COMMON QUARTERLY EXAMINATION 2024 CUDDALORE - DT
STANDARD -XI
COMPUTER SCIENCE

TIME:3.00HRS   MARKS:70

PART -I

I ANSWER ALL THE QUESTIONS   15X1=15

Q.NO	OPTION	ANSWER	Q.NO	OPTION	ANSWER
1.	a.	Vaccum Tube	9.	d.	At the start of the algorithm
2.	c.	Peta	10.	b.	m=7 , n= -8
3.	a.	NOT(OR)	11.	a.	Rick Mascitti
4.	c.	Cache Memory	12.	a.	>>
5.	a.	F2	13.	a.	Size of()
6.	c.	System Software	14.	d.	\n
7.	a.	specification	15.	3.	3
8.	c.	6			

PART -II

II Answer any six questions.(Question No.24 is compulsory)   6x2=12

16.	The CPU has three components which are, • Control unit, • Arithmetic and logic unit (ALU) • Memory unit.	2
17.	2 46 2 23 – 0 2 11 – 1 2 5 – 1 2 2 – 1 1 – 0 $(46)_{10} = 101110_2$	2
18.	• Clock speed • Instruction set • Word size	2
19.	• The GUI is a window based system with a pointing device to direct I/O, choose from menus, make selections and a keyboard to enter text. Its vibrant colours attract the user very easily.	2

20.	• Multiple applications can execute simultaneously in Windows, and this is known as "Multitasking".	2
21.	• An algorithm is a sequence of instructions to accomplish a task or solve a problem.	2
22.	An expression of the variables has the same value before and after an assignment, it is an invariant of the assignment.	2
23.	• The "null or empty statement" is a statement containing only a semicolon (;) • C++ allows a group of statements enclosed by pair of braces {}. This group of statements is called as a compound statement or a block.	2
24.	(i) 39 - Decimal (Integer) (ii) 032 - Octal (Integer) (iii) 0XCAFE - Hexadecimal (Integer) (iv) 04.1 4 - Real constant (Floating Point)	2

PART -II

II Answer any six questions.(Question No.33 is compulsory)   6x3=18

25.	• In the Sixth Generation, computers could be defined as the era of intelligent computers, based on Artificial Neural Networks. • One of the most dramatic changes in the sixth generation will be the explosive growth of Wide Area Networking. ▫ Natural Language Processing (NLP) is a component of Artificial Intelligence (AI). It provides the ability to develop the computer program to understand human language.	3
26.	**De-Morgan's Theorem** • $\overline{(A + B)} = \overline{A}\ \overline{B}$ The complement of a sum is equal to the product of complement • $\overline{(AB)} = \overline{A} + \overline{B}$ The complement of a product is the equal to sum of complement	3
27.	• 8-bit microprocessor * 16-bit microprocessor • 32-bit microprocessor * 64-bit microprocessor	3
28.	• User Interface (UI) • Memory Management • Process management • Security Management • Fault Tolerance • File Management	2 1

29.	Copy	Move	
	It means to make a duplicate copy of file.	It means to transfer a file from one location to another.	
	The original file remains at the source location.	The original file is moved to the destination location.	3
	It uses the Copy & Paste option. Click Edit → Copy or Ctrl + C or right click→ Copy from the pop-up menu. Click Edit → Paste or Ctrl + V or Right click → Paste from the popup menu.	It uses the Cut & Paste option. Click Edit → Cut or Ctrl + X or right click → Cut from the pop-up menu. Click Edit → Paste or Ctrl + V or Right click → Paste from the popup menu.	

30.	• Alternative statement analyses the problem into two cases. Case analysis statement generalizes it to multiple cases. • Case analysis splits the problem into an exhaustive set of disjoint cases.	3

31.	• iostream header file contains the definition of its member objects cin and cout. • If you fail to include iostream in your program, an error message will occur on cin and cout; and we will not be able to get any input or send any output.	2

32	syntax of switch:	
	switch(expression) { case constant 1: statement(s); break; case constant 2: statement(s); break; . . default: statement(s); }	2
	purpose of switch statement: • The switch statement is a multi-way branch statement. • It provides an easy way to dispatch execution to different parts of code based on the value of the expression. • The switch statement replaces multiple if-else sequence.	1

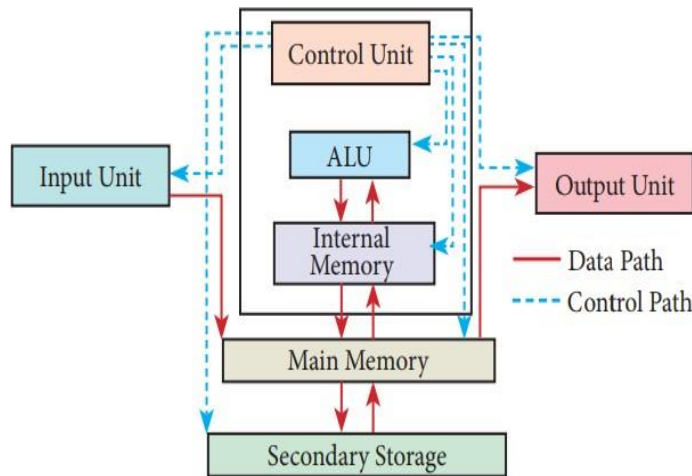| 33.	(i) n = x + y / x; n = 5 + (4 / 5) n = 5 + 0.8 n = 5.8	ii) z = m * x + y; z = (2.5 * 5) + 4 z =12.5 + 4 z = 16.5 z = 16 (z – is integer)	iii) z = (x++) * m + x; z = ((5++) * 2.5) + 5 z = (5 * 2.5) + 5 z = 12.5 + 5 z = 17.5 z=17 (z – is integer)	3

PART -III

III Answer all questions   5x5=25

34a.	Every task given to a computer follows an Input- Process- Output Cycle (IPO cycle).	

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.

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.

- The CPU has three components which are Control unit, Arithmetic and logic unit (ALU) and Memory unit.

    - The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and logical operations.

    - 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.The memory unit holds the data and instructions during the processing.

Output Unit:

- An Output Unit is any hardware component that conveys information to users in an understandable form.

  Example: Monitor, Printer etc.

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.

Marks: 1, 4

OR	
34b. • hypotenuse (a, b) • − − inputs: a, b are real numbers, a > 0, b > 0 • − − outputs: c2 = a2 + b2 wrhere c is real number, c > 0	5

35a.

(a)
```
2 | 98
2 | 49   − 0
2 | 24   − 1
2 | 12   − 0
2 | 6    − 0
2 | 3    − 0
    1    − 1
```

The Binary Equivalent of 98_{10} = 1100010_2

8 bit format	=	01100010
1"s complement	=	10011101
Add 1 bit	=	+ 1
2"s Complement	=	10011110

$2\frac{1}{2}$

(b)
```
2 | 135
2 | 67   − 1
2 | 33   − 1
2 | 16   − 1
2 | 8    − 0
2 | 4    − 0
2 | 2    − 0
    1    − 0
```

The Binary Equivalent of 135_{10} = 10000111_2

1"st complement	=	01111000
Add 1 bit	=	+ 1
2"s Complement	=	01111001

$2\frac{1}{2}$

OR	
35b. • The user interface should enable the user to retain this expertise for a longer time. • The user interface should also satisfy the customer based on their needs. • The user interface should save user's precious time. • The ultimate aim of any product is to satisfy the customer. The User Interface is also to satisfy the customer. • The user interface should reduce number of errors committed by the user	5

36a.	**1.** Read Only Memory (ROM):	
	▪ Read Only Memory refers to special memory in a computer.	
	▪ 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.	
	▪ 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):	5
	▪ 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.	
	Erasable Programmable Read Only Memory (EPROM):	
	▪ Erasable Programmable Read Only Memory is a special type of memory which serves as a PROM, but the content can be erased using ultraviolet rays.	
	▪ The ultraviolet light clears its contents, making it possible to reprogram the memory.	
	Electrically Erasable Programmable Read Only Memory (EEPROM):	
	▪ Electrically Erasable Programmable Read Only Memory is a special type of PROM that can be erased by exposing it to an electrical charge.	
	▪ Comparing with all other types of ROM, EEPROM is slower in performance.	

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OR

</div>

36b.	Binary Operators - Require two operands. C++ Operators are classified as:	
	● Arithmetic Operators: Arithmetic operators to perform simple arithmetic operations like addition, subtraction, multiplication, division etc.,	5

Operator	Operation	Example
+	Addition	10 + 5 = 15
-	Subtraction	10 – 5 = 5
*	Multiplication	10 * 5 = 50
/	Division	10 / 5 = 2 (Quotient of the division)
%	Modulus (To find the reminder of a division)	10 % 3 = 1 (Remainder of the division)

● Relational   Operators: Relational   operators   are   used   to   determine   the relationship between its operands. The result will be a Boolean value.

Operator	Operation	Example
>	Greater than	a > b
<	Less than	a < b
>=	Greater than or equal to	a >= b
<=	Less than or equal to	a <= b
==	Equal to	a == b
!=	Not equal	a != b

- Logical operators : A logical operator is used to evaluate logical and relational expressions.

Operator	Operation	Description
&&	AND	The logical AND combines two different relational expressions in to one. It returns 1 (True), if both expression are true, otherwise it returns 0 (false).
||	OR	The logical OR combines two different relational expressions in to one. It returns 1 (True), if either one of the expression is true. It returns 0 (false), if both the expressions are false.
!	NOT	NOT works on a single expression / operand. It simply negates or inverts the truth value. i.e., if an operand / expression is 1 (true) then this operator returns 0 (false) and vice versa

- Assignment Operator: Assignment operator is used to assign a value to a variable which is on the left hand side of an assignment statement. = (equal) is commonly used as the assignment operator in all computer programming languages. EX: a = 10

37a. Shortcuts to your most often used folders and files may be created and placed on the Desktop to help automate your work.

- Select the file or folder that you wish to have as a shortcut on the Desktop.
- Right click on the file or folder.
- Select Send to from the shortcut menu, then select Desktop (create shortcut) from the sub-menu.
- A shortcut for the file or folder will now appear on your desktop and you can open it from the desktop in the same way as any other icon.

5

OR

37b.

1. There are three fundamental gates namely AND, OR and NOT. AND gate:

- The AND gate can have two or more input signals and produce an output signal.
- The output will be 1 if and only if both inputs are 1; otherwise the output is 0. The logical symbol of AND gate and Truth Table:
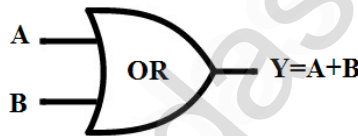
A —
AND — Y=A.B
B —

Inputs		Output
A	B	Y=A.B
0	0	0
0	1	0
1	0	0
1	1	1

OR Gate

- The OR gate gets its name from its behaviour like the logical inclusive "OR".
- The output will be 1 if and only if one or both inputs are 1; otherwise, the output is 0.

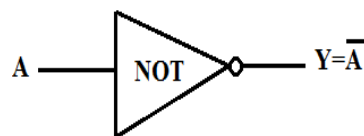The logical symbol of OR gate and Truth Table:

A —
OR — Y=A+B
B —

Inputs		Output
A	B	Y=A+B
0	0	0
0	1	1
1	0	1
1	1	1

NOT Gate

- The NOT gate, called a logical inverter, has only one input. It reverses the logical state.

The logical symbol of NOT gate and Truth Table:

A — NOT — $Y=\overline{A}$

Input	Output
A	$Y=\overline{A}$
0	1
1	0

5

38a.	**2.** Syntax Error: • Syntax is a set of grammatical rules to construct a program. • Syntax errors occur when grammatical rules of C++ are violated. Example: cout << "Welcome to Programming in C++" • As per grammatical rules of C++, every executable statement should terminate with a semicolon. But, this statement does not end with a semicolon. Semantic Error: • A Program has not produced expected result even though the program is grammatically correct. • It may be happened by wrong use of variable / operator / order of execution etc. This means, program is grammatically correct, but it contains some logical error. So, Semantic error is also called as "Logic Error. Run-time error: • A run time error occurs during the execution of a program. It occurs because of some illegal operation that takes place. ▢ For example, if a program tries to open a file which does not exist, it results in a run-time error.	5
	OR	

38b.	• In an entry-controlled loop, first the test-expression is evaluated and if it isnonzero, the body of the loop is executed otherwise the loop is terminated.
	
	 for loop :
	
	 • The for loop is a entry- controlled loop and is the easiest looping statement whichallows code to be executed repeatedly.
	 • It contains three different statements:
	     ▪ Initialization
	     ▪ condition or test-expression and
	     ▪ update expression(s))
	 • The three statements are separated by semicolons.
	
	 The general syntax is:
	
	      for (initialization(s); test-expression; update expression(s))
	      {
	      Statement 1;
	      Statement 2;
	      ………….
	      }
	      Statement-x;
	
	 Explain with example
		5