

**FIRST YEAR HIGHER SECONDARY EXAMINATION, MARCH 2025**  
**ANSWER KEY**  
**SUBJECT: COMPUTER SCIENCE**

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**PART – I**

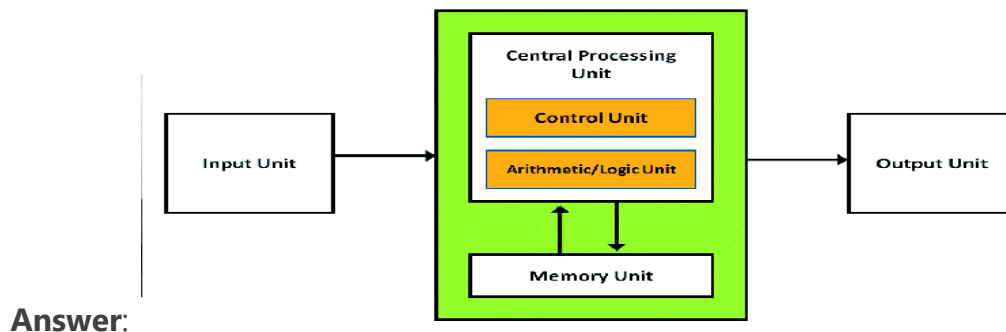
**1 Mark Questions (5 × 1 = 5)**

- 1. Name the logic gate which produces the output 1, only if all the inputs are 1.**  
**Answer:** AND gate
  - 2. The program written in high level language is called \_\_\_\_.**  
**Answer:** Source program
  - 3. Which type of statement is  $m = 10$  ?**  
**Answer:** Assignment statement
  - 4. If  $a = 2$ ,  $b = 3$  and  $c = ++a + b++$ . Find the value of 'c'.**  
**Answer:** 6 ( $++a$  becomes 3,  $b++$  uses 3  $\rightarrow 3 + 3 = 6$ )
  - 5. The smallest index of an array is \_\_\_\_.**  
**Answer:** 0
  - 6. A unique address (12 digit hexadecimal number) assigned to each NIC is called \_\_\_\_.**  
**Answer:** MAC (Media Access Control) address
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**PART – II**

**2 Mark Questions (9 × 2 = 18)**

- 7. Expand the following :**  
(a) ENIAC  
**Answer:** Electronic Numerical Integrator and Computer  
(b) VLSI  
**Answer:** Very Large Scale Integration
- 8. Draw the block diagram of John Von Neumann's computer architecture.**



9. If  $(x)_8 = (101011)_2 = (y)_{16}$ . Find the values of  $x$  and  $y$ .

**Answer:**

- $x = 53$  (Convert each group to octal:  $101 = 5$ ,  $011 = 3$ )
- $y = 2B$  (Convert each group to hexadecimal:  $0010 = 2$ ,  $1011 = B$ )

10. What are the major functions of operating system ?

**Answer:**

1. Process management
2. Memory management
3. File management
4. Device management

11. Distinguish between logical error and syntax error in a program.

**Answer:**

- **Logical Error:** Incorrect logic (program runs, wrong output).
- **Syntax Error:** Violates language rules (prevents compilation).

12. Write an algorithm to print the numbers up to 100 in reverse order.

**Answer:**

1. Start
2.  $N = 100$
3. Repeat step 4 and 5 while  $(N >= 1)$
4. Print  $N$
5.  $N = N - 1$
6. Stop

13. List the data type modifiers in C++.

**Answer:**

- short, long (size modifiers).
- signed, unsigned (sign modifiers).

14. List any 4 operations that can be performed in an array.

**Answer:**

- Traversal,
- Searching,
- Sorting.
- inserting

15. Compare `strcmp( )` and `strncmpi( )`.

**Answer:**

- `strcmp()`: compare two strings, Case-sensitive comparison.
- `strncmpi()`: compare two strings ignoring the cases, Case-insensitive comparison.

16. Explain the difference between call by value method and call by reference method.

**Answer:**

- **Call by Value:** A copy of the actual argument is passed to the function. Changes made to the parameter inside the function do not affect the actual argument.
- **Call by Reference:** The address of the actual argument is passed to the function. Changes made to the parameter inside the function affect the actual argument.

17. Explain the format of URL with an example.

Answer:

<http://www.example.com/contact.html>

- Protocol (e.g., http, https)
- Domain name (e.g., [www.example.com](http://www.example.com))
- File name(e.g.,contact.html)

18. Write the advantages of social media.

Answer:

- Communication and networking
- Information sharing
- Business promotion and marketing
- Entertainment and content creation
- Bring people together
- Plan and organise events
- Social skills

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## PART – III

### 3 Mark Questions (9 × 3 = 27)

19. List and explain any three methods of representing characters in computer memory.

Answer:

- **ASCII:** American Standard Code for Information Interchange, 7-bit code for English. Uses 7 bits per character can represent only 128 characters. ASCII-8 which uses 8 bits can represent 256 characters
- **Unicode:** Universal multi-byte encoding. Unicode used 16 bits or more can represent up to 65,536 characters. It can represent almost all written languages of the world.
- **EBCDIC:** Extended Binary Coded Decimal Interchange Code, 8-bit code for IBM systems. It can represent only 256 characters.

20. Prove that  $(X + Y \cdot Z) = (X + Y) \cdot (X + Z)$  using algebraic method.

Answer:

$$\begin{aligned} \text{RHS} &= (X+Y).(X+Z) \\ &= X \cdot X + X \cdot Z + Y \cdot X + Y \cdot Z \\ &= X + X \cdot Z + X \cdot Y + Y \cdot Z \\ &= X + X \cdot Z + X \cdot Y + Y \cdot Z \\ &= X \cdot (1+Z) + X \cdot Y + Y \cdot Z \\ &= X \cdot 1 + X \cdot Y + Y \cdot Z \\ &= X + X \cdot Y + Y \cdot Z \\ &= X \cdot (1+Y) + Y \cdot Z \\ &= X \cdot 1 + Y \cdot Z \\ &= X + Y \cdot Z \\ &= \text{LHS} \quad \text{Hence proved} \end{aligned}$$

21. Categorize the software given below into operating system, application package, and utility program.

Linux, OpenOffice Calc, Windows, WinZip, Kaspersky, OpenOffice Writer

Answer:

- **OS:** Linux, Windows.
- **Application:** Open Office Calc, Open Office Writer.
- **Utility:** WinZip, Kaspersky.

22. (a) Draw a flow chart for the following algorithm :

Step 1 : Start

Step 2 :  $N = 1$

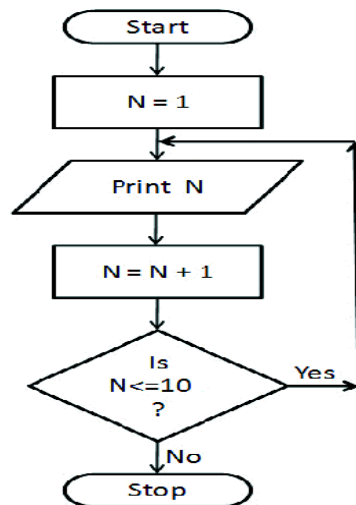
Step 3 : Print N

Step 4 :  $N = N + 1$

Step 5 : if  $N \leq 10$  Then goto step 3

Step 6 : Stop

Answer:



(b) Write the output of the above algorithm.

Answer:

(b) Output: 1 2 3 4 5 6 7 8 9 10

23. Identify invalid identifiers and write reason.

(a) `_4ac`

(b) `a@b`

(c) `For`

(d) `4ac`

(e) `main`

Answer:

- (b) `_a@b`: Contains special character @.
- (d) `4ac`: cannot start with a digit.

24. Differentiate between Type Casting and Type Promotion.

Answer:

- **Type Casting:** Manual conversion of one data type to another .This is done by the programmer explicitly.  
Eg : 5/( int )2.0 => 2 ( Here , programmer uses type casting ( int ) to convert the float data type of 2.0 to int . Thus the result of this integer expression is also an integer .)
- **Type Promotion:** Automatic conversion of a smaller data type to a larger one. This is done by the compiler  
Eg : 5/2.0 => 2.5 ( Here , int data type of 5 is converted to float by compiler. Thus the result of the float expression is also float )

25. Rewrite the following program using while loop and do.....while loop:

```
#include<iostream>
using namespace std;
int main( )
{
    for (int i=1;i<=10;i++)
    {
        cout<<i;
    }
    return 0;
}
```

Answer:

**While Loop:**

```
int i=1;
while(i<=10)
{
    cout<<i;
    i++;
}
```

**Do-While Loop:**

```
int i=1;
do
{
    cout<<i;
    i++;
} while(i<=10);
```

26. Write an algorithm for bubble sorting.

Answer:

- Step 1. Start
- Step 2. Accept a value in N as the number of elements of the array
- Step 3. Accept N elements into the array AR

Step 4. Repeat Steps 5 to 7, (N - 1) times

Step 5. Repeat Step 6 until the second last element of the list

Step 6. Starting from the first position, compare two adjacent elements in the list. If they are not in proper order, swap the elements.

Step 7. Revise the list by excluding the last element in the current list.

Step 8. Print the sorted array AR

Step 9. Stop

27. Write the use of the following string function in C++:

(a) gets( )

(b) getline( )

(c) write( )

Answer:

- (a) gets( ): used to input a single character or stream of characters
- (b) getline( ): used to input a line of text or a string
- (c) write( ): used to display a string

28. Write the syntax and use of following functions in C++:

(a) strcpy( )

(b) pow( )

(c) islower( )

Answer:

- (a) strcpy( ): strcpy(string1,string2) – used to copy a string to another
- (b) pow( ): double pow(double , int) ;- used to find the power of a number.
- (c) islower( ): int islower(char) –used to check whether a character is in lower case (small letter) or not..

29. Explain any 3 advantages of email.

Answer:

- Speed
- Easy to use
- Provision of attachments
- Environment friendly
- Reply to an e mail
- Cost effective
- Available anywhere

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## **PART – IV**

**5 Mark Questions (2 × 5 = 10)**

30. Define the term e-Waste. Explain briefly about any four e-Waste disposal methods.

Answer:

**E-Waste** refers to electronic products nearing the end of their useful life.

Eg: discarded computers, mobile phones, television sets, refrigerators etc.

## Disposal Methods:

1. **Reuse:** It refers to second-hand use.
2. **Incineration:** It is a combustion process in which the waste is burned at a high temperature.
3. **Recycling:** It is the process of making new products from old devices.
4. **Land filling:** In this method soil is excavated and e-waste is buried in it.

31. Write a program to check whether the given number is palindrome or not.

Answer:

```
#include <iostream>
using namespace std;
int main()
{
    int n, rev=0, temp;
    cin >> n;
    temp = n;
    while (temp > 0)
    {
        rev = rev * 10 + temp % 10;
        temp=temp/10;
    }
    cout << (n == rev ? "Palindrome" : "Not Palindrome");
    return 0;
}
```

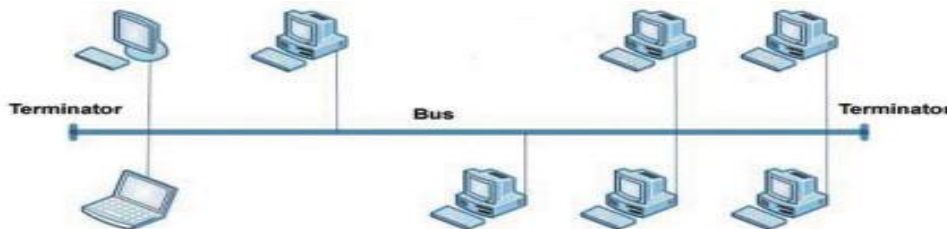
32. Define Network topology. Explain about the four major topologies.

Answer:

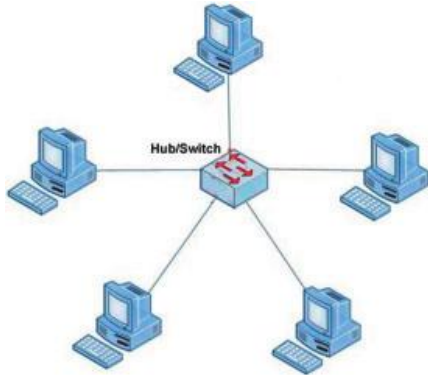
The way in which the nodes are physically interconnected to form a network is called **Network topology**. Major topologies are bus, star, ring and mesh

### Topologies

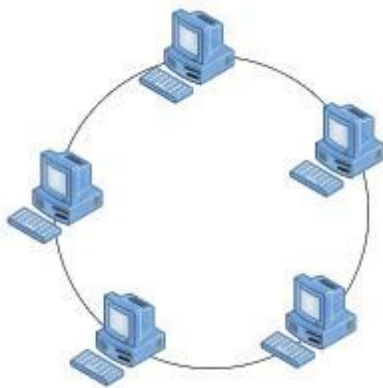
- **Bus Topology:** All devices are connected to a single central cable (bus).
- A small device called a terminator is attached to each end of the bus .If a node has to send data to another node it sends data to the bus. The signal travels through the bus and each node checks the bus and only the intended node will accept the data.



- **Star Topology:** All devices are connected to a central hub or switch.
- If any node has to send some information to any other node it sends the signal to the hub /switch. The signal is then broadcasted to all the nodes. But is accepted only by the intended node. In the case of a switch, the signal is sent only to the intended node.



- **Ring Topology:** Each device is connected to adjacent nodes and form a circle (ring).
- Data travels only in one direction in a ring .Each node regenerates the signal and passes to the next node until it reaches the intended node reaches



- **Mesh Topology:** In mesh topology every node is connected to all other nodes.
- There will be more than one path between two nodes. If one path fails, the data will take another path, and reach the destination.

