NADAR HR.SEC.SCHOOL, RAJAPALAYAM.

XI - COMPUTER SCIENCE – ENGLISH MEDIUM
HALF YEARLY EXAM 2024 ANSWER KEY

PART - A

1.	First Generation computers used	a) Vacuum tubes
2.	2^50 is referred as	c) Peta
3.	Operating system is a	c) System software
4.	The shortcut key used to rename a file in windows	a) F2
5.	A program written in high level language is called as	d) All the above
6.	A loop that contains another loop inside its body	a) Nested loop
7.	In C++ which statement is used to terminate the execution of a loop?	d) break
8.	In C++ the following is used for pointer to variable.	c) *
9.	Which Is return data type of the function prototype of add(int,int); ?	a) int
10.	int age[]=(6,90,20,18,2); How many elements are there in this array?	b) 5
11.	The identifiable entity with some characteristics and behaviour is	object
12.	The variable declared inside the class are known as	d) attributes
13.	Which of the following refers to a function having more than one distinct meaning?	a) Function overloading
14.	The type of Inheritance that reflects the transitive nature is	d) Hybrid inheritance
15.	Commercial programs made available to the public illegally are known as	b) warez

PART - B

16)	**What is the function of 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.
17)	110111+10011 = 10101010
18)	**Differentiate Save and save As option.** • "Save" option save a document in first time. "Save As" option save an already saved the document with a new name and also create a copy of already saved document with a new name obviously.
19)	**Draw a flow chart for conditional statement**
20)	**What is a reference variable? What is its use?** • Reference is an alternative name for a variable. A reference provides an alias for a previously defined variable. Declaration of a reference consists of base type and an & (ampersand) symbol; reference variable name is assigned the value of a previously declared variable.
21)	What is polymorphism? • Polymorphism means 'one name, many form'. Polymorphism can be achieved in two ways.

22)	```
	#include<iostream>
	using namespace std;
	int main()
	{
	int m1[5][5], sum=0;
	int i, j, row, col;
	cout<<"\n Enter the number of rows: ";
	cin>>row;
	cout<<"\n Enter the number of columns: ";
	cin>>col;
	cout<<"\n Enter Matrix Elements:\n";
	for(i=0; i<row; i++)
	{
	for(j=0; j<col; j++)
	{
	cin>>m1[i][j];
	}
	}
	for(i=0; i<row; i++)
	{
	for(j=0; j<col; j++)
	{
	sum=sum+m1[i][j];
	}
	}
	Cout<<"The Sum matrix = "<<sum;
	}
	``

23)	**Write down the importance of destructor.** • The purpose of the destructor is to free the resources that the object may have acquired during its lifetime. A destructor function removes the memory of an object which was allocated by the constructor at the time of creating a object.

24)	**Write a short note about Tamil Programming Language.**
	• Programming languages to develop software to computers and smart phones are available only in English. Now, efforts are taken to develop programming languages in Tamil. Basedon Python programming language,the first Tamil programming language "Ezhil" is designed. With the help of this programming language, you can write simple programs in Tamil.

PART - C

25)	**Write the Truth tables of fundarnental gates**
	(i) AND gate ii) OR gate (iii) NOT gate

(i) AND gate

A	B	A.B
0	0	0
0	1	0
1	0	0
1	1	1

ii) OR gate

A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

(iii) NOT gate

A	$\bar{A}$
0	1
1	0

26)	**Write a note on Multiprocessing.**
	• 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. Since the execution takes place in parallel, this feature is used for highspeed execution which increases the power of computing

27)	**When do you say that a problem is algorithmic in nature?**
	• We usually say that a problem is algorithmic in nature when its solution involves the construction of an algorithm. Some types of problems can be immediately recognized as algorithmic.

28)	**Describe the differences between keywords and identifiers?**
	Keywords : Keywords are the reserved words which convey specific meaning to the C++. Keywords cannot be used as an identifier. **Example:** Switch, case, for, if etc., **Identifiers** Identifiers are the user defined names given to different parts of the C++ program. Identifiers are not reserved. **Example:** name, age, class-12B etc.,

29)	```
	#include<iostream>
	using namespace std;
	int main ()
	{
	int i =1;
	while(i<=40)
	{
	cout<<i<<"\t"; i=i+3;
	}
	}
	``

30)	**Key Differences Between if-else and switch**
	1. Expression inside if statement decide whether to execute the statements inside if block or under else block. On the other hand, expression inside switch statement decide which case to execute.
	2. An if-else statement uses multiple statements for multiple choices. On other hand, switch statement uses single expression for multiple choices.
	3. If-esle statement checks for equality as well as for logical expression. On the other hand, switch checks only for equality.
	4. The if statement evaluates integer, character, pointer or floating-point type or Boolean type. On the other hand, switch statement evaluates only character or a integer data type.
	5. Sequence of execution is like either statement under if block will execute or statements under else block statement will execute. On the other hand the expression in switch statement decide which case to execute and if do not apply a break statement after each case it will execute till the end of switch statement.
	6. If expression inside if turn out to be false, statement inside else block will be executed. If expression inside switch statement turn out to be false then default statements are executed.
	7. It is difficult to edit if-else statements as it is tedious to trace where the correction is required. On the other hand, it is easy to edit switch statements as they are easy to trace.
	There are some important things to know about switch statement. They are
	1. A switch statement can only work for quality of comparisons. 2. No two case labels in the same switch can have identical values.
	3. If character constants are used in the switch statement, they are automatically converted to their equivalent ASCII codes.
	4. The switch statement is more efficient choice than if in a situation that supports the nature of the switch operation.

31)	**With note an Array of strings.**
	Answer: An array of strings is a two-dimensional character array. The size of the first index (rows) denotes the number of strings and the size of the second index (columns) denotes the maximum length of each string. Usually, array of strings are declared in such a way to accommodate the null character at the end of each string.

32)	**Rules for function overloading :**
	(i) The overloaded function must differ in the number of its arguments or data types.
	(ii) The return type of overloaded functions are not considered for overloading same data type.
	(iii) The default arguments of overloaded functions are not considered as part of the parameter list in function overloading.

| 33) | **A proxy server**
 A proxy server acts as an intermediary between the endusersand a web server. A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resources available from a different server. The proxy server examines the request, checks authenticity and grants the request based on that. Proxy servers typically keep the frequently visited site addresses in its cache which leads to improved response time. |

PART - D

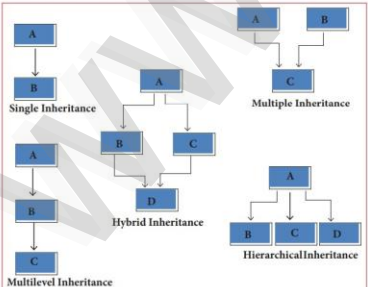| 34) A) | **Discuss the various generations of computers.** |

Generation	Time Period	Evolved Hardware	Key Changes
First Generation	1946 - 1956	Vacuum tubes	Large computers using vacuum tubes. Limited processing speed and storage.
Second Generation	1956s - 1964s	Transistors	Transistors replaced vacuum tubes, making computers smaller, faster, and more reliable.
Third Generation	1964 - 1971	Integrated circuits	Integrated Circuits (ICs) made computers even smaller, faster, and more affordable.
Fourth Generation	1971 - 1980	Microprocessors	Microprocessors enabled personal computers. The internet and networking became widely used.
Fifth Generation	1980 - Present & Beyond		AI, cloud computing, and IoT advanced computing. Quantum computing promises much higher power.

34) B)

Step #1
Decimal Number = -212
We have to convert this decimal number to Binary:
Binary of -212 = **11010100**
Selected Bits = **12**
Binary after adding remaining bits = **000-11010100**

Step #2
Write down the binary Number:

| 0 | 0 | 0 | - | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |

Step #3
Invert all values (Swap each **0** with **1** and each **1** with **0**):

| 0 | 0 | 0 | - | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |

One's Complement = 111000101011

Step #1
Decimal Number = -76
We have to convert this decimal number to Binary:
Binary of -76 = **-1001100**
Selected Bits = **08**
Binary after adding remaining bits = **-1001100**

Step #2
Write down the binary Number:

| - | 1 | 0 | 0 | 1 | 1 | 0 | 0 |

Step #3
Invert all values (Swap each **0** with **1** and each **1** with **0**):

| - | 1 | 0 | 0 | 1 | 1 | 0 | 0 |

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

| 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |

One's Complement = 00110011

| 35) A) | **Explain the characteristics of a microprocessor.**
 A Microprocessor's performance depends on the following characteristics:
 (i) Clock speed   (ii) Instruction set   (iii) Word size
 (i) Clock Speed
 Every microprocessor has an internal clock that regulates the speed at which it executes instructions. The speed at which the microprocessor executes instructions is called clock speed. Clock speed is measured in MHz (Mega Hertz) or in GHz (Giga Hertz).
 (ii) Instruction set: A command which is given to a computer to perform an operation on data is called an instruction. Basic set of machine level instructions that a microprocessor is designed to execute is called as an instruction set. This instruction set carries out the following types of operations:
 1. Data transfer   2. Arithmetic operations   3. Logical operations   4. Control flow   5. Input/output.
 (iii) Word Size : The number of bits that can be processed by a processor in a single instruction is called its word size. Word size determines the amount of RAM that can be accessed by a microprocessor at one time and the total number of pins on the microprocessor. Total number of input and output pins in turn determines the architecture of the microprocessor. |

| 35) B) | **Finding Files and Folders**
 You can use the **search** box on the **Start** menu to quickly search a particular folder or file in the computer or in a specific drive.
 To find a file or folder:
 Click the **Start** button, the **search** box appears at the bottom of the start menu.
 Type the name of the file or the folder you want to search. Even if you give the part of the file or folder name, it will display the list of files or folders starting with the specified name
 The files or the folders with the specified names will appear, if you click that file, it will directly open that file or the folder.
 4. There is another option called "**See more results"** which appears above the **search** box.
 5. If you click it, it will lead you to a **Search Results** dialog box where you can click and open that file or the folder.
 Searching Files or folders using Computer icon
 1.   Click **Computer Icon** from   desktop or from **Start menu**.
 2.   The Computer disk drive screen will appear and at the top right corner of that screen, there is a **search** box option.
 3.   Type the name of the file or the folder you want to search. Even if you give the part of the file or folder name, it will display the list of files or folders starting with the specified name. 4. Just click and open that file or the folder. |

36) A)	**Control Statements** **The sequential statement :** • The **sequential statement** are the statements, that are executed one after another only once from top to bottom. These statements do not alter the flow of execution. These statements are called as sequential flow statements. They are always end with a semicolon (;). • The selection statement means the statement (s) are executed depends upon a condition. If a condition is true, a true block (a set of statements) is executed otherwise a false block is executed. This statement is also called **decision statement** or **selection statement** because it helps in making decision about which set of statements are to be executed. **Selection statement** • In a program, statements may be executed sequentially, selectively or iteratively. Every programming languages provides statements to support sequence, selection (branching) and iteration. 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. **Iteration statement** • The **iteration statement** is a set of statement are repetitively executed depends upon a conditions. If a condition evaluates to true, the set of statements (true block) is executed again and again. As soon as the condition becomes false, the repetition stops. This is also known as **looping statement** or iteration statement. • The set of statements that are executed again and again is called the **body of the loop.** The condition on which the execution or exit from the loop is called **exit-condition** or **test-condition.**

36) B)	**Write a C++ program to accept any integer number and reverse it..**
	``cpp
	#include<iostream>
	using namespace std;
	int main ()
	{
	int n, d, s = 0;
	cout<<"Enter a number=";
	cin>>n;
	while (n! =0)
	{
	d=n%10;
	s = (s*10)+d;
	n = n/10;
	}
	cout<<"The reversed number is="<<s;
	}
	``

37) A)	**Inline function**
	• Normally the call statement to a function makes a compiler to jump to the functions (the definition of the functions are stored in STACKS) and also jump back to the instruction following the call statement.
	• This reduces the speed of program execution. Inline functions can be used to reduce the overheads like STACKS for small function definition.
	• An inline function looks like normal function in the source file but inserts the function's code directly into the calling program. To make a function inline, one has to insert the keyword inline in the function header.
	Syntax :
	        inline returntype functionname (datatype parametername1.... datatype parameternameN)
	• Inline functions execute faster but requires more memory space.
	• Reduce the complexity of using STACKS. #include <iostream>
	``cpp
	using namespace std;
	inline float simpleinterest(float p1,float n1, float r1)
	{
	    float si1=(p1*n1*r1)/100; return(si1);
	}
	int main ()
	{
	    float si,p,n,r;
	    cout<<"\nEnter the Principle Amount Rs. :"; cin>>p;
	    cout<<"\nEnter the Number of Years :"; cin>>n;
	    cout<<"\nEnter the Rate of Interest :"; cin>>r;
	    si=simpleinterest(p,n,r); cout << "\nThe Simple Interest = Rs."<<si;
	}
	``

37) B)	**Write a note on the basic concepts that suppors OOPs?** **Answer: Basic Concepts of OOP :** The Object Oriented Programing has been developed to overcome the drawbacks of procedural and modular programming. It is widely accepted that object-oriented programming is the most important and powerful way of creating software. The Object-Oriented Programming approach mainly encourages: **(i) Modularisation :** Where the program can be decomposed into modules. **(ii) Software re-use:** Where a program can be composed from existing and new modules. **(iii) Main Features of Object Oreitned Programming :** Data Abstraction, Encapsulation, Modularity, Inheritance, Polymorphism **(iv) Encapsulation :** The mechanism by which the data and functions are bound together into a single unit is known as Encapsulation. It implements abstraction. Encapsulation is about binding the data variables and functions together in class. It can also be called data binding. Encapsulation is the most striking feature of a class. The data is not accessible to the outside world, and only those functions which are wrapped in the class can access it. These functions provide the interface between the object's data and the program. This encapsulation of data from direct access by the program is called data hiding or information hiding. **(v) Data Abstraction :** Abstraction refers to showing only the essential features without revelaing background details. Classes use the concept of abstraction to define a list of abstract attributes and function which operate on these attributes. They encapsulate all the essential properties of the object that are to be created. The attributes are called data members because they hold information. The functions that operate on these data are called methods or member function. **(vi) Modularity :** Modularity is designing a system that is divided into a set of functional units (named modules) that can be composed into a larger application. **(vii) Inheritance :** Inheritance is the technique of building new classes (derived class) from an existing Class (base class). The most important advantage of inheritance is code reusability **(viii) Polymorphism** : Polymorphism is the ability of a message or function to be displayed in more than one form
38) A)	**What are the various crimes happening using computer?** <u>**Crime : Function**</u> **Crime Functions :** Hacking, threats, and blackmailing towards a business or a person. **Cyber stalking:** Harassing through online. **Malware:** Malicious programs that can perform a variety of functions including stealing, encrypting or deleting sensitive data, altering or hijacking core computing functions and monitoring user's computer activity without their permission. **Denial of service attack:** Overloading a system with fake requests so that it cannot serve normal legitimate requests. **Fraud:** Manipulating data, for example changing the banking records to transfer money to an unauthorized account. **Harvesting:** A person or program collects login and password information from a legitimate user to illegally gain access to others, account(s). **Identity theft:** It is a crime where the criminals impersonate individuals, usually for financial gain. **Intellectual property theft:** Stealing practical or conceptual information developed by another person or company **Salami slicing:** Stealing tiny amounts of money from each transaction. **Scam:** Tricking people into believing something that is not true. **Spam:** Distribute unwanted e-mail to a large number of internet users. **Spoofing:** It is a malicious practice in which communication is send from unknown source disguised as a source known to the receiver.
38) B)	**Types of Inheritance** There are different types of inheritance viz., Single Inheritance, Multiple inheritance, Multilevel inheritance, hybrid inheritance and hierarchical inheritance. **1. Single Inheritance :** When a derived class inherits only from one base class, it is known as single inheritance **2. Multiple Inheritance :** When a derived class inherits from multiple base classes it is known as multiple inheritance **3. Hierarchical inheritance :** When more than one derived classes are created from a single base class , it is known as Hierarchical inheritance. **4. Multilevel Inheritance :** The transitive nature of inheritance is itself reflected by this form of inheritance. When a class is derived from a class which is a derived class – then it is referred to as multilevel inheritance. **5. Hybrid inheritance :** When there is a combination of more than one type of inheritance, it is known as hybrid inheritance. Hence, it may be a combination of Multilevel and Multiple inheritance or Hierarchical and Multilevel inheritance or Hierarchical, Multilevel and Multiple inheritance.