NADAR HR.SEC.SCHOOL, RAJAPALAYAM.
XI - COMPUTER SCIENCE – ENGLISH MEDIUM
QUARTERLY EXAM 2024 ANSWER KEY

PART - A

1.	Which one of the following is the main memory?	RAM
2.	How many bytes does 1 KiloByte contain?	1024
3.	For 1101_2 what is the Hexadecimal equivalent?	D
4.	NAND is called as …… Gate	Universal gate
5.	Which is the fastest memory?	Cache memory
6.	File Management manages	All the Above
7.	Under which of the following OS, the option Shift + Delete – permanently deletes a file or folder?	Windows 7
8.	Which of the following activities is not algorithmic in nature?	Walk in the park.
9.	Suppose u, v = 10 ,5 before the assignment. What are the values of u and v after the sequence of assignments? 1 u := v 2 v := u	u, v = 10 ,10
10.	If m x a + n x b is an invariant for the assignment a, b : = a + 8, b + 7, the values of m and n are	m = 7, n = -8
11.	What was the original name given to C++?	C with Classes
12.	Which of the following data types is not a fundamental type?	signed
13.	This can be used as alternate to endl command:	\n
14.	How many times the following loop will execute? for (int i=0; i<10; i++)	10
15.	ASCII Value of "H"	72

PART - B

16)	**What is a computer?** (i) A computer is an electronic device that manipulates information, or data. It has the ability to store, retrieve, and process data. (ii) Computer works faster than human being and given the values more accuracy and reliable
17)	**List the encoding systems for characters in memory.** (i) BCD - Binary Coded Decimal. (ii) EBCDIC - Extended Binary Coded Decimal Interchange Code. (iii) ASCII - American Standard Code for Information Interchange. (iv) Unicode. (v) ISCII - Indian Standard Code for Information Interchange.
18)	**Draw the truth table for XOR gate.** <table><tr><th colspan="2">Input</th><th>Output</th></tr><tr><td>A</td><td>B</td><td>C</td></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>
19)	**What is multi-processing?** This is a one of the features of Operating System. It has two or more processors for a single running process (job). Processing takes place in parallel is known as parallel processing.
20)	**Rename a file :** Mouse right click on a file and choose rename option to rename a file.

21)	**What is the difference between an algorithm and a program?**
	An algorithm is a self-contained step-by-step set of operations to be performed to solve a specific problems. A computer program is a sequence of instructions that complete the rules of a specific programming language, written to perform a specified task with a computer.
22)	**What is an invariant?**
	An expression involving variables, which remains unchanged by an assignment to one of these variables, is called an invariant of the assignment.
23)	**What is meant by a token? Name the token available in C++.**
	The smallest individual unit in a program is known as a Token or a Lexical unit.
	C++ has the following tokens:
	(i) Keywords
	(ii) Identifiers
	(iii) Literals
	(iv) Operators
	(v) Punctuators
24)	**What is the use of setw( ) format manipulator?**
	setw ( ) manipulator sets the width of the fi eld assigned for the output. The fi eld width determines the minimum number of characters to be writt en in output.
	Syntax:
	setw(number of characters)
	Example:
	cout<<setw(25)<<name;
	PART - C
25)	**What is an input device? Give two examples.**
	Input device is used to feed any form of data to the computer, which can be stored in the memory unit for further processing.
	Example: Keyboard, Mouse, Scanner, Fingerprint scanner, Track Ball, Retinal Scanner, Light pen etc.
26)	**What is radix of a number system? Give example**
	A numbering system is a way of representing numbers. Each number system is uniquely identified by its base value or radix. Radix or base is the count of number of digits in each number system. Radix or base is the general idea behind positional numbering system.
	Example :
	Binary Number System - Radix 2
	Octal Number System - Radix 8
	Decimal Number System - Radix 10
	Hexadecimal Number System - Radix 16.
27)	$(88)_{10} \rightarrow (1011000)_2 \rightarrow (130)_8$
28)	**Differentiate Computer Organization from Computer Architecture.**
	(i) Computer Organization deals with the hardware components that are transparent to the programmer.
	(ii) Computer architecture deals with the engineering considerations involved in designing a computer.
29)	**Key Functions of the Operating System**
	Resource Management: The OS allocates and oversees system resources such as CPU time, memory, and input/output devices to ensure efficient and fair usage.
	Process Management: It juggles multiple processes, scheduling and prioritising them to make the most of available resources and enable multitasking.
	Memory Management: The OS handles memory allocation, ensuring that each application gets its fair share of RAM while preventing conflicts.
	File System Management: It provides a structured way to organise, store, and retrieve files and directories, safeguarding data.
	User Interface: The OS offers a user-friendly interface, allowing users to interact with the computer through graphical or command-line interfaces.

30)	**Elements of a window**
	1. Title Bar
	The title bar will display the name of the application and the name of the document opened. It will also contain minimize, maximize and close button.
	2. Menu Bar
	The menu bar is seen under the title bar. Menus in the menu bar can be accessed by pressing Alt key and the letter that appears underlined in the menu title. Additionally, pressing Alt or F10 brings the focus on the first menu of the menu bar.
	3. The Workspace
	The workspace is the area in the document window to enter or type the text of your document. Figure 5.10 Shows the workspace area in the document window.
	4. Scroll bars -
	The scroll bars are used to scroll the workspace horizontally or vertically. Figure 5.10 shows the Scroll bars.
	5. Corners and borders
	The corners and borders of the window helps to drag and resize the windows. The mouse pointer changes to a double headed arrow when positioned over a border or a corner.
31)	**How is state represented in algorithms?**
	(i) State is a basic and important abstraction.
	(ii) Computational processes have state. A computational process starts with an initial state. As actions are performed, its state changes. Its ends with a final state.
	(iii) The state at any point of execution is simply the values of the variables at that point.
32)	**What is the use of a header file?**
	Header files contain definitions of functions and variables, which is used into any C++ program by using the pre-processor #include statement. It have an extension ".h" which contains C++ function declaration and macro definitions.
33)	The syntax of the switch statement is;

```
switch(expression)
{
        case constant 1:
                statement(s);
                break;
        case constant 2:
                statement(s);
                break;
        .
        .
        .
        .
        default:
                statement(s);
}
```

PART - D	
34) A)	**Explain the basic components of a computer with a neat diagram.**
	Components of a Computer :
	The computer is the combination of hardware and software. Hardware is trb physical component of a computer like motherboard, memory devices, monitor, keyboard etc., while software is the set of programs or instructions. Both hardware and software together make the computer system to function. Every task given to a computer follows an Input- process - output cycle (IPO cycle).
	(i) Input unit: Input unit is used to feed any form of data to the computer, which can be stored in the

memory unit for further processing.

Example : keyboard, mouse etc.

(ii) Central Processing Unit : CPU is the major component which interprets and executes software instructions. It also control the operation of all other components such as memory, input and output units.

(iii) Arithmetic and Logic Unit : The ALU is a part of the CPU where various computing functions are performed on data. The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and logical operations.

(iv) Control Unit : The control unit controls the flow of data between the CPU, memory and I/O devices. It also controls the entire operation of a computer.

(v) Output Unit : An output unit is any hardware component that conveys information to users in an understandable form. Example : Monitor, Printer etc.

(vi) Memory Unit : The Memory Unit is of two types which are primary memory and secondary memory. The primary memory is used to temporarily store the programs and data when the instructions are ready to execute. The secondary memory is used to store the data permanently. The Primary Memory is volatile, that is, the content is lost when the power supply is switched off. The Random Access Memory (RAM) is an example of a main memory. The Secondary memory is non volatile, that is, the content is available even after the power supply is switched off. Hard disk, CD-ROM and DVD ROM are examples of secondary memory.

34) B)	ADDITION	SUBTRACTION
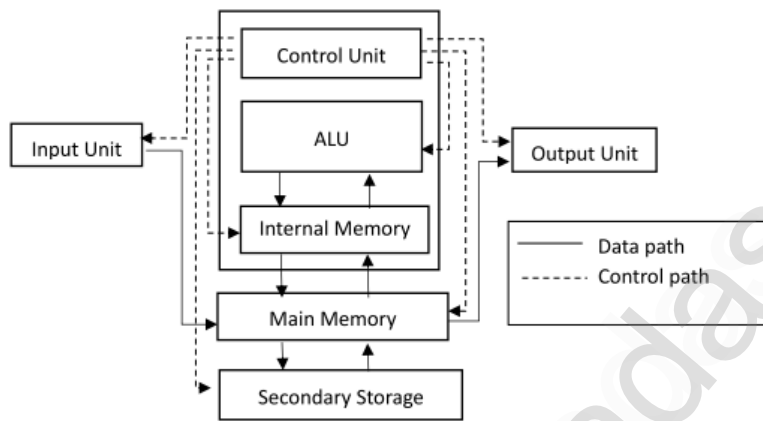
ADDITION

```
    1   1   1   1   0   1   1   1
    1   0   0   0   1   1
  ─────────────────────────────────
1   0   0   0   1   1   0   1   0
```

SUBTRACTION

```
            1   0   0   0   0   0
            1   0   1   0   1
          ─────────────────────────
                    1   0   1   1
```

35)
A)

தருக்க வாயில்கள்	குறியீடு	மெய்ப்பட்டியல்		
AND		A	B	AB
		0	0	0
		0	1	0
		1	0	0
		1	1	1
OR		A	B	A + B
		0	0	0
		0	1	1
		1	0	1
		1	1	1
NOT		A	$\overline{A}$	
		0	1	
		1	0	

35) B)	**Explain the types of ROM.** **Read-only memory (ROM) :** (i) Read only memory refers to special memory in a computer with pre-recorded data at manufacturing time which cannot be modified. The stored programs that start the computer and perform diagnostics are available in ROMs. (ii) ROM stores critical programs such as the program that boots the computer. Once the data has been written onto a ROM chip, it cannot be modified or removed and can only be read. (iii) ROM retains its contents even when the computer is turned off. So, ROM is called as a non-volatile memory. **Programmable Read-Only Memory (PROM)** : (i) Programmable read-only memory is also a non-volatile memory on which data can be written only once. Once a program has been written onto a PROM, it remains there forever. (ii) Unlike the main memory, PROMs retain their contents even when the computer is turned off. (iii) PROM is manufactured as a blank memory, whereas a ROM is programmed during the manufacturing process itself. PROM programmer or a PROM burner is used to write data to a PROM chip. The process of programming a PROM is called burning the PROM. **Erasable Programmable Read-Only Memory (EPROM)** (i) Erasable Programmable Read-Only Memory is a special type of memory which serves as a PROM. The content can be erased using ultraviolet rays. (ii) An EPROM differs from a PROM. PROM can be written only once and cannot be erased. (iii) EPROMs are used widely in personal computers because they enable the manufacturer to change the contents of the PROM to replace with updated versions or erase the contents before the computer is delivered. **Electrically Erasable Programmable Read-Only Memory (EEPROM)** (i) Electrically Erasable Programmable Read-Only Memory can be erased by exposing it to an electrical charge. (ii) Like other types of PROM, EEPROM retains its contents even when the power is turned off. Comparing with all other types of ROM, EEPROM is slower in performance.
36) A)	**Explain the process manangement algorithms in Operating System.** The following algorithms are mainly used to allocate the job (process) to the processor. (i) FIFO (ii) SJF (iii) Round Robin (iv) Based on Priority **(i) FIFO (First In First Out) Scheduling:** This algorithm is based on queuing technique. The process that enters the queue first is executed first by the CPU, followed by the next and so on. The processes are executed in the order of the queue. **(ii) SJF (Shortest Job First) Scheduling:** This algorithm works based on the size of the job being executed by the CPU. **(iii) Round Robin Scheduling :** The Round Robin (RR) scheduling algorithm is designed especially for time sharing systems. Jobs (processes) are assigned and processor time in a circular method. **(iv) Based On Priority:** The given job (process) is assigned based on a Priority. The job which has higher priority is more important than other jobs.
36) B)	**Explain the versions of Windows Operating System.** *Versions Year : Specific - with features* **1. Windows 1.x : 1985** i. Introduction of GUI in 16 - bit. processor ii. Mouse was introduced as an input device. **2. Windows 2.x : 1987** i. Supports to minimize or maximize windows. ii. Control panel feature was introduced with various system settings and customising options. **3. Windows 3.x : 1992** i. Introduced the concept of multitasking.

ii. Supported 256 colours which brought a more modern, colourful look to the interface.

4. Windows 95 : 1995

i. Introduced Start button, the taskbar, Windows Explorer and Start menu.

ii. Introduced 32 - bit processor and focused more on multitasking.

5. Windows 98 : 1998

i. Integration of the Web browser (Internet Explorer) with the Operating System.

ii. DOS gaming began to disappear as Windows based games improved.

iii. Plug and play feature was introduced.

6. Windows NT

Designed to act as servers in network.

7. Windows Me : 2000

It introduced automated system diagnostics and recovery tools.

8. Windows 2000 : 2000

i. Served as an Operating System for business desktop and laptop systems.

ii. Four versions of Windows 2000 were released: Professional (for business desktop and laptop systems), Server (both a Web server and an office server), Advanced Server (for line-of-business applications) and Data Centre Server (for high-traffic computer networks).

9. Windows XP : 2001

i. Introduced 64-bit Processor.

ii. Improved Windows appearance with themes and offered a stable version.

10. Windows Vista : 2006

Updated the look and feel of Windows.

11. Windows 7 : 2009

Booting time was improved, introduced new user interfaces like Aero Peek, pinning programs to taskbar, handwriting recognition etc. and Internet Explorer 8.

12. Windows 8 : 2012

i. Windows 8 is faster than previous versions of Windows.

ii. Start button was removed.

iii. Windows 8 takes better advantage of multi-core processing, solid state drives (SSD), touch screens and other alternate input methods.

iv. Served as common platform for mobile and computer.

13. Windows 10 : 2015

i. Start Button was added again.

ii. Multiple desktop.

iii. Central Notification Center for App notification and quick actions.

iv. Cortana voice activated personal assistant.

37) A)	**Write the specification of an algorithm hypotenuse whose inputs are the lengths of the two shorter sides of a right angled triangle, and the output is the length of the third side.**
	(i) Let us name the algorithm hypotenuse.
	(ii) It takes the number as the input. Let us name the input S1, S2 should not be negative.
	(iii) It produces the Hypotenuse of S1, S2 as the output. Let us name the output l. Then S1, S2 should be the square of l.
	Now the specification of the algorithm is Hypotenuse (S1,S2)
	- inputs : S1 and S2 are real numbers or integers.
	- outputs : l is a real number such that $l^2 = S1^2 + S2^2$
37) B)	**Write about Binary operators used in C++.**
	Binary Operators - Require two operands
	(i) Arithmetic Operators　　　　　(ii) Relational Operators.　　　　　(iii) Logical Operators
	(iv) Bitwise Operators　　　　(v) Assignment Operators　　　(vi) Conditional Operator
	(i) Arithmetic Operators : Arithmetic operators perform simple arithmetic operations like addition, subtraction, multiplication, division etc.,
	(ii) Relational Operators : Relational operators are used to determine the relationship between its operands. When the relational operators are applied on two operands, the result will be a Boolean value i.e

	1 or 0 to represents True or False respectively. C++ provides six relational operators. **(iii) Logical Operators** : A logical operator is used to evaluate logical and relational expressions. The logical operators act upon the operands that are themselves called as logical expressions. C++ provides three logical operators. **(v) Assignment Operators :** Assignment operator is used to assign a value to a variable which is on the left hand side of an assignment statement. = (equal to) is commonly used as the assignment operator in all computer programming languages. This operator copies the value at the right side of the operator to the left side variable. It is also a binary operator. **(vi) Conditional Operators :** In C++, there is only one conditional operator is used. ?: is a conditional Operator. This is a Ternary Operator. This operator is used as an alternate to if... else control statement.

38)
A)
	Explain control statement with suitable example.
	Control statements are statements that alter the sequence of flow of instructions. If the statements are executed sequentially, the flow is called as sequential flow. In some situations, if the statements alter the flow of execution like branching, iteration, jumping and function calls, this flow is called as control flow.
	Sequence statement:
	Statement 1
	    ↓
	Statement 2
	    ↓
	Statement 3
	The sequential statement are the statements, that are executed one after another only once from top to bottom. These statement do not alter the flow of execution. These statement are called as sequential flow statements. They are always end with a semicolon (;).
	If - else : In if-else statement, first the expression or condition is evaluated either true of false. If the result is true, then the statements inside true-block is executed and false-block is skipped. If the result is false, then the statement inside the false-block is executed i.e., the true-block is skipped.
	if (rem==0)
	cout<< "\n The given number" <<num<<" is Even";
	else
	cout<<"\n The given number"<<num<<" is Odd";

38)
B)
	Write a program to find the LCM and GDC of two numbers.
	program to find GDC and LCM
	#include<iostream.h>
	using namespace std;
	int main()
	{
	int nl,n2, a, b, gcd, lcm;
	cout<<"Enter two numbers"<<endl;
	 cin>>nl>>n2;
	a=nl;
	b=n2;
	while (n1 != n2)
	{
	if(n1>n2)
	nl = nl − n2;
	else
	n2 = n2 − n1;
	}
	gcd = nl;
	cout<< "GCD=" <<gcd;
	lcm = (a * b) / gcd;
	cout <<"LCM =" << lcm;}