Tsl11CS

Tenkasi District
Common Half Yearly Examination - December 2023

Standard 11
COMPUTER SCIENCE

Time Allowed: 3.00 Hours   Maximum Marks: 70

Part - I

1. Answer all the questions.   15×1=15
2. Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

1) Interactive operating system provides
   a) Graphics User Interface   b) Data Distribution
   c) Security Management   d) Real Time Processing

2) What is the meaning of "Hibernate" in Windows XP/Windows 7?
   a) Restart the computer in safe mode
   b) Restart the computer in hibernate mode
   c) Shutdown the computer terminating all the running applications
   d) Shutdown the computer without closing the running applications

3) How many times the loop is iterated?
   $i := 0$
   while $i \neq 6$
   $i : i+1$
   a) 5   b) 6   c) 7   d) 0

4) A loop invariant need not be true
   a) at the start of the loop   b) at the start of each iteration
   c) at the end of each iteration   d) at the start of the algorithm

5) Which of the following operator is extraction operator in C++?
   a) >>   b) <<   c) <<<   d) >>>

6) Which of the following operator returns the size of the data type?
   a) sizeof ()   b) int ()   c) long ()   d) double ()

7) In C++, the group of statements should be enclosed within:
   a) { }   b) [ ]   c) ( )   d) < >

8) Which function is used to convert the given string into Uppercase letters?
   a) toupper()   b) isupper()   c) strupr()   d) strupper()

9) How many bytes allocated for the given array in Dev C++ compiler?
   int num [5];
   a) 4 bytes   b) 5 bytes   c) 10 bytes   d) 20 bytes

10) Which of the following supports the transitive nature of data?
    a) Inheritance   b) Encapsulation   c) Polymorphism   d) Abstraction

11) The member function defined within the class behave like _____ functions.
    a) inline   b) non inline   c) outline   d) data

12) Which of the following reduces the number of comparisons in a program?
    a) Operator overloading   b) Operations overloading
    c) Function overloading   d) Member overloading

13) A class is derived from a class which is a derived class itself, then this is referred to as
    a) Multiple inheritance   b) Multilevel inheritance
    c) Single inheritance   d) Double inheritance

14) The process of converting cipher text to plain text is called
    a) Encryption   b) Decryption   c) Key   d) Proxy server

15) Strings are called as
    a) Constants   b) Literals   c) Identifiers   d) Characters

Part - II

Answer any six questions. Question No. 24 is compulsory: 6×2=12

16) Distinguish Primary and Secondary memory.
17) Convert $(-24)_{10}$ into Binary number.
18) What are the different operating system used in computer?
19) Define an algorithm.
20) Does testing the loop condition affect the loop invariant? Why?
21) What is a reference variable? What is its use?
22) What is parameter? and list its types.
23) Write the disadvantages of OOP.
24) Write a while loop that displays numbers:
    4, 8, 12, ... 40

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Part - III

Answer any six questions. Question No. 33 is compulsory: 6×3=18

25) Write down the interfaces and ports available in a computer.
26) Write a note on the elements of a window.
27) Define a function to double a number in two different ways:
    (1) n+n (2) 2×n
28) Describe the differences between Keywords and Identifiers.
29) Write the syntax and purpose of switch statement.
30) Define an Array. What are the types?
31) Define information hiding.
32) How does a compiler decide as to which function should be invoked when there are many functions? Give an example.
33) Read the following C++ snippet and answer the questions given below.

```
class student
{
    int m, n;
public:
    void add ();
    float calc ();
} x1, x2;
```

i) Identify the members of the class.
ii) What is the size of the objects x1, x2 in memory?

Part - IV

Answer all the questions: 5×5=25

34) a) Explain the basic components of a computer with a neat diagram. **(OR)**
    b) How AND and OR can be realized using NAND and NOR gate?
35) a) Explain the versions of windows operating system.   **(OR)**
    b) What are the characteristics of constructor?
36) a) Explain call by reference method with suitable example.   **(OR)**
    b) What is an entry control loop? Explain any one of the entry controlled loop with suitable example.
37) a) Write the differences between object oriented programming and procedural programming.   **(OR)**
    b) What are the rules for operator overloading?
38) a) Explain the different types of Inheritance.   **(OR)**
    b) Write the output for the following program.

```cpp
#include <iostream>
using namespace std;
class nest
{
    int x1;
    int square_num ()
    {
        return x1 * x1;
    }
public:
    void input_num ()
    {
        cout<<"\n Enter the number";
        cin >> x1;
    }
    int cube_num ()
    { return x1 * x1 * x1;}
    void disp_num ()
    {
        int sq=square_num ();
        int cu = cube_num ();
        cout<<"\n The square of"<<x1<<"is"<<sq;
        cout<<"\n The cube of "<<x1<<"is"<cu;
    }
};
int main ()
{
    nest n1;
    n1.input_num();
    n1.disp_num();
    return 0;
}
```

|1|

XI Standard - (Computer Science)
Tenkasi District.
Half Yearly Examination - Answer key-2023.

Part-I

1. a) Graphical User Interface.
2. d) shut down the computer without closing the running applications.
3. a) 5
4. d) at the start of the algorithm
5. a) >>
6. a) Size of
7. a) { }
8. a) to upper c)
9. d) 20 bytes.
10. a) Inheritance.
11. a) Inline.
12. c) function overloading.
13. b) Multilevel inheritance.
14. b) Decryption.
15. d) Characters.

Part-II

16.
1.

Primary memory	Secondary memory
It is used to temporarily Store the Programs and data when the instructions are ready to execute.	It is used to store data Permanently.
2. It is a volatile, the Content is lost, when the Power supply is switched off.	It is non-volatile, the content is available even after the power supply switched off.
3. Example: RAM	Example: CD-Rom, DVD-Rom, Hand disk —etc.

— 2 marks

TENKAM Any two Points.

17)

```
2 | 24
2 | 12 - 0
2 | 6 - 0
2 | 3 - b
    1 - 1
```

1's complement ⟹

HHOOHH

$(-24)b = 0001100c$

Binary representation of $(24)10 = 11000$ — 2 marks

8 bit representation ⟹ 00011000

18)   * UNIX   * Mac os.

* Microsoft windows   * Solaris.

* Linux.

                (any 4)   — 2 marks

19)   An algorithm is a sequence of instructions to accomplish a task or solve a problem. — 2 marks

20)   * No, the loop conditions do not affect the loop variant   — 1 mark

* Because each time the loop body is executed repeatedly, the variables are updated. However, there is also a property of the variable which remains unchanged by the execution of the loop body.

* This unchanging property is called the loop invariant.   — 1 mark

21)   * A Reference Vari provides an alias for a previously defined variable

* Declaration of a reference consists of base type and an & symbol.

* reference variable name is assigned the value of a previously declared variable. — 2 marks.

Syntax:

⟨type⟩ ⟨& reference_variab⟩ = ⟨original_variab⟩

22) × Arguments or Parameters are the means
to Pass values from calling function to the called
function.   — 1 marks
          (1) formal Parameters   (2) Actual Parameters.
                                             — 1 marks

23)   1. Size   3. Speed.
            2. Effort
                                             2 marks.

24)   ## Include <iostream>
            using namespace std;
            ── int main()
            ──   {
            ──   int i=4;
            ──   while (i <= 40)
                     {
                     Cout << "i" << "\t";
                     i += 4;   (OR) i = i+4;
                     }
            ── return 0;
                  }
            (OR) Any suitable program
                                             — 2 marks

Part-III

25)   Serial Port   Audio Plugs
          Parallel Port   Ps/2 port
          USB Port   SCS I port
          NGA connector

                       (Explain any 3) — 3 marks
26)   Title bar
                       Scroll bars
          Menu bar
                       Corners & borders.
          The workspace
                       With Definition
                                             — 3 marks

27) a)(1) Double (n)
         ── Input: n is real number or an integer, n > 0
         ── output: y is a real number or an integer.
            ── Such that   y = m+n. — 1/2 marks
     (2) Same Answer: output: y = 2 × n   1/2 marks

28)

keywords	identifiers
1. Keywords are reserved words which convey specific meaning to the compiler.	Identifiers are user defined names given to different parts of the CH program.
2. They are essential elements to construct CH programs.	These are fundamental building blocks of a program.
3. Example: Switch, if, for etc	Example: name, age, c

(OR) Any 3 differences.

— 3 marks

29)
```
Switch (expression)
{
    Case constant 1:
        Statement (S)
        break;

    Case constant 2:
        Statement (S)
        break;
            ·
            ·
    default:
        Statement (S)
}
```
— 2 marks

* It provides an easy way to dispatch Execution to different parts of code based on the value of the expression (OR)

* It replaces multiple if_else sequence.

— 1 marks.

30) An array is a collection of variables of the same type that are referenced by a common name.

— 2 marks

Types!

* one dimensional array   * multi dimensional array.
* Two   "   "

— 1 marks.

31) * Data and functions are bound together into a single unit is known as Encapsulation.

* Encapsulation of data from direct access by the program is called data hiding or Information hiding.

— 2 marks

32. * When you can overloaded function, the compiler determines the most appropriate definition to use by comparing the arguments types you have used to call the function with the parameter types specified in the definition

* The process of selecting the most appropriate overloaded function or operator is called overloaded resolution. — 2 marks

Example:

float area (float radius)

float area (float half, float height)

float area (float length, float breadth)

(OR) Any Example. — 3 marks

33) i) M,n, add(), call()

ii) X1 = 8 bytes   X2 = 8 bytes

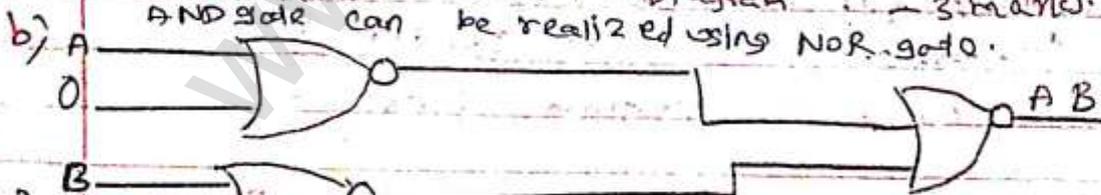— 3 marks

Part - IV

34) a) 1. Arithmetic Logic Unit
2. Control Unit
3. Memory Unit
4. Input Unit
5. Output Unit   (2 marks)

Explanation with diagram — 3 marks.
AND gate can be realized using NOR gate.

b) A
0

B
0

A B

equivalent to A B
   B   AB

OR gate can be realized using NAND gate.

A
1

B

A + B

equivalent to

A + B

— 5 marks

34) a) Windows 1.X – 1985   Windows XP – 2001
       2.X – 1987   ) Vista – 2006
       3.X – 1992   ) 7 – 2009
) 95 – 1995   ) 8 – 2012
) 98 – 1998   ) 10 – 2015.
) N J. –
) me – 2000
    0) 2000 – 2000
                With Definition   – 5 marks.

b)   ✗ The name of the constructor must be same as
    that of the class
       ✗ No return type can be specified
    for constructor
       ✗ A constructor can have parameter List
       ✗ The constructor function can be overbaded
       ✗ They cannot be inherited but a derived
    Class can call the base class constructor.
              (OR) Any 5 Points   – 5 marks

35) a) ✗ The method copies the address of the
    actual argument into the formal parameter.
       ✗ The address of the argument is passed
    any change made in the formal parameter
    will be reflected back in the actual
    Parameter.   – 2 marks
              Example Program: 3 marks.

    forloop: δ
b)   ✗ It is a entry controlled loop and
    is the easlest looping statement which allow
    code to be executed repeatedly
    for (Initialization; test expression; update expression)
       {
       Statement 1;
       Statement 2;

(or) Any example. — 4 marks

(or)

While loop is a control flow statement that allows the loop statements to be executed as long as the condition is true.

The while loop is an entry controlled loop because the test expression is evaluated before entering into a loop

while (Test expression)
{
    body of the loop,
    3 Statement - 2. — 4 marks
}

Entry controlled loop.

In entry loop, first the test expression is evaluated and if it is nonzero the body of the loop is executed, otherwise the loop is terminated. — 1 marks

37) a)

Procedural Programming object oriented	Procedural Object oriented Programming.
1. Data and its associated Operations are grouped into single unit using class objects.	Programs are organized in the forms of Subroutines or SR programs.
2. OOPS emphasizes on data rather than algorithm.	Procedural programming. Emphasis on doing Difficult to thing.
3. Programs are designed around the data being operated.	maintain and enhance the program code as any change.
4. Example : C++, Java, VBNet, Python etc	Ex: FORTRAN, COBOL.

b)
1. Precedence of Associativity of an operator cannot be changed.

2. No new operators can be created / only existing operators can be overloaded.

3. Cannot redefine the meaning of an operator's procedure.

4. Overloaded operators can be given to an operator.

5. When binary operators are overloaded, the left hand object must be an object of the relevant class.

— 5 marks.

38) a) 1. Single Inheritance
2. Multilevel "
3. Multiple "
4. Hierarchical "
5. Hybrid "

With Explanation — 5 marks.

b) Enter the number 2
The square of 2 is 4
The cube of 2 is 8
(output changed with respect to input value)

— 5 marks

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