FIRST YEAR HIGHER SECONDARY

MODEL EXAMINATION – FEBRUARY 2023

COMPUTER SCIENCE

PART-I

Answer any 5 questions from 1 to 6. Each carries 1 score. (5×1-5)

1. Which is the MSB representation of -90 in the sign magnitude representation method?

A: 1

2. Which flowchart symbol is always used in Pair?

A: Connector symbol

3. Name a ternary operator in C++.

A: Conditional operator

4.___is the built in function used to terminate the program.

A: exit()

5. Expand the term Wi-MAX.

A: Worldwide Interoperability for Microwave Access

6. Acquiring information such as username, password, and credit card details etc. using misleading websites is known as___

A: Phishing

PART-II

Answer any 9 questions from 7 to 18. Each carries 2 scores. (9×2=18)

7. One of the following number is invalid, find it and state the reason for invalidity.

i) $(101001)_8$ ii) $(111)_2$ iii) $(768)_8$ iv) $(ABC)_{16}$

A: iii) $(768)_8$ is invalid since the number 8 will not be used in Octal number system

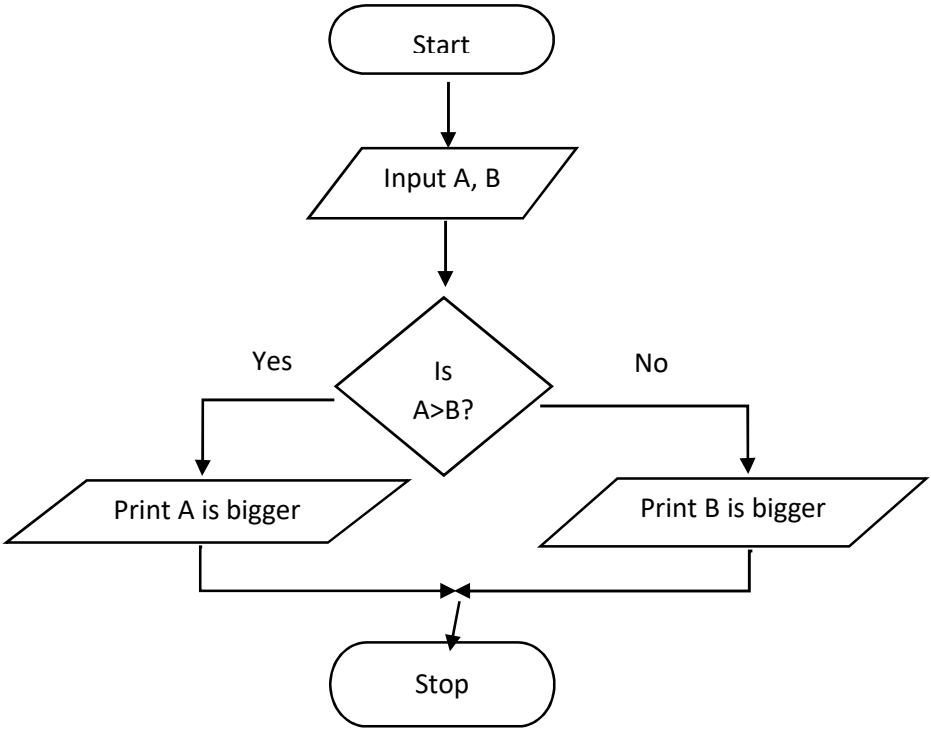
8. Write any 2 differences between RAM and ROM

A:

RAM	ROM
It allows reading and writing	Allows reading only
It is volatile	Non-volatile

9. Draw a flowchart to find the bigger of two numbers.

A:



10. Find the invalid identifier names from the following and give the reason for invalidity.

_8AC Z$ B7 for INT

A: Z$ - $ symbol is not allowed

for – Keyword is not allowed

11. What is L-value and R-value of a variable?

A: L-value is the address and R value is the content of the variable

12. Compare entry controlled loop with exit controlled loop.

A:

Entry controlled loop	Exit controlled loop
No guarantee to execute at least once	Execute at least once
E.g. for, while	E.g. do while

13. List the name of any 4 operations that can be performed on an array.

A: Traversing, Searching, Insertion, Deletion.

14. Write an algorithm for linear search.

A: Step 1: Start

Step 2: First, read the search element, say x

Step 3: Compare the x with the first element.

Step 4: If not matched, compare x with the next element.

Step 5: If matched, display "Element found" and go to last step.

Step 5: Repeat steps 3 and 4 until the last element

Step 6: If no match, print "Element is not found"

Step 7: Stop

15. Distinguish between call by value and call by reference method.

Call by value method	Call by reference method
Ordinary variables are used as formal parameters.	Reference variables are used as formal parameters
The changes made in the formal arguments do not reflect in actual arguments.	The changes made in the formal arguments to reflect in actual arguments.

16. List the name of any 4 character functions in C++.

A: isupper( ), islower(), isalpha(), isdigit()

17. List and explain any 2 advantages of computer networks.

1. Resource sharing

Resources can be shared using network. Resources may be hardware (hard disk, printer, scanner etc.) or software (application software, anti-virus etc.).

2. Communication

Communication is easy and faster using networks. E-mail, chat, video conference etc. are examples.

18. Write any 4 advantages of social media.

A: Social media helps to

- Bring people together
- Plan and organize events
- Business promotion
- Social skills

PART-III

Answer any 9 questions from 19 to 29. Each carries 3 scores. (9×3=27)

19. Match the following:

a) ABACUS 1) Charles Babbage

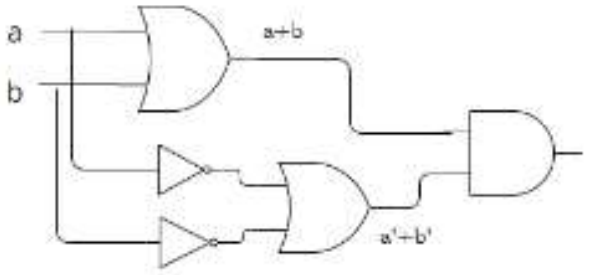
b) Napier's Bones 2) Wheels and Gears
c) Pascaline 3) Counting Frame
d) Leibnitz's Calculator 4) Punched Card
e) Jacquard's Loom 5) Numbering Rods
f) Analytical Engine 6) Step Reckoner

A:

a) ABACUS 3) Counting Frame
b) Napier's Bones 5) Numbering Rods
c) Pascaline 2) Wheels and Gears
d) Leibnitz's Calculator 6) Step Reckoner
e) Jacquard's Loom 4) Punched Card
f) Analytical Engine 1) Charles Babbage

20. Construct a logical circuit for the expression

$f(a,b) = (a+b).(\bar{a}+\bar{b})$



$(a+b).(\bar{a}+\bar{b})$

21. Categorize the software given below into operating system, application software and utility program.
Ubuntu, Open Office Calc, Windows, WinZip, GIMP, Kaspersky

A:

OS	Application software	Utility program
Ubuntu, Windows	Open Office Calc, GIMP	WinZip, Kaspersky

22. Explain the different types of errors that are occurred during the compilation and running of a program.

1. Syntax errors: - Syntax errors occur when the rules (syntax) of the language are not followed. E.g. Not using semicolon at the end of a statement.

2. Logical errors: - These errors occur when the programmer makes a logical mistake. E.g. placing + symbol instead of * symbol.

3. Run-time errors: - These errors are detected only during the execution. E.g. Try to divide a number by zero.

23. Explain any 3 Tokens available in C++.

1.Keywords

Keywords are reserved words with a pre-defined meaning E.g. if

2.Identifiers

Identifiers are user-defined words. It is used to name different program elements such as memory location, function name, object name etc.

3.Puncturators

Punctuators are special symbols used in the program. E.g. #

24. Write another 3 forms of the C++ statement a = a+1:

A: a++; ++a; a+=1;

25. What is the role of relational operators in C++?

Distinguish between == and =

A: Relational operators are used for comparing two expressions in C++. '=' is an assignment operator used to assign values from RHS to LHS. '==' is a comparison operator used for equality checking.

26. Distinguish between break and continue statements in C++.

A:

break	***Continue***
Used with switch or loops	Used only with loops
Takes the control outside the loop	Does not take control out of loop
Causes to terminate the loop	Skips one iteration of the loop

27. Differentiate between put() and write() with an example.

A: **put()**

This is used to display a character. The object cout is used with this.

E.g. char ch = 'K'

cout.put (ch); // Displays 'K'

write()

This is used to display a string. It can give one or two arguments. First argument is a character array and the second argument can specify how many characters to be displayed.

E.g. char str[50] = "This is to check the stream function" ;

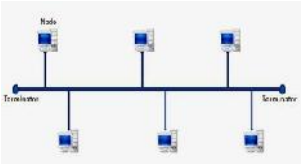
cout.write (str, 16) ; //This will display "This is to check"

28. Write a short note on any 3 network topologies.

1. Bus

In bus topology, all the nodes are connected to a main cable called bus. Characteristics of a bus are

- Easy to install
- Requires less cable length
- Inexpensive



2. Star

In star topology each node is directly connected to a hub or switch. Its characteristics are

- More efficient compared to bus
- Easy to install
- Requires more cable length

3. Ring

In ring topology all nodes are connected to a cable ring. Data travels only in one direction. Its characteristics are

- Requires less cable length
- Inexpensive
- Addition of nodes is difficult

29. Explain about the following social medias.
    a) Internet Forums b) Content communities
    c) Micro blogs.

A:

a. Internet forums: - It is online discussion websites where people can engage in conversations and find solutions in the form of messages. Each discussion on a topic is called a thread. E.g. Ubuntu forum.

b. Content communities: - These are websites that organize and share contents like photos and videos. E.g. Youtube.com

c. Micro blogs: - It allows users to exchange short sentences, images or video links. It can be used for expressing personal opinion. E.g. Twitter.com

PART-IV

Answer any 2 questions from 30 to 32. Each carries 5 scores. (2×5-10)

30. a) Explain any 3 methods of representing integer numbers in computer memory? (3)

b) Find the one's complement of-38 (2)

A: a.

1. Sign and magnitude

In this method, the left most bit is used for sign (+ve or -ve). If the left most bit is zero, then the number is positive. If the left most bit is one, then the number is negative.

2. 1's Complement

In this method numbers are represented as

Positive numbers - As it is (No change)

Negative numbers - Complement of the respective positive number (Complement of 1 is 0 and complement of 0 is 1)

3. 2's Complement

In 2's complement numbers are represented as

Positive numbers - As it is (No change)

Negative numbers - Adding 1 to the 1's complement of that number

b. Binary of 38 is 100110

8 bit representation of 38 is 00100110

1's complement of -38 is 11011001

31. a) What do you mean by e-Waste ? (1)

b) Explain any 4 methods of disposing e-Waste. (4)

A: E-waste refers to electronic products nearing the end of their 'useful life'. It can be discarded computers, electronics, mobile phones, television sets, refrigerators, etc. E-waste disposal methods are

1. Reuse

It refers to second-hand use or usage after the equipment is modified.

2. Incineration

It is a complete combustion process. The waste is burned in specially designed incinerators at a high temperature in the range of 900 to 1000 degree Celsius.

3. Recycling

It is the process of making new products from old products. Monitors, keyboards, hard drivers, CDs, mobiles, printers, CPUs, memory chips etc. can be recycled.

4. Land filling

It is one of the most widely used methods. In this method soil is excavated and waste material is buried in it, which is covered by a thick layer of soil.

32. a) Name and explain the different types of loops in C++(3)

b) Rewrite the following program using while loop. (2)

```
main()
{
        int a, p=1;
        for(a= 1; a <= 5; a += 2)
        p=p*a;
        cout<<p;
}
```

A: for,while and do-while are the three loops in C++. The difference between them is describes below

For	While	do-while
Entry controlled	Entry controlled	Exit controlled
Initialisation with loop definition	Initialisation before loop definition	Initialisation before loop definition
Updation with loop definition	Updation inside loop body	Updation inside loop body
No guarantee to execute at least once	No guarantee to execute at least once	Execute at least once

b.

```
main()
   {
        int a=1,p=1;
        while(a<=5)
        {
                p=p*a;
                a+=2;
        }
        cout<<p;
    }
```