, What is the purpose of Rear and Front?
11) Write an algorithm to insert a node in a linked list.
12) What is relation? What is the difference between tuple and attribute?
13) What are the various levels of data abstraction in a database system?
14) Define the following term: a. Sever b. Protocol c. Internet

**Section- C**

**Long Answer type Questions: 5*3=15**

15) What is sorting? Write an algorithm for selection sort.
16) Distinguish between infix, prefix and postfix algebraic expressions by giving example of each.
17) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation:

**50, 40, +, 18, 14, - , *, +**

18) Write short notes on the following:
    a. Transmission media b. E-mail

19) Write SQL commands for (a) to (e) on the basis of STUDENT relation given below:

| Sl_ No | Name | Age | Department | DOA | Charges | Sex |
|---|---|---|---|---|---|---|
| 1 | Ashish | 22 | Hindi | 05/09/2012 | 500 | M |
| 2 | Taruna | 21 | History | 01/07/2014 | 400 | F |
| 3 | Manish | 23 | Computer | 10/01/2012 | 300 | M |
| 4 | Amit | 22 | Computer | 25/01/2012 | 350 | M |
| 5 | Asha | 24 | History | 01/02/2013 | 400 | F |
| 6 | Karan | 23 | Hindi | 12/11/2011 | 500 | M |
| 7 | Alok | 20 | English | 11/01/2011 | 450 | M |
| 8 | Nitu | 21 | English | 02/03/2010 | 300 | F |

a) To show all information about the students of History Department.

b) To list the names of the female students who are in Hindi department

c) To list the names of all students with their date of admission in ascending order

d) To count the number of students with age<23

e) To insert a new row in the student table with the following data:

9, 'sitaram', 22,'Computer',{12/09/2015},200,'M'

# 2021

Choose the correct alternative for the following: 2*35=70

1. C++ is developed by
   (1) Dennis Ritchie (2) Ken Thompson
   (3) Martin Richard (4) B jarne Stroustrup
2. The smallest individual unit in a program is called
   (1) Token (2) Keyword
   (3) Operator (4) None of these
3. "Reema" is an example of
   (1) Integer literal (2) Character literal
   (3) String literal (4) None of these
4. Relational operators are
   (1) +,-,*,/,% (2) &&,||,!
   (3) ? : (4) >,<,>=,<=,==,!=
5. Every C++ program must contain a ……function.
   (1) main( ) (2) strlen( )
   (3) getch( ) (4) none of these
6. Char ,int , float , double and void are
   (1) User defined data type (2) Fundamental data type
   (3) Derived data type (4) None of these
7. x=++y +2y evaluates to (if y=6)
   (1) 18 (2) 21
   (3) 20 (4) None of these
8. While loop checks condition on
   (1) Top (2) Bottom
   (3) Left (4) None of these
9. Jump statement(s) is / are
   (1) go to (2) continue
   (3) break (4) All of these
10. In C++, array index always starts from
    (1) 0 (2) 1
    (3) 2 (4) 3
11. In C++ programming strcat( ) function is used for
    (1) count length of a string (2) Converting string to character
    (3) comparing two strings (4) concatenating two strings

12. Which of the following is not a feature of C++ ?
(1) Polymorphism (2) Inheritance
(3) Abstraction (4) Reflection
13. Object Oriented Programming follows
(1) Top Down approach (2) Bottom up approach
(3) Left-Right approach (4) Right –Left approach
14. Wrapping up of data and functions into a single unit is called
(1) Inheritance (2) Polymorphism
(3) Encapsulation (4) None of these
15. Instance of a class is called
(1) File (2) object
(3) Keyword (4) None of these
16. By default the members of a class are
(1) Public (2) Private
(3) Protected (4) None of these
17. A class can have the ……members
(1) Data (2) Member functions
(3) Bothe (1) and (2) (4) None of these
18. The operation of processing each element in the list is known as
(1) Sorting (2) Merging
(3) Inserting (4) Traversal
19. Beginning address of an array is called
(1) Top address (2) Base address
(3) File address (4) None of these
20. A line of people waiting for their turn to vote is an example of
(1) Stack (2) Queue
(3) Linked list (4) None of these
21. Stack follows.
(1) GIGO Technique (2) FIFO Technique
(3) LIFO Technique (4) None of these
22. The elements are inserted in a queue from the end called
(1) Top (2) middle
(3) Rear (4) Front
23. A linked list is a collection of data elements, called
(1) Array (2) Pointer
(3) Nodes (4) None of these

24.Binary search works on only on
(1) Unsorted array (2) Sorted array
(3) int array (4) none of these

25.ABC* + D – EF/* is a/ an
(1) Infix expression (2) Prefix expression
(3) Postfix expression (4) None of these

26.Duplication of data is known as
(1) Delta (2) Dque
(3) Data redundancy (4) None of these

27.A relational data model organizes the data into tables known as
(1) Relation (2) Network
(3) File (4) None of these

28.A row in a relation is called
(1) Data (2) Tuple
(3) Domain (4) None of these

29.Which of the following searching algorithms is of divide and conquer type?
(1) Linear Search (2) Binary search
(3) File searching (4) None of these

30.DBMS stands for
(1)Database Management system (2) Database Manual System
(3)Define Management Solution (4) None of these

31.The…….command creates a new table.
(1) CREATE TABLE (2) CREATE VIEW
(3) CREATE EMPLOYEE (4) None of these

32.COUNT( ) is used to
(1) Count total number of rows (2) Count total number of columns
(3) Count total number of files (4) None of these

33.Network devices (s) is /are
(1) Modem (2) Hub
(3) Router (4) All of these

34.The pattern of interconnection of nodes in a network is called
(1) Protocol (2) Topology
(3) E-mail (4) None of these

35.HTTP means
(1) Height type Transfer protocol 2) Hyper Text Transfer Protocol
(3) Hyper Text Transfer Power (4) None of these

# 2020

**Full marks-70**
**Pass marks -23**
**Time -3 Hours**

**All questions are compulsory.**
**Figures in the margin indicate full marks.**
**Candidates are required to give their answer in own words as far as practicable.**

## Section A

**1**.Choose the correct answer from the following: **1*16=16**

a) C++ is developed by

i) Dennis Ritchie ii)Ken Thompson

iii) Martin Richard iv) B jarne Stroustrup

b) String Terminator character is

i) '\0' ii) '\n'

iii) '\b' iv) None of these

c) DBMS stands for

i) Database Management System ii) Database Manual System

iii) Define Management Solution iv) None of these

d) The smallest individual unit is

i) Semicolon ii) Data type

iii) Token iv) Keyword

e) The process of finding the location of the particular element in the array is called

i) Traversal ii) Searching

iii) Sorting iv) None of these

f) The Boolean expression A.(B+C)=AB+AC is

i) Associative law ii) Commutative law

iii) Absorption law iv) Distributive law

g) Destructor name is preceded by

i) ! ii)#

iii) $ iv) ~

h) The term attribute refers to a

i) Table ii) Row

iii) Column iv) Relation

i) Main is a/an

i) Object ii) Function

iii) Literal iv) None of these

j) F Stream class is used for

i) **Input operation** ii) **Output operation**

iii) **Input/Output operation** iv) None of these

k) A set of logical operators is

i) **+ - * / %** ii) **? :**

iii) **> < >= <=** iv) None of these

l) Pointer is a

i) **Variable that holds address of other variable**

ii) **Pointer name is preceded by ***

iii) **void pointer is a pointer which can hold the address of any data type**

iv) All of these

m) STACK follows

i) GIGO Technique ii) FIFO Technique

iii) **LIFO Technique** iv) None of these

n) When several classes inherit the properties of same common class, it is called

i) **Single inheritance** ii) **Multiple inheritance**

iii)**Hierarchical inheritance** iv) None of these

o) People standing in a line is an example of

i) **STACK** ii) **QUEUE**

iii) **ARRAY** iv) **Linked list**

p)……. is a Browser.

i) C++ ii) Firefox

iii) Telnet iv) Cookies

**Section- B**

**Very short Answer Questions:** **2*9=18**

2) Write the difference between Data and Information.

3) What is Token? What are the names of different types of Token?

4) Write the difference between Unary operator and Ternary operator.

5) Give the output of the following:

```
#
void main( )
{
int  x;
for(x=1;x<=12;x*=2)
cout<<x<<endl;
}
```

6) What is function? Write the types of function.

7) Explain the concept of Encapsulation.

8) Explain the concepts of minterm and maxterm.

9) Define (a) Hub (b) Repeater

10) What is Inheritance?

**Section- C**

**Long Answer Questions:**

11) Write a program in C++ to find the sum of any five odd numbers.

12) What is Inline function? Write its advantages and disadvantages.

13) Define Data type. Explain different types of data type with example.

14) Write an algorithm of Bubble sort or Binary Search.

15) What is array in C++? Explain its types.

16) Draw the circuit and truth table of $X+\overline{X}Y$

17) Define Single inheritance and explain with suitable example.

18) What is guided media? Explain.

19) Obtain postfix notation for the following infix notation manually:

a) **A+C-D*B**

b) **(A+B)*C+D/E-F**

20) What is logic gate? Explain fundamental logic gates with circuit diagram and truth table.

21) Write short notes on the following:

i) DDL ii) DBMS

iii) Tautology iv) Server

**2019**

# Full marks-70

# Pass marks -23

# Time -3 Hours

**All questions are compulsory.**

**Figures in the margin indicate full marks.**

**Candidates are required to give their answer in own words as far as possible.**

## Section A

**1**.Choose the correct answer from the following: **1*16=16**

a) A set of conditional/ ternary operator(s) is/are

i) +,-,*,/,% ii) >,<,>=,<=,==,!=

iii) &&,||,! iv) ?:

b) Which operator has the lowest precedence?

i) Sizeof ii) Unary

iii) Assignment iv) Comma

c) In C++ programming strlen( ) function is used for

i) Count length of a string ii) Copy Two string

iii) Compare two strings iv) Concatenate two strings.

d) In C++ programming array index is always starts from

i) 0 ii) 1

iii) 2 iv) 3

e) While loop checks the condition on

i) Top ii) Bottom

iii) middle iv) None of these

f) Which of the following is the symbol for AND operator?

i) | | ii) &&

iii) & iv) None of these

g) What will be the output of the following condition statement ?

**A=15>=15? 15:16**

i) 16 ii)15

iii) 31 iv) None of these

h) If an array is declared as int arr[5][5], how many elements can it store?

i) 0 ii) 5

iii) 10 iv) 25

i) In C++ programming '\v' is used for

i) Form feed ii) Line break

iii) Vertical tab iv) Alarm

j) Which of the following data structure is non-linear type ?

i) **Strings** ii) **Lists**

iii) **Stacks** iv) None of these

k) The operation of processing each element in the list is known as

i) **Sorting** ii) **Merging**

iii) **Inserting** iv) Traversal

l) Which of the following is not a type of constructor?

i) **Copy constructor** ii) **Parametrised constructor**

iii) **Default constructor** iv) Friend constructor

m) The Boolean Expression

**A.(B+C)=AB.AC** is called

i) Associative Law ii) Commutative Law

iii) Absorption Law iv) Distributive Law

n) A Boolean function of n variables has …….rows of possible input combinations.

i) **n** ii) **2n**

iii) $\mathbf{2^n}$ iv) **2n-1**

o) In which topology has every node an equal chance to transmit data?

i) Ring ii) Star

iii) Bus iv) Mesh

p)How many layers are there in the TCP/IP model?

i) 1 layer ii) 3 layers

iii) 5 layers iv) 7 layers

**Section- B**

**Very short Answer Questions:** **2*9=18**

2) What is the difference between Character and String in C++?

3) Differentiate between Variable and identifier.

4) Evaluate the following C++ expression s where **a,b,c** are integers and **d,f** are floating point numbers .The values are **a=5,b=6** and **d=3.5**.

a) **c=a++ - (b ++) * (- -d)**

b) **f=(++b) * b – a++**

5) What data types would you use to represent the following items?

i) The number of employees in a Department

ii) The salary of an employee

iii) The identification number of an employee

iv)The registration number of a vehicle

6) Write an algorithm to **insert an element in a queue**.

7) Write an algorithm to count total number of **nodes in a linked list**.

8) What is the role of a Database Administrator in a database system?

9) Prepare a truth table for $\mathbf{AB\overline{C}+BC}$

10) What is Topology?

**Section- C**

**Long Answer Questions:**

11) What is the concept of a **Data hiding** and how is it achieved using class and objects?

12) Write a program in C++ to find the product of any five numbers using **constructor member** functions.

13) What is an **operator overloading** and **operator overriding**? Explain it with a suitable example.

14) Define the terms **'Constructor' and 'destructor'** in detail with suitable examples. Write their difference.

15) Write an algorithm for **Insertion Sorting** procedure.

16) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation:

**300, 10, 30, +, 20, *, +**

17) Transform each of the following expressions to **prefix and postfix** form:

a) **(A-B*(C+D))/E*F**

b) **(A+B)-C*D**

18) Write the output of the following program:

```
#include<iostream.h>
#include<conio.h>
void main()
{
int s=0;
```

```
clrscr( );

for(int i=2;i<15;i++)

{

s=s+i;

cout<<"\n"<<i<<"\t"<<s;

}

}
```

20) Write SQL commands for (a) to (d) on the basis of M_C_DEPT relation given below:

| Sl_ No | P_Name | Age | Department | Date _of _Adm | Charges | Sex |
|---|---|---|---|---|---|---|
| 1 | Ramayan | 62 | Surgery | 23/02/15 | 8000 | M |
| 2 | Rajani | 22 | ENT | 20/01/15 | 3000 | F |
| 3 | Rajhans | 32 | Orthopaedic | 19/02/15 | 5500 | M |
| 4 | Badrinath | 12 | Surgery | 1/01/15 | 5600 | M |
| 5 | Satyakam | 36 | ENT | 12/01/15 | 4500 | M |
| 6 | Archana | 16 | ENT | 24/02/15 | 3800 | F |
| 7 | Baby | 29 | Cardiology | 20/02/15 | 8800 | F |
| 8 | Biva | 45 | Gynaecology | 22/02/15 | 9000 | F |
| 9 | Prakash | 19 | Cardiology | 13/01/15 | 9900 | M |
| 10 | Neha | 23 | Nuclear medicine | 19/2/15 | 6000 | F |

**a)** To show all information about the patients of Cardiology Department.

**b)** To list the names of the female patients who are in Gynaecology department.

c) To list the names of all patients with their dates of admission in ascending order.

**d)** To count the number of patients with age<36.

20) Obtain a simplified form for the following Boolean Expression using Karnaugh Map:

$$F(A,B,C,D)=\sum (0,2,5,7,8,1013,15)$$

21) Define the terms:

i) Node ii) Network

iii) Client iv) Server

**2018**

# Full marks-70

# Pass marks -23

# Time -3 Hours

**All questions are compulsory.**

**Figures in the margin indicate full marks.**

**Candidates are required to give their answer in own words as far as possible.**

# Section A

**1**.Choose the correct answer from the following: **1*16=16**

a) main( ) is a /an

i) Keyword ii) Object

iii) Function iv) None of these

b) Destructor has the same name as the constructor and it is preceded by

i) ! ii) @

iii) ~ iv) $

c) A set of logical operator is

i) +,-,*,/,% ii) >,<,>=,<=,==,!=

iii) &&,||,! iv) ?:

d) Which of the following is not a feature of C++?

i) Operator overloading ii) Inheritance

iii) Namespace iv) Reflection

e) Which of the following is not a type of constructor ?

i) Copy constructor ii) parameterized constructor

iii) Default constructor iv) Friend constructor

f) Which of the following is not the member of class?

i) Static function ii) Friend function

iii) Const function iv) Virtual function

g) Which of the following concepts provides facility of using object of one class inside another class?

i) Encapsulation ii)Composition

iii) Abstraction iv) Inheritance

h) Which of the following is sorting algorithms is of divide and conquer type ?

i) Bubble sort ii) Insertion sort

iii) Quick sort iv) All of these

i) The operation of processing each element in the list is known as?

i) Sorting ii) Merging

iii) Inserting iv) Traversal

j) Transformation of infix operation

**(A+B*C-D)/E*F** to postfix is

i) **ABC*+D-EF*/** ii) **ABC+*D-EF*/**

iii) **ABC*+D-EF/*** iv) None of these

k) A row in a Relation is called

i) Data ii)Tuple

iii) Domain iv) none of these

l) The following are components of a database except

i) User Data ii) Metadata

iii) Reports iv) Indexes

m) The Boolean Expression

**A.(B.C)=(A.B).C** is called

i) Associative Law ii) Commutative Law

iii) Absorption Law iv) Distributive Law

n) Tautology means a Boolean Expression that always results in

i) True ii) False

iii) Both (a) and (b) iv) None of these

o) Which of the following layer is not in OSI model?

i) Physical layer ii) Internet layer

iii) Network layer iv) Transport layer

p)……..is a network of networks.

i) Internet ii) Intranet

iii) Webpage iv) Browser

**Section- B**

**Very short Answer Questions:** **2*9=18**

2) Write two major differences between Object Oriented programming and Procedural Programming.

3) What is the difference between a keyword and an identifier?

4) Evaluate the following C++ expression s where **a,b,c** are integers and **d,f** are floating point numbers .The values are **a=3,b=5** and **d=1.5**.

a) **c=a++ +b*++d**

b) **f= b*b++ - ++a**

5) What data types would you use to represent the following items?

i) The average marks in a class

ii) The number of students in the class

iii) The registration letter of a car

iv) The population of a city

6) List four important operations associated with linear data structure .Describe each.

7) Write an algorithm to count total number of nodes in a linked list.

8) Prepare a truth table for $XYZ+Y\bar{Z}+X\bar{Z}$

9) How many types of users work on database System?

10) What are Repeaters?

**Section- C**

**Long Answer Questions:**

11) What are the advantages offered by **inheritance**?

12) Write a program in C++ to find the sum of any five numbers using **constructor member** function.

13) What is an **inheritance** ? What are the different types of inheritance supported by C++?

14) An electricity board charges according to following rates:

**For the First 100 units------ Rs 2 per unit**

**For the Next 200 units------ Rs 3 per unit.**

**Beyond 300 units------ Rs 4 per unit.**

All users are charged **meter charge** also, which is **Rs 50.** Write a program in C++ to read the number of units consumed and print out the charges.

15) Write an algorithm for Merge sort procedure.

16) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation:

**500, 20, 30, 10, *, +**

17) Transform each of the following expressions to infix form:

a) **+ * ABC**

b) **- +/AC^D/EFG**

18) Write the output of the following program:

```
#include<iostream.h>
void main()
{
int x=5,y=5;
cout<<x++;
cout<<",";
cout<<++x;
cout<<",";
cout<<y++<<","<<++y;
}
```

19) Write SQL commands for (a) to (d) on the basis of SPORTS relation given below:

| Student_ No | Class | Name | Game 1 | Grade 1 | Game2 | Grade 2 |
|---|---|---|---|---|---|---|
| 10 | 7 | Smith | Cricket | B | Swimming | A |
| 11 | 8 | Raju | Tennis | A | Skating | C |
| 12 | 7 | Kamlesh | Swimming | B | Football | B |
| 13 | 7 | Bina | Tennis | C | Tennis | A |
| 14 | 9 | Anjana | Basketball | A | Cricket | A |
| 15 | 10 | Arpit | Cricket | A | Athletics | C |

a) Display the names of the students who have grade C in either Game 1 or Game2 or both.

b) Display the number of the students getting grade A in Cricket

C) Display the names of the students who have same grade for both Game1 and Game2.

d) Display the game taken up by the students, whose names start with A.

20) Obtain a simplified form for the following Boolean Expression using Karnaugh Map:

$$F(A,B,C,D)=\sum (0,1,2,3,5,7,8,9,10,11,13,15)$$

21) Why do we need to network our system?

# COMPUTER SCIENCE XII

## 2017

## Full marks-70

## Pass marks -23

## Time -3 Hours

**All questions are compulsory.**

**Figures in the margin indicate full marks.**

**Candidates are required to give their answer in own words as far as possible.**

## Section A

**1**.Choose the correct answer from the following: **1*16=16**

a) While loop checks the condition on

i) Top ii) Bottom

iii) middle iv) None of these

b) A keyword is

i) an identifier ii) in lowercase Alphabet

iii) Reserved for instruction only iv) None of these

c) A set of Relational operator is

i) +,-,*,/,% ii) >,<,>=,<=,==,!=

iii) &&,||,! iv) ?:

d) If a class **X inherits** from class **Y**,then Y is called ……..of X.

i) Super class ii) Sub class

iii) Abstract class iv) None of these

e) An inline function is

i) Prefixed with keyword inline

ii) Declared and defined inside the class

iii) Prefixed with inline on the header and defined outside the class

iv) All of these

f) Constructors

i) are special function ii) have the same name as that of the class

iii) have no return type iv) All of these

g) In protected inheritance, a public data member of the base class will be treated in a derived class as

i) Public ii)Private

iii) Protected iv) None of these

h) In a Queue , Insertion is done at

i) Rear ii) Front

iii) both (i) and (ii) iv) None of these

i) FIFO means

i) First in First Out ii) Fast in First Out

iii) Fast in Fast Out iv) None of these

j) Arranging elements of an array in specific order is called

i) Array ii) Records

iii) Pointers iv) None of these

k) Number of Tuple in a Relation is called

i) Degree ii) Cardinality

iii) Attribute iv) none of these

l) The duplication of data is known as

i) Data Redundancy ii) Data inconsistency

iii) Data security iv) none of these

m) The solution of

**X. (X+Y)** is equal to

i) X ii) $\overline{X}$

iii) X+Y iv) None of these

n) How many gates would be required to implement the following Boolean expression after simplification?

**XY+X(X+Z)+Y(X+Z)**

i) 1 ii) 2

iii) 4 iv) 5

o) Which of the following layer is not in OSI model ?

i) Physical layer ii) Internet layer

iii) Network layer iv) Transport layer

p) Web Browser is/are

i) Google Chrome ii) Firefox

iii) Internet Explorer iv) All of these

**Section- B**

**Very short Answer Questions:** **2*9=18**

2) Differentiate between data hiding and Encapsulation.

3) What will be the sizes of following constants?

**'\a' , "A\a" and "JAC-2017\a"** ?

4) Evaluate the following C++ expression s where **a,b,c** are integers and **d,f** are floating point numbers .The values are **a=4,b=4** and **d=1.5**.

a) **c=a+++++b*++d**

b) **f=++ b*b++ - ++a**

5) What data types would you use to represent the following items?

i) The average marks in a class

ii) The number of students in the class

iii) The registration letter of a car

iv) The population of a city

6) Write an algorithm to search for an ITEM in a linked list.

7) Define second and third Normal Form.

8) Prepare a truth table for $\mathbf{XY+Y\,\overline{Z}+\overline{X}\,\overline{Z}}$

9) What is modem? What is its function?

10) Describe the similarities and differences between **queues and stacks.**

**Section- C**

**Long Answer Questions:**

11) What is polymorphism? Give an example to show its implementation in C++.

12) Write a program in C++ to find the sum of the following series using constructor and destructor member function.

**$S=x+x^3+x^5+\ldots\ldots+$up to $n^{th}$ term.**

13) What are the advantages offered by inheritance?

14) An electricity board charges according to following rates:

**For the First 100 units------ Rs 4 per unit**

**For the Next 200 units------ Rs 5 per unit.**

**Beyond 300 units------ Rs 6 per unit.**

All users are charged **meter charge** also, which is **Rs 70.** Write a program in C++ to read the number of units consumed and print out the charges.

15) Write an algorithm for Quick sort procedure.

16) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation:

**120, 45, 20, +, 25, 15,-, +,***

17) Transform each of the following expressions to infix form:

a) **+ - ABC**

b) **+A-BC**

c) **+-/AC*D^EFG**

18) Write the output of the following program:

```
#include<iostream.h>
#include<conio.h>
void main( )
{
clrscr( );
int r;
for(int i=1;i<5;i++)
{
r=pow(i , i);
cout<<"\n"<<i<<"\t"<<r;
}
getch( );
}
```

19) Obtain a simplified form for the following Boolean Expression using Karnaugh Map:

$$F(A,B,C,D)=\sum (0,1,2,3,4,5,6,7,8,9,10,11)$$

20) Write SQL commands for (a) to (d) on the basis of STUDENTS relation given below:

| Sl_ No | Name | Age | Department | Date _of _Adm | Charges | Sex |
|---|---|---|---|---|---|---|
| 1 | Amit | 22 | Computer | 10/01/98 | 320 | M |
| 2 | Neha | 23 | History | 24/03/99 | 400 | F |
| 3 | Karan | 22 | Hindi | 12/12/97 | 500 | M |
| 4 | Khushboo | 21 | History | 1/07/99 | 600 | F |
| 5 | Aman | 22 | Hindi | 5/09/98 | 350 | M |
| 6 | Vikash | 21 | History | 27/06/99 | 400 | M |
| 7 | Asit | 23 | Computer | 25/02/98 | 310 | M |
| 8 | Anubhuti | 23 | Hindi | 31/07/98 | 300 | F |

a)To show all information about the students of Hindi Department.

b)To list the names of the female students who are in History department

c) To list the name s of all students with their date of admission in descending order

**d)** To count the number of students with age>22

21) What are the components required for networking?

# COMPUTER SCIENCE XII

## 2016

## Full marks-70

## Pass marks -23

## Time -3 Hours

**All questions are compulsory.**

**Figures in the margin indicate full marks.**

**Candidates are required to give their answer in own words as far as possible.**

## Section A

**1**.Choose the correct answer from the following: **1*16=16**

a) Header files have the file extension

i) .h ii) .he

iii) .hea iv) .head

b) A row in a relation is called

i) Data ii) Tuple

iii) Domain iv) None of these

c) A Token is

i) Keyword ii) an identifier

iii) smallest unit of a program iv) operators

d) The condition on While loop checks on

i) middle ii) Top

iii) Bottom iv) All of these

e) Destructor is a

i) Member function ii) Overloaded

iii) Constructor iv) None of these

f) Base class is

i) Normal class ii) Derived class

iii) Child class iv) All of these

g) In private inheritance, a protected data member of the base class will be treated in a derived class as

i) Public ii) Protected

iii) Private iv) None of these

h) Binary search uses

i) Divide and conquer method ii) Back tracking approach

iii) Heuristic search iv) Greedy search

i) A linked list is a collection of data elements, called

i) Array ii) Pointer

iii) Nodes iv) All of these

j) The elements are inserted in a queue from the end called

i) Top ii) Middle

iii) Front iv) Rear

k) The solution of

**X+XY** is equal to

i) X ii) $\overline{X}$

iii) X+Y iv) None of these

l) Identity law states that

i) $X+\overline{X}=1$ ii) 0+X=X

iii) X+X=X iv) X.X=X

m) Attribute in a relation is called

i) Record ii) Column

iii) Tuple iv) none of these

n) Normalization is used to reduce

i) Data Redundancy ii) Data inconsistency

iii) Data security iv) none of these

o) A Small file that a web server can store on your machine is

i) Hacker ii) Cracker

iii) Firewall iv) Cookies

p) Network devices(s) is /are

i) Ethernet Card ii) Hub

iii) Router iv) All of these

**Section- B**

**Very short Answer Questions:** **2*9=18**

2) How are abstraction and encapsulation interrelated?

3) Write the names of header files to which the following belong:

a) **clrscr( )** b) **gets( )**

4) What is structure? Give suitable example.

5) What is the difference between Constructive function and Normal function?

6) What is **Queue**? In a queue, what is the purpose of Front & Rear?

7) What do you mean by Linked list?

8) Define Primary and Candidate key.

9) Prepare a truth table **A+ B**

10) What is networking? Write the advantages of networking?

**Section- C**

**Long Answer Questions:**

11) What is the difference between object oriented programming and procedural programming?

12) Define multilevel and multiple inheritance in context of object oriented programming .

Give suitable example to illustrate the same.

13) Write a program to swap values of two variables using pass by reference method.

14) What is the difference between static memory allocation and dynamic memory allocation?

15) Explain sorting along with two popular sort techniques.

16) Evaluate the following postfix operation:

**AB + C * D /** if **A=2,B=3,C=4 & D=5** using stack.

17) Write a program to create a class RESORT in C++ with the following description:

Private Members:

| | |
|---|---|
| Rno | Room no. |
| Name | Customer name |
| Charges | Per day charges |
| Days | no. of days stay |
| Compute | A function to calculate and return amount as Days*Charges and if the value of Days*Charges is more than 11000 then as 1.02*Days*Charges. |

Public Member:

| | |
|---|---|
| Getinfo ( ) | A function to enter the content rno, name, charges and days. |
| Dispinfo ( ) | A function to display rno, name, charges, days and amount.<br>(Amount to be displayed by calling function compute ( ) ) |

18) Write the output of the following program:

```
    #include<iostream.h>
int area(int s)
{
return (s*s);
}
float area( int b, int h)
{
return (0.5*b*h);
}
  void main( )
{
cout<<area(5)<<endl;
cout<<area(4,3)<<endl;
cout<<area(b,area(3))<<endl;
}
```

19) Write SQL commands for (a) to (d) on the basis of Employee relation given below:

| No | Name | Salary | Area | Age | Grade | Dept. |
|---|---|---|---|---|---|---|
| 1 | Pankaj kr | 40,000 | West | 45 | C | Civil |
| 2 | Salini | 35,000 | South | 38 | A | Elec |
| 3 | Sanjay Singh | 60,000 | North | 52 | B | Civil |
| 4 | Rakesh | 38,000 | North | 29 | B | Civil |
| 5 | Surya prasad | 42,000 | East | 35 | A | Comp |
| 6 | Dinesh kr.. | 29,000 | South | 34 | A | Mech |

**a)** To display the name of all employee who are in the area south.
**b)** To display the name and age of all employee having age>40.
**c)** To display list of all employees whose salary >=30,000 & <=40,000.
**d)** To display the employee s name in descending order of age.

20) State and verify the De Morgan's law in Boolean algebra using truth table .

21) Write short notes on the following:

a) E-Mail b) WWW

# COMPUTER SCIENCE XII

## 2015

## Full marks-70

## Pass marks -23

## Time -3 Hours

**All questions are compulsory.**

**Figures in the margin indicate full marks.**

**Candidates are required to give their answer in own words as far as possible.**

# Section A

**1**.Choose the correct answer from the following: **1*16=16**

a) main( ) is a /an

i) Keyword ii) Object

iii) Function iv) None of these

b) A keyword is

i) an identifier ii) in lowercase Alphabet

iii) Reserved for instruction only iv) None of these

c) A set of Arithmetic operator is

i) +,-,*,/,% ii) >,<,>=,<=,==,!=

iii) &&,||,! iv) ?:

d) Do while loop checks the condition on

i) Top ii) Bottom

iii) Middle iv) None of these

e) An inline function is

i) Prefixed with keyword inline

ii) Declared and defined inside the class

iii) Prefixed with inline on the header and defined outside the class

iv) All of these

f) Constructors

i) are special function ii) have the same name as that of the class

iii) have no return type iv) All of these

g) In protected inheritance, a public data member of the base class will be treated in a derived class as

i) Public ii)Private

iii) Protected iv) None of these

h) In a Queue , Insertion is done at

i) Rear ii) Front

iii) both (i) and (ii) iv) None of these

i) The complexity of binary search algorithm is

i) **O(n)** ii) **$O(n^2)$**

iii) **O(n log n )** iv) **O( log n)**

j) The operation that involves accessing the nodes of the list in order to perform some processing on them is

i) Inserting ii) Deleting

iii) Searching iv) Traversing

k) Number of Tuple in a Relation is called

i) Degree ii) Cardinality

iii) Attribute iv) none of these

l) The duplication of data is known as

i) Data Redundancy ii) Data inconsistency

iii) Data security iv) none of these

m) The solution of

**X. (X+Y)** is equal to

i) X ii) $\overline{X}$

iii) X+Y iv) None of these

n) How many gates would be required to implement the following Boolean expression after simplification?

**XY+X(X+Z)+Y(X+Z)**

i) 1 ii) 2

iii) 4 iv) 5

o) Which of the following layer is not in OSI model?

i) Physical layer ii) Internet layer

iii) Network layer iv) Transport layer

p) Web Browser is/are

i) Google Chrome ii) Firefox

iii) Internet Explorer iv) All of these

**Section- B**

**Very short Answer Questions:** **2*9=18**

2) Differentiate between data hiding and Encapsulation.

3) What will be the sizes of following constants?

**'\a' , "A\a" and "JAC-2015\a"** ?

4) For a given variable "a=, initialized by 10, what is the **difference** between statements **a++** and **++a**? Explain briefly.

5) What data types would you use to represent the following items?

i) The average marks in a class

ii) The number of students in the class

iii) The registration letter of a car

iv) The population of a city

6) Describe the similarities and differences between **queues and stacks.**

7) What are the two components of a node in a given linked list? Explain with suitable diagram.

8) Prepare a truth table for **$XY+Y\overline{Z}+X\overline{Z}$**

9) Define second and third Normal Form.

10) What is modem? What is its function?

**Section- C**

**Long Answer Questions:**

11) What is polymorphism? Give an example to show its implementation in C++.

12) What are the advantages offered by inheritance?

13) Compare and contrast between **Bubble sort and Selection sort**.

14) Write a program to create a class STUDENT and initialize the data member --- student name , student roll number and marks in three subjects. compute average marks using separate member functions.

15) An electricity board charges according to following rates:

**For the First 100 units------ Rs 3 per unit**

**For the Next 200 units------ Rs 4 per unit.**

**Beyond 300 units------ Rs 6 per unit.**

All users are charged **meter charge** also, which is **Rs 50.** Write a program in C++ to read the number of units consumed and print out the charges.

16) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation:

**120, 45, 20, +, 25, 15,-, +,***

17) Transform each of the following expressions to infix form:

a) **+ - ABC**

b) **+A-BC**

c) **+-/AC*D^EFG**

18) Write the output of the following program:

```
#include<iostream.h>
#include<conio.h>
int recs(int m)
{
if(m==0)
return  (0);
else
return  (m+recs(m-1));
}
 void main( )
{
clrscr( );
int r;
for(int i=0;i<5;i++)
{
r=recs( i );
cout<<"\n"<<i<<"\t"<<r;
}
getch( );
}
```

19) Obtain a simplified form for the following Boolean Expression using Karnaugh Map:

$$F(A,B,C,D)=\sum (0,1,2,4,5,6,8,9,10,12,13,14)$$

21) Write SQL commands for (a) to (d) on the basis of STUDENTS relation given below:

| Sl_ No | Name | Age | Department | Date _of _Adm | Charges | Sex |
|---|---|---|---|---|---|---|
| 1 | Sandeep | 24 | Computer | 10/01/97 | 120 | M |
| 2 | Asha | 21 | History | 24/03/98 | 200 | F |
| 3 | Karan | 22 | Hindi | 12/12/96 | 300 | M |
| 4 | Taruna | 25 | History | 01/07/99 | 400 | F |
| 5 | Ashish | 22 | Hindi | 05/09/97 | 250 | M |
| 6 | Manish | 25 | History | 27/06/98 | 300 | M |
| 7 | Amit | 24 | Computer | 25/02/97 | 210 | M |
| 8 | Anubhuti | 23 | Hindi | 31/07/97 | 200 | F |

b) To show all information about the students of History Department.

b) To list the names of the female students who are in Hindi department

C) To list the name s of all students with their date of admission in descending order

d) To count the number of students with age>22

21) What are the components required for networking?