SAMPLE QP FOR XI HALF-YEARLY EXAMINATION

SUB: COMPUTER SCIENCE

CLASS - XI

TIME: 3 HOURS

M.M: 70

General Instruction:
   i. All the questions are compulsory.
   ii. Please write down the serial number of the question before attempting it.

Q1. A) Write any two key features of fifth Generation computer.

B) Arrange the following in increasing order of speed and capacity:
   - Mini, Embedded, Super, Mainframe, Micro

C) What is Icon? Write name of any one type of Icon.

D) What are wild card characters? What is the use of wild card characters?

E) Convert the following:
   (i) \( (2AF)_{16} \) to \( (\ ?)_{10} \)
   (ii) \( (38.21)_{10} \) to \( (\ ?)_{2} \)

F) What are utilities software? Write any one example.

G) What is Operating System? Give one example of each single user and multiuser Operating System.

H) Differentiate between compiler and Interpreter. Write one example of interpreter and compiler based language.

Q2. A) What is polymorphism?

B) What is difference between an object and a class?

C) What is difference between a character and a string constant in C++?

D) What do you understand by dynamic initialization? Give one example.

E) What is variable? How many values are associated with it?

F) Write the corresponding C++ expressions for the following mathematical expression:
(i) \( ut + \frac{1}{2} ft^2 \)  
(ii) \( e^{2x^2 - 4x} \)

Q3. A) What do you mean by type casting? What are its types? [2]

B) Write any four identifiers naming rule. [2]

C) What will be the value of the following, if \( j=5 \) initially? [1+1=2]

(i) \( (5 \times \text{++}j) \% 6 \)  
(ii) \( (5 \times j++) \% 6 \)

D) What is the result of the following expression? [1+1=2]

If \( x=2 \) & \( y=3 \), then

(i) \( x>y \) ? cout<<x : cout<<y;  
(ii) \( z = \text{++}x + y + \text{++}y; \)

E) Identify the errors in the following code segment and also write the corrected program. [2]

```
#include <iostream.h>
int main( )
{
    int number, class , sum;
    cout<<"Enter a number and class:" ;
    cin >>number >> class ;
    number + class = sum ;
    cout<<"Sum ="<<sum ;
}
```

Q4 A) Write a program that inputs radius and calculates volume of a sphere using the following formula : [2]

\[
Volume = \frac{1}{3} \pi r^2
\]

B) Write a program to generate the following table using a single cout statement for output: [2]

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>60</td>
</tr>
<tr>
<td>Orange</td>
<td>40</td>
</tr>
<tr>
<td>Bananna</td>
<td>20</td>
</tr>
</tbody>
</table>

C) Write a program to convert given inches into its equivalent yards, feet and inches. (1 yard = 36 inches, 1 foot = 12 inches) [3]
D) Write a program to find the largest of the three given numbers. [3]

Q5. A) What is “Code Generation”? Can a program be executed before it? [2]

B) What is pretty printing? [1]

C) What do you understand by Guard Code? [1]

D) Write any two use of documentation. [1+1]

E) Differentiate between syntax and semantics error. [2]

F) Write any four characteristics of a good program. [2]

Q6. A) What will be the output produced by following code fragment: [1]
    ```
    int i, j;
    for( i=10 ; i<=50 ; i+=10)
        j = i / 2;
    cout<< j<< " " ;
    ```

B) The break statement causes an exit from ……………………. [1]

C) The exit statement causes an exit from ……………………. [1]

D) Write one example of infinite loop using any one looping construct. [1]

E) Predict the output of the following code segment: - [1+1=2]
    ```
    int n=7 ;
    cout<<" -n= "<< -n <<"\n";
    cout<<"n= "<< n - - <<"\n";
    ```

F) Write any two point of difference between a while loop and do-while loop. [2]

G) Write any two point of difference in operation in switch and if- else. [1+1=2]
Q7. A) What is the problem of dangling – else? What is the default dangling – else matching and how it can be overridden? [2]

B) Write an equivalent while loop for the following for loop: [2]
   for ( int i=2, sum=0 ; i<=20 ; i=i+2 )
       sum += i ;

C) Rewrite the following code fragment using switch: [2]
   If (ch == 'O')
       Outstanding ++ ;
   If (ch == 'E')
       Excellent ++ ;
   If (ch == 'G')
       Good ++ ;
   If (ch == 'P')
       Poor ++ ;
   else
       Unknown ++ ;

D) Write a do-while loop that displays numbers 2, 4, 6, 8, …, 18, 20 [2]

E) Write a C++ program to print the Fibonacci series upto the N terms. [3]
   i.e. 0 1 1 2 3 5 8 .......................... N

F) Write a program to print the following output: [3]
   5 5 5 5 5
   4 4 4 4
   3 3 3
   2 2
   1
## Marking Scheme

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Model Answer</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Q 1.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **A)** | (i) **Parallel Processing**- many processors are grouped to function as one large group processor.  
(ii) **Superconductors** – a superconductor is a conductor through which electricity can travel without any resistance resulting in faster transfer of information between the components of a computer.  
½ marks for each correct feature. | ½ + ½ =1 |
| **B)** | For correct arrangement one marks i.e. Embedded , Micro , Mini , Mainframe , Super | 1 |
| **C)** | Icon is a graphic symbol representing a window element.  
For Eg Application Icon, Shortcut Icon, Document Icon, Disk Drive Icon (Any one )  
½ + ½ =1 | |
| **D)** | Two special characters (* and ? ) are called wild card characters in windows. They are useful in searching files because they give flexibility in specifying paths and files.  
½ + ½ =1 | |
| **E)** | (i) \((687)_{10}\)  
(ii) \((100110 . 0011010111)_{2}\)  
For each correct answer ½ marks | ½ + ½ = 1 |
| **F)** | ½ marks for correct definition and ½ marks for example. | ½ + ½ = 1 |
| **G)** | One marks for correct definition of operating system and example of single user and multi user operating system ½ marks each. | 1 + ½ + ½ = 2 |
| **H)** | One marks for each correct difference and one marks for each correct example. | 1+1=2 |
| **Q2.** | | |
| **A)** | Polymorphism is a property by which the same message can be sent to objects of several different classes, and each object can respond in a different way depending on its class.  
For correct definition of Polymorphism one marks. | 1 |
| **B)** | Object is an identifiable entity with some characteristics and behavior.  
OR  
Objects represents data and its associated functions under single unit.  
A class is a template/Blue-print representing a group of objects that share common properties and relationship.  
OR  
A class represents a group of similar objects. | 1 |
One marks for any one correct difference between an object and a class.

C) A character constant in C++ must contain one character and must be enclosed in single quotation marks.
   A string constant is a sequence of characters surrounded by double quotes and each string-literal is by default added with a special character ‘\0’ which marks the end of the string.
   One marks for any one correct difference between a character and a string.

D) Initialization of variable at run time is called dynamic initialization.
   For eg. float avg = sum/count;
   ½ marks for correct definition and ½ marks for correct example.

E) Variable represent named storage locations, whose values can be manipulated during program run.
   Two values associated with a symbolic variable are rvalue (data value, stored at some location in memory) and lvalue (the address in memory at which its data value is stored).
   (½ marks for correct definition and ½ marks for specifying lvalue and rvalue)

F) (i) \( u*t + \frac{1}{2} \cdot f \cdot pow(t, 2) \) or \( u*t + \frac{1}{2} \cdot f \cdot t^t \)
   (ii) \( exp(abs(2 \cdot pow(x, 2) - 4*x)) \)

Q3

A) one marks for correct definition & one marks for its types along with name

B) ½ marks for specifying each rule.

C) Output (i) 0 (zero) (ii) 1

D) Result of expression (i) 1 mark for correct answer (ii) 1 mark for correct answer

E) ½ marks for each correction.

Q4

A) (i) declaration of variable ½ marks
   (ii) writing calculation part correctly 1 marks
   (iii) Displaying output ½ marks.

B) (i) Using tabs properly ½ marks
   (ii) using newline properly ½ marks
   (iii) using single cout properly 1 marks.

C) For correct output of yard, foot and inches 1 marks each.
**Q5**

| **D)** | (i) Writing correct logic for each condition  
OR  
For complete correct program -3 marks |
|---|---|
| **A)** | A compiler translates the corrected program text into object or assembly instruction text understood by the computer. This process of translation is called code generation. 1 marks  
A program cannot be executed before code generation.-1 marks |
| **B)** | When program formatting is done to make a program more readable, it is called pretty printing.  
For correct definition – 1 marks |
| **C)** | The code which can handle exceptional data errors and operational errors is called guard code.  
For correct definition- 1 marks |
| **D)** | 1 marks for each use of documentation.  
1* 2= 2 |
| **E)** | Syntax errors are the errors that occur when rules of a programming language are violated. For Eg X_Y*Z ; //Result in syntax error as underscore is not an assignment operator, it should be = operator..  
2 |
| **F)** | (i) Effective and efficient  
(ii)User friendly.  
(iii)Self Documenting Code.  
(iv) Reliable  
(v) Portable  
(Any four) ½ marks for each characteristics |

**Q6**

<table>
<thead>
<tr>
<th><strong>A)</strong></th>
<th>Output : 25 (1 marks for correct output)</th>
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</table>
| **B)** | The break statement causes an exit from the smallest enclosing while, do-while, for or switch statement.  
OR  
The break statement causes an exit from the innermost loop or switch.  
½ marks for partial correct answer and 1-marks for the above correct answer |
| **C)** | The exit statement causes an exit from the program it appears in.  
½ marks for partial correct answer and 1-marks for the above correct answer |
<p>| | | | |</p>
<table>
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<tbody>
<tr>
<td><strong>Q 7</strong></td>
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</table>
| **A)** | Defining the problem of dangling else – 1 marks  
Specifying the default dangling- else matching -1/2 marks  
Writing example – 1/2 marks |   |   |
| **B)** | (i) initialization of variable correctly – 1/2 marks  
(ii) Writing while loop Condition correctly – 1/2 marks  
(iii) Displaying output correctly – 1/2 marks  
(iv) proper increment of variable – 1/2 marks |   | ½ * 4 =2 |
| **C)** | (i) using switch expression correctly – 1/2 marks  
(ii) writing case constants correctly – 1/2 marks  
(iii) using break correctly – 1/2 marks  
(iv) Using default correctly – 1/2 marks |   | ½ *4 = 2 |
| **D)** | (i) initialization of variable correctly – 1/2 marks  
(ii) Writing do-while loop – 1/2 marks  
(iii) incrementing loop variable – 1/2 marks  
(iii) Displaying output correctly – 1/2 marks |   | 2 |
| **E)** | (i) initialization of variable correctly – 1/2 marks  
(ii) Writing while loop Condition correctly – 1/2 marks  
(iii) writing logic in 3 lines 1/2 marks each – 1/2 *3 marks  
(iv) Displaying output correctly – 1/2 marks |   | 3 |
| **F)** | (i) initialization of variable correctly – 1/2 marks  
(ii) Writing for loop 1 correctly – 1/2 marks  
Writing for loop 2 correctly – 1 marks  
(iii) using newline at proper place - 1/2 marks  
(iv) Displaying output correctly – 1/2 marks |   | 3 |