

DESIGN OF QUESTION PAPER (FA-I)

CLASS: - XII

SUBJECT: -COMPUTER SCIENCE

TIME: - 1 hr

MAX. MARKS:- 20

The weightage or the distribution of marks over different dimension of the question paper shall be as follows.

- Weightage to learning outcomes:

Sr. No.	Learning outcomes	Marks	Percentage of marks
1.	Knowledge	06	30%
2.	Understanding	09	45%
3.	Application	05	25%
4.	Skill	-	-
Total		20	100%

- Weightage to content/ subject units:

Sr. No.	Units	Marks
1.	Unit I: Programming in C++ (Except Inheritance)	20
Total		20

- Weightage to forms of questions:

Sr. No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Long Answer Type(LA-I)	04	01	04
2.	Short Answer Type(SA-I)	02	04	08
3.	Short Answer Type(SA-II)	03	01	03
4.	Very Short Answer Type(VSA)	01	05	05
Total			11	20

.2.

The expected time for different types of question would be as follows:

Sr.No	Form of Questions	Approx. time for each question in mins.(t)	Number of questions (n)	Approx. time for each form of question in mins. (nxt)
1.	Long Answer Type(LA-I)	12	01	12
2.	Short Answer Type(SA-I)	07	04	28
3.	Short Answer Type(SA-II)	10	01	10
4.	Very Short Answer Type(VSA)	02	05	10
Total			11	60

As the total time is calculated on the basis of number of questions required to be answered and the length of their anticipated answers, it would therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

- Scheme of Option

There will be no overall choice. However, there may be internal choice in sub questions of 4 marks category.

- Weightage to difficulty level of questions:

Sr. No.	Estimated difficulty level of question	Marks	Percentage
1.	Easy	04	20%
2.	Average	12	60%
3.	Difficult	04	20%
Total			

A question may vary in difficulty level from individual to individual. As such, the assessment in respect of each question will be made by paper setter, on the basis of general anticipation from the group as a whole, taking the examination. This provision is only to make the paper balanced in weightage, rather than to determine the pattern of marking at any stage.

DESIGN OF QUESTION PAPER (FA-II)

CLASS: - XII

SUBJECT: -COMPUTER SCIENCE

TIME: - 1 hr

MAX. MARKS:- 20

The weightage or the distribution of marks over different dimension of the question paper shall be as follows.

- Weightage to learning outcomes:

Sr. No.	Learning outcomes	Marks	Percentage of marks
1.	Knowledge	06	30%
2.	Understanding	09	45%
3.	Application	05	25%
4.	Skill	-	-
Total		20	100%

- Weightage to content/ subject units:

Sr. No.	Units	Marks
1.	Unit I: Programming in C++ (Only Inheritance)	05
2.	Unit II: Data Structures in C++ Arrays	10
	Linear Linked List	05
	Total	20

- Weightage to forms of questions:

Sr. No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Long Answer Type(LA-I)	04	01	04
2.	Short Answer Type(SA-I)	02	04	08
3.	Short Answer Type(SA-II)	03	01	03
4.	Very Short Answer Type(VSA)	01	05	05
Total			11	20

.2.

The expected time for different types of question would be as follows:

Sr.No	Form of Questions	Approx. time for each question in mins.(t)	Number of questions (n)	Approx. time for each form of question in mins. (n×t)
1.	Long Answer Type(LA-I)	12	01	12
2.	Short Answer Type(SA-I)	07	04	28
3.	Short Answer Type(SA-II)	10	01	10
4.	Very Short Answer Type(VSA)	02	05	10
Total			11	60

As the total time is calculated on the basis of number of questions required to be answered and the length of their anticipated answers, it would therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

- Scheme of Option

There will be no overall choice. However, there may be internal choice in sub questions of 4 marks category.

- Weightage to difficulty level of questions:

Sr. No.	Estimated difficulty level of question	Marks	Percentage
1.	Easy	04	20%
2.	Average	12	60%
3.	Difficult	04	20%
Total			

A question may vary in difficulty level from individual to individual. As such, the assessment in respect of each question will be made by paper setter, on the basis of general anticipation from the group as a whole, taking the examination. This provision is only to make the paper balanced in weightage, rather than to determine the pattern of marking at any stage.

DESIGN OF MODEL QUESTION PAPER (FINAL EXAM)

CLASS: - XII

SUBJECT: -COMPUTER SCIENCE

TIME: - 2^{1/2} hrs

MAX. MARKS:- 55

The weightage or the distribution of marks over different dimension of the question paper shall be as follows.

- Weightage to learning outcomes:

Sr. No.	Learning outcomes	Marks	Percentage of marks
1.	Knowledge	11	20%
2.	Understanding	33	60%
3.	Application	11	20%
4.	Skill	-	-
Total		55	100%

- Weightage to content/ subject units:

Sr. No.	Units	Marks
1.	PROGRAMMING IN C++	20
2.	DATA STRUCTURES	12
3.	FILE HANDLING	08
4.	BOOLEAN ALGEBRA	08
5.	COMPUTER NETWORKS	07
Total		55

- Weightage to forms of questions:

Sr. No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Long Answer Type(LA-I)	04	02	08
2.	Short Answer Type(SA-I)	02	11	22
3.	Short Answer Type(SA-II)	03	05	15
4.	Very Short Answer Type(VSA)	01	10	10
Total			28	55

.....2.

The expected time for different types of question would be as follows:

Sr.No	Form of Questions	Approx. time for each question in mins.(t)	Number of questions (n)	Approx. time for each form of question in mins. (nxt)
1.	Long Answer Type(LA-I)	12	02	24
2.	Short Answer Type(SA-I)	06	11	66
3.	Short Answer Type(SA-II)	08	05	40
4.	Very Short Answer Type(VSA)	02	10	20
Total			28	150

As the total time is calculated on the basis of number of questions required to be answered and the length of their anticipated answers, it would therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

- Scheme of Option

There will be no overall choice. However, there is an internal choice in 2 questions of 4 marks category and 1 question of 3 marks category.

- Weightage to difficulty level of questions:

Sr. No.	Estimated difficulty level of question	Marks	Percentage
1.	Easy	11	20%
2.	Average	33	60%
3.	Difficult	11	20%
Total		55	100%

A question may vary in difficulty level from individual to individual. As such, the assessment in respect of each question will be made by paper setter, on the basis of general anticipation from the group as a whole, taking the examination. This provision is only to make the paper balanced in weightage, rather than to determine the pattern of marking at any stage.

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
MODEL QUESTION PAPER OF FIRST FORMATIVE EXAMINATION

MAXIMUM MARKS: 20

DURATION: 60 MINUTES

SUBJECT : COMPUTER SCIENCE

STD:XII

Instructions:-

1. All questions are compulsory, however there is an internal choice for question number 11.
2. Programs should be written in C++ only.
3. State your assumptions clearly.

Section-A consists of 05 questions of 01 mark each.

Section-B consists of 04 questions of 02 marks each

Section-C consists of 01 question of 03 marks each

Section-D consists of 01 questions of 04 marks each

SECTION A

1. Define an Inline function [01]
2. What is a class? [01]
3. What is a copy constructor ? [01]
4. Consider the following function prototype [01]

`int mul (int i , int j =10, int k);`

Is the above function prototype is correct or not? If not Justify

5. What is Function Overloading? [01]

SECTION B

6. List any four characteristics of constructor function [02]
7. Write a user defined function to display the following pattern for N lines [02]

```
1    2    3    4
5    6    7
8    9
10
```

The function should accept the number of lines as its argument.

8. Replace the following IF ELSE ladder by a SWITCH statement [02]

```
if (x==5)
    a++;
else if (x == 6) || (x== 9)
    b++;
else
    c++;
```

9. Determine the output of the following program: [02]

```
#include <iostream.h>

int g = 20;

void func( int &x, int y)
{
    x = x-y;
    y = x*10;
    cout<<x<<" , "<< y <<endl;
}

void main( )
{
    int g = 7;
    func (g , : : g);
    cout<< g<< " , "<<: : g<< endl;
    func (: : g , g);
    cout<< g<< " , "<<: : g<< endl;
}
```


SECTION C

10. Write a user defined function to print N numbers of Fibonacci series [03]

The function should accept total number of numbers as its argument

0, 1, 1, 2, 3, 5, 8, 13upto N term

SECTION D

11. Define a class SERIAL in C++ with the following specification [04]

Private Members

- A data member serialcode of type long.
- Title an array of 20 characters
- A data member duration of type float.
- A data member noofepisodes of type int.

Public Members

A constructor to initialize duration as 30 and no of episodes as 10

- A function Newserial() to accept values for serialcode and Title.
- A function Otherentries() to assign the values of duration and noofepisodes with the help of corresponding values passed as parameters to this function.
- A function Displaydata() to display all the data members on the screen

Write only the function definition

OR

Define a class employee with the following specification

Private Members

- A data member empno of type integer.
- A data member ename an array of 20 characters.
- A data member basic, hra, da and netpay of type float
- A member function calculate () to find the sum of basic, hra and da with float return type.

Public Members

- havedata() : to accept value for empno, ename, basic, hra, da and invoke calculate () to calculate netpay.
- Displaydata() :- function to display all the data members on the screen

Write only the function definition.

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MODEL QUESTION PAPER OF SECOND FORMATIVE EXAMINATION

MAXIMUM MARKS: 20

DURATION: 60 MINUTES

SUBJECT : COMPUTER SCIENCE

STD: XII

Instructions:-

1. All questions are compulsory, however there is an internal choice for question number 11.
2. Programs should be written in C++ only.
3. State your assumptions clearly.

Section-A consists of 05 questions of 01 mark each.

Section-B consists of 04 questions of 02 marks each

Section-C consists of 01 question of 03 marks each

Section-D consists of 01 questions of 04 marks each

SECTION A

1. Define Multilevel inheritance. [01]
2. Define an array. [01]
3. Define pointer [01]
4. Define the term linear linked list [01]
5. Evaluate the postfix expression 5, 4, +, 3, * [01]

SECTION B

6. Write a short note on private derivation. [02]
7. Consider the following class declaration and answer the questions given below [02]

```
class WORLD
```

```
{
```

```
    int H;
```

```
class COUNTRY : private WORLD
```

```
{
```

```
    int T;
```

```

        protected:
        int s;
        public:
            void INPUT(int );
            void OUTPUT ( );
};

class STATE: public COUNTRY
{
    int m;
    public:
        void DISPLAY ( );
};

```

- a) Name the base class and derived class of the class COUNTRY.
- b) Name the data member(s) that can be accessed from function DISPLAY();
- c) Name the member functions which can be accessed from the objects of class STATE.
- d) Is the member function OUTPUT () accessible by the objects of class COUNTRY. Justify.

8. Perform Insertion Sort on the following list of numbers. Show the contents of [02]
the array after every iteration / pass.

10, 4, 1, 8, -1

9. Write a user defined function in C++ to find the number of positive and negative and [02]

zero elements present in a single dimensional array storing integer elements

The function should accept the array and its size as an argument.

For e.g. if A = { -1, 0, 1, -4, 8, 3 }

No. of zero elements = 1

No. of positive elements = 3

No of negative elements = 2

SECTION C

10. Write a user defined function in C++ to perform deletion of an element in a single [03]
dimensional array where $1 \leq pos \leq n$

The function should accept the array, its size and the position of the element to be
deleted as an argument

SECTION D

11. Consider the following class declaration

```
class linkedlist
{
    struct node;
        {   int data;
            node *next;
        } * head;
public:
    linkedlist (); {head =NULL;}
    void create ();
    void display ();
};
```

Define the following member functions.

- Member function create () which creates a linear linked list of N nodes
- Member function display () which displays the linear linked list.

OR

Consider the following class declaration

```

class linkedlist
{
    struct node;
        {    int data;
            node *next;
        } * head;
public:
    linkedlist (); {head =NULL;}
    void create ();
    void insert ( );
    void display ();
};

```

Define the member function insert () which inserts a node at any position in the linear linkedlist where $1 \leq \text{pos} \leq n+1$

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MODEL QUESTION PAPER OF FINAL EXAMINATION

MAXIMUM MARKS: 55

DURATION: 150 MINUTES

SUBJECT : COMPUTER SCIENCE

Instructions:-

1. All questions are compulsory, however there is an internal choice for question number 22,27 and 28.
2. Question number from 1 to 5 should be attempted only once.
3. Programs should be written in C++ only.
4. State your assumptions clearly.

Section-A consists of 10 questions of 01 mark each.

Section-B consists of 11 questions of 02 marks each

Section-C consists of 05 question of 03 marks each

Section-D consists of 02 questions of 04 marks each

SECTION A

1. Write the CORRECT alternative from those given below : [01]
The mechanism of deriving a class from another derived class is known as _____ inheritance
 - Hybrid
 - Multilevel
 - Hierarchical
 - Multiple
2. Write the CORRECT alternative from those given below : [01]
 - In a doubly linked list we have in each node two links to next two nodes
 - Two copies of link to next node
 - Two copies of data
 - Two links, one to previous and one to next node
3. Write the CORRECT alternative from those given below : [01]
Random access for I/O is possible using file pointers in C++ for _____
 - Text files only
 - Binary files
 - Text files and binary files
 - Both. But only in read mode for Binary files.
4. Write the CORRECT alternative from those given below : [01]

The dual of the Boolean expression $(A + B)(A\bar{C}) \cdot B$ is _____

- $(A + B) + (A + \bar{C}) \cdot B$
- $(A \cdot B) + (A + \bar{C}) \cdot B$
- $(A + B)(A + \bar{C}) \cdot B$
- $(A \cdot B) + (A + C) \cdot B$

5. Write the CORRECT alternative from those given below : [01]

Suggest the most suitable (very high speed) service to provide data connectivity between admission building located in Delhi and the campus located in Goa from the following options.

- Telephone line
- Co-axial cable
- Twisted pair cable
- Satellite connections

6. Define Inline function [01]

7. What is the advantage of postfix expression over infix expression ? [01]

8. Consider a queue of size 4. Insert elements 70, 25, 20. Delete two elements [01]
from queue and insert 40. Show the status of FRONT and REAR at the end of all operation.

9. What is a Web Browser? [01]

10. Expand the following abbreviations with respect to computer networks [01]

i) HTML

ii) URL

SECTION B

11. Answer the questions i) ii) and iii) after going through the following program [02]

class sports


```

{
    int time;

    public sports ( )                //function 1
    {
        time = 0;
    }

    void display ( )                // function 2
    {
        cout << “ It is a sports festival”;
    }

    sports ( int duration )        // function 3
    {
        time = duration;
    }

    sports(sports sf )            //function 4
    {
        time =f.duration
    }
};

```

- i) Which feature of object oriented programming is demonstrated using function 1, function 3 and function 4 ?
- ii) Which category of constructor function 4 belongs to and what is the purpose of using it?
- iii) Identify the type of constructor depicted in function 3.

12. State any four special characteristics of Destructors.

[02]

13. Write a user defined function series () having two parameters x of type double [02]
and N of type integer to find and return the sum of the series given below

$$x + \frac{x^2}{3!} + \frac{x^3}{5!} + \dots \dots \dots \frac{x^n}{(2n-1)!}$$

14. Differentiate between Call by value and Call by Reference in Functions. [02]

15. State a point of difference between each of the following [02]

- i) Stack and Queue
- ii) Linear Queue and circular queue

16. State a point of difference between each of the following [02]

- a. ifstream class and ofstream class
- b. seekg () and seekp ()

17. A “RECORD .DAT” files exist containing records of type class employee [02]

Using obj as the object of fstream class.

- i) Give a single command to open the file in append mode.
- ii) In continuation of the above command, explain the position of the file pointer

18. Simplify the following Boolean expression using Boolean laws. [02]

$$F = \overline{A\overline{B}(A+C)} + \overline{A\overline{B}(A+\overline{B}+C)}$$

19. Represent the Boolean expression $P(\overline{Q} + R)$ with the help of NOR gates only. [02]

20. Write a short note on twisted pair cable ? [02]

21. State two advantages and two disadvantages of bus Topology [02]

SECTION C

22. Define a class book with complete function definitions in C++ with following specification ., [03]

Private:

- Book_No of type integer
- Book_title of type string, size[30]
- Price of type float
- Total_cost() to compute the total cost to be paid as price x N_copies is the number of copies passed as an argument to the function.

Public :

- Input() To take input for Book_No, Book_title, Price
- Purchase () To take input for N_copies and display total cost by calling function Total_Cost()

Write a function main() to declare an array of objects and call the necessary functions for N Books ($N \leq 10$) where N is the number of books to be purchased.

OR

Define a class competition with complete function definitions in C++ with following specification ., [03]

Private:

- Event_No of type integer
- Description of type string, size[30]
- Score of type integer
- Qualified of type character

Public :

A constructor functions to assign initial values Event_no as 101 description as “ state level”, score as 50 and qualified as ‘N’

- Input() To take input for Event_No, description and score.
- Award () To award qualified as ‘y’ if score is more than the cutoffscore passed as argument to the function else ‘N’
- Show() To display all the details

Write a function main () accepting the input for cutoffscore and call the necessary functions.

23. Write a complete procedural C++ program to generate the following pattern [03]
for N lines

```

*   *   *   *
  *   *   *
    *   *
      *

```

24. Write a function display () in C++ to transfer the content from two arrays FIRST []

and SECOND [] to array FINAL [] . The even places (0, 2, 4,.....) of array FINAL [] should get the content from the array FIRST [] and odd places (1, 3, 5,) of array FINAL [] should get the content from the array SECOND[] .Assume that both FIRST[] and SECOND [] array contain the same number of elements and function display accepts all the arguments.

Ex: If the FIRST [] array contains 30, 60, 90 and the SECOND[] array contains 10, 50, 80 then the FINAL[] array should contain 30, 10, 60, 50, 90, 80.

[03]

25. Given a binary file “ACADEMICS.DAT” containing records of the following class [03]
type:

```

class Exam
{
    char Name [20] ;
    char Address [20 ] ;
    char Status [15];

public :
    void admission ( );
    void show ( );
    int Check_Result (char s [ ])
    {
        Return strcmp (status, s);
    }
}

```

};

Write a function promote () in C++ that would copy all those records which are having status as “PASS” from “ACADEMICS.DAT” to “FINAL.DAT ”

26. Obtain a simplified form for the following Boolean expression using K-Map. [03u]

$$f(a, b, c, d) = \sum(0, 1, 2, 3, 4, 5, 10, 11, 15)$$

Also draw the logic circuit diagram for the simplified expression using basic gates.

SECTION D

27. Write a procedural C++ program to generate perfect numbers from 1 to n where n is the input entered through a keyboard.

Note: A number is called a perfect number if the summation of factors of a number (excluding itself) is equal to the number itself

e.g. 6

$$1 + 2 + 3 = 6 \quad [04]$$

OR

Write a procedural C++ program to generate first n prime numbers where n is a Input entered through a keyboard. [04]

28. Consider the following class declaration [04]

```
class queue_Customer
{
    struct customer
    {
```

```

        int CNo;
        char CName [20];
        customer *link;
    } * rear , * front
public:
    Queue_Customer( )
    {
        rear = front= NULL;
    }

```

Write a function definition of delete_customer () which deletes a node containing customer's information from a dynamically allocated queue and show () to display all nodes in the queue.

Note: Display the information of the customer before deleting node in the function delete_customer();

OR

Consider the following class declaration

[04]

```

class stack
{
    struct node
    {
        float data;
        node *link;
    } * top;

public:
    stack( )
    {
        top = NULL;
    }
    void push( );
    void pop( );
    void show_stack ( );
};

```

Define the following member function in C++ of the stack class

- i) `push()` - to push a node into the stack which is allocated dynamically
- ii) `pop ()` - to remove a node from the stack and release memory.
- iii) `show_stack(0` - to display the stack elements.