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Time Allowed : 3.00 Hours

Maximum Marks : 90

- Instructions : (1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.  
 (2) Use Blue or Black ink to write and underline.

**PART - I**

**15x1=15**

Note : (i) Answer all the questions.  
 (ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

- Which is the main component used in First Generation ?  
 (a) Microprocessor (b) Transistors (c) Vacuum tubes (d) Integrated circuits
- Which is a collection of wires used for communication between the internal components of a computer?  
 (a) Program counter (b) BUS (c) Word size (d) Central Processing Unit
- Which one of the following is system software ?  
 (a) MS-Word (b) VLC player (c) MS-Excel (d) Language Processor
- Which Log Off option, puts the computer into a low-power mode that retains all running programs and open windows in computer memory for a super-quick restart ?  
 (a) Sleep (b) Lock (c) Log Off (d) Restart
- Which are named boxes for storing data ?  
 (a) Control Flow (b) Algorithm (c) Variables (d) Functions
- Suppose u, v=5, 10, before the assignment. What are the values of u and v after the sequence of assignments ?  
 $u := v+10$   
 $v := u+10$   
 (a) u, v=10, 10 (b) u, v=30, 10 (c) u, v=20, 10 (d) u, v=20, 30
- Which is the key to construct and to reason about iterative algorithms ?  
 (a) Loop invariant (b) Composition (c) Base Case (d) Decomposition
- Which of the following operator is extraction operator in C++ ?  
 (a) << (b) >> (c) < > (d) !=
- How many times the following loop will execute ? for (int i=2; i<=10; i+=2)  
 (a) 5 (b) 4 (c) 6 (d) 3
- Which is a multiway branch statement in C++ ?  
 (a) continue (b) switch (c) break (d) while
- cin>>n[3]; to which element does this statement accept the value ?  
 (a) 3 (b) 2 (c) 5 (d) 4
- Which of the following is a user defined data type ?  
 (a) char (b) float (c) class (d) int
- The variable declared inside the class are known as data members and the functions are known as :  
 (a) data functions (b) member functions (c) value functions (d) private functions
- Which one of the following C++ operator can be overloaded ?  
 (a) + (b) ? : (c) :: (d) sizeof
- A computer network security that monitors and controls incoming and outgoing traffic is :  
 (a) Cookies (b) Worms (c) Firewall (d) Virus

**PART - II**

**6x2=12**

Note : Answer any 6 questions, question No. 24 is compulsory.

- Write note on warm booting.
- Write short note on HDMI.
- What is Fault Tolerance ?
- Write short note on recursion.
- What is the use of setw( ) format manipulator ?
- Write note on conditional operator in C++.
- What are the main functions of the constructor ?
- What is meant by encryption and decryption ?
- What is meant by nested structure ? Give an example.

**PART - III**

**6x3=18**

Note : Answer any six questions. Question No. 33 is compulsory.

- (a) What is wordlength ? (b) What is bit ?
- Write note on various types of ports in computer.
- List the functions of Windows Operating System.
- Write about notations for algorithms.
- What is string literal ? Give an example.
- Write about default argument in C++ functions with example.
- List the characteristics of destructors.
- Write note on TSCII.

33. List the restrictions to be kept in mind while implementing operator overloading.

**PART - IV**

5x5=25

Note : Answer **all** questions.

34. (a) Write in detail about the characteristics of microprocessor. **OR**  
(b) (i) What is algorithm ?  
(ii) Explain the following principles and techniques for designing algorithms :  
(A) Specification (B) Abstraction (C) Composition (D) Decomposition
35. (a) (i) What is type conversion in C++ ?  
(ii) Explain types of conversions with suitable example. **OR**  
(b) Explain about if, if...else and nested if statements in C++ with syntax and example.
36. (a) Write a C++ program to find sum of the series :  $S=1+x+x^2+\dots+x^n$ . **OR**  
(b) Write in detail about the following C++ functions with general form and suitable example.

37. (a) (i) isalnum( ) (ii) isdigit( ) (iii) strcpy( ) (iv) strcmp( ) (v) strcat( )  
Explain the main features of object oriented programming with its advantages and disadvantages. **OR**

- (b) Write the output for the following C++ program.  
Assume the values for age as 23,  
height as 161.5 and weight as 45.

```
#include <iostream>
using namespace std;
struct Student
{
    int age;
    float height,weight;
}obj;
int main()
{
    cout<<"\nEnter the age :";
    cin>>obj.age;
    cout<<"\nEnter the height :";
    cin>>obj.height;
    cout<<"\nEnter the weight :";
    cin>>obj.weight;
    cout<<"\nYour details :";
    cout<<"\nAge :"<<obj.age;
    cout<<"\nHeight :"<<obj.height;
    cout<<"\nWeight :"<<obj.weight;
    return 0;
}
```

38. (a) (i) Explain the types of inheritance.  
(ii) What are the points to be observed while defining the derived class ? **OR**  
(b) Debug the given C++ program to get the following output :

Output

The width of the box is :20  
The length of the box is :67

Program

```
#include <stream>
using namespace std;
class Box
{
    double width;
public:
    double length;
    int printWidth()
    {
        cout<<"\nThe width of the box is :"<<width;
        cout<<"\nThe length of the box is :"<<length;
    }
    void setWidth(double w,l);
}

void Box::setWidth(double w,double l)
{
    width=w;
    length=l;
}

int MAIN()
{
    Box obj;
    b.setWidth(67.0,20.0);
    b.print Width();
    exit 0;
}
```