

COMPUTER SCIENCE (10+2)

Roll. No.....

Time Allowed: 3 Hours

Maximum Marks: 60

Candidates are required to give their answers in their own words as far as practicable.

Multiple Choice Questions :

(12*1 = 12)

If answer is correct one mark will be awarded otherwise No mark.

1. Which of the following is an example of a strong password

- a. 1234
- b. Neeru123
- c. Cmps@123##
- d. None of above

Ans : C. Cmps@123##

2. Ravi wants to create a new directory on Linux desktop . Which command should be used by him.

- a. Ls
- b. Cd
- c. Pwd
- d. Mkdir

Ans : d. mkdir

3. What is Full form of LVM

- a. Logical Volume Management
- b. Local Volume Management
- c. Live Volume Management
- d. Least Volume Managment

Ans : a- Logical Volume Managment

4. Linux and window both are same operating system . Is this True ?

- a. True
- b. False
- c. Not Sure
- d. Both are operating system

Ans : b- False

5. Images made up of geometrical shapes are ?

- a. Bitmap Images
- b. Vector Images
- c. Both Type
- d. JPEG images

Ans : b – vector images

6. If you are designing a logo in CorelDRAW, you would like to keep the quality of your logo to be usable across different media So, how should we do it properly while exporting the logo?

- a. Export logo as high quality JPEG to use over all applications
- b. Export the logo as a vector format (SVG, EPS etc..This ensures that it retains its scalability and clarity.
- c. Export the logo and PNG with a transparent background, high resolution
- d. Export Logo as JPEG with high resolution

Ans b. - Export the logo as a vector format (SVG, EPS etc..This ensures that it retains its scalability and clarity

7. Which of the following is code used for inserting external style sheet in PHP

- a. `<link rel="stylesheet" type="text/css" href="styles.css">`
- b. `<style src="css/styles.css"></style>`
- c. `<link rel="stylesheet" href="/css/styles.css">`
- d. None of Above

Ans : a. `<link rel="stylesheet" type="text/css" href="styles.css">`

8. What is output of Following code

```
$number = 15;
```

```
if ($number > 20)
```

```
{
```

```
    echo "Greater than 20";
```

```
}
```

```
Else
```

```
{
```

```
    echo "20 or less";
```

```
}
```

- a. Greater than 20
- b. 20 or less
- c. 15
- d. No result

Ans : b- 20 or less

9. Let's say you have 2 tables;) one for Orders and another Products in an e-commerce database Each order may include multiple products, and every product can be a part of more than one order. How do you put the primary and foreign keys in place?
- Using OrderID as the primary key in Orders and ProductID as the primary key in Products then creating an orderItems table of connecting two main tables through it using constitutional foreign keys(OrderId,product ID).
 - Make ProductName as the primary key in Products Table, and OrderNumber as the primary key in OrdersTable.
 - Use OrderID as a primary key for both Orders and Products tables.
 - Have the ProductID as the primary key in this Products table and OrderID as a foreign key in an associated Orders table.

Ans : b - Using OrderID as the primary key in Orders and ProductID as the primary key in Products then creating an orderItems table of connecting two main tables through it using constitutional foreign keys(OrderId,product ID).

10. Which of the following is an example of DBMS

- Mysql
- Google
- PHP
- Javascript

Ans : a. Mysql

11. which command is used in PL/sql to show data of those students who have less than 50% marks in table CS.

- SELECT * FROM CS WHERE Marks < 50;
- Select CS where marks>50%;
- SELECT * FROM CS WHERE Marks >50;
- Select all from CS where Marks<50;

Ans : a. SELECT * FROM CS WHERE Marks < 50.

12. You are about to make a purchase on an online shopping site and notice that the URL shows "http://" instead of "https://". As you evaluate the risks and decide whether to proceed, which of the following considerations should be prioritized?

- "The absence of 'https://' indicates that the website does not use encryption to protect your payment details, increasing the risk of data interception and potential fraud."
- "The presence of 'http://' implies that the website may offer better user experience due to faster page loading times."
- "The 'http://' in the URL suggests that the website has limited options for payment methods, affecting your choice of payment."
- "The 'http://' protocol indicates that the website does not provide instant customer support for transaction issues."

Ans: a- "The absence of 'https://' indicates that the website does not use encryption to protect your payment details, increasing the risk of data interception and potential fraud."

Answer the following questions.

(2+3=5)

13. What is use of shell commands in Linux . Write any two points . (2)

Answer : The use of shell commands are as follows :

- i. Shell commands are used to create, delete, and manage files and directories, such as ls to list files and rm to remove them.] — (1)
- ii. Shell commands help monitor system performance and manage processes, like top to view running processes and ps to check process status] — (2)

14. What is the difference between Linux and Window NT. Mention any three differences to support the same . (3)

Answer :

Sr No	Linux	Window
1.	Linux is open source operating system	Window is not an open source operating system — (1)
2.	Linux is free of cost	Window is not free operating system and is costly — (2)
3.	linux is more efficient as compare to window OS	Window OS is less efficient. — (3)

Answer the following question (Maximum 100 words)

(3+3=6)

15. Explain following commands in one line with syntax (any three) (1*3=3)

- i. Cd :
CD command in Linux is used to change the current working directory.
Syntax: CD[directory] — (1)
- ii. Echo :
The echo command in Linux is used to display a line of text or a variable value to the terminal.
Syntax : echo [text or variable] — (2)
- iii. Printf:

The printf command in PHP is used to format and output a string.

Syntax : printf(format, arguments); — (3)

iv. Rmdir:

The rmdir command in Linux is used to remove an empty directory.

Syntax : rmdir[directory_name]

v. LS :

The ls command in Linux is used to list the contents of a directory.

Syntax : ls [options] [directory]

vi. Who :

The who command in Linux displays a list of users currently logged into the system.

Syntax : Who[options]

Optional

16. Describe the concept of input and output redirection with appropriate examples. (3)

Answer : Input and output redirection in Linux allow users to control where data is read from or written to. **Input redirection** (<) takes input from a file instead of the keyboard. — (2)

For example, command < inputfile.txt feeds the contents of inputfile.txt to command.

Output redirection (>) sends the output of a command to a file, overwriting it if it exists.

For instance, command > outputfile.txt writes the command's output to outputfile.txt.

Using >> appends to the file instead of overwriting.

For example, command >> outputfile.txt adds the command's output to the end of outputfile.txt. — (3)

Answer the following questions (word Limit 150-200 words)

(4*3=12)

17. Explain any two tools used in corel draw .

(2+2=4)

Answer : • **Pen Tool**: The Pen Tool is essential for drawing precise paths and shapes. It allows users to create straight lines, curves, and complex shapes by placing anchor points and adjusting their handles to control the curvature. This tool is invaluable for creating custom illustrations, logos, and detailed vector artwork. — (2)

□ **Shape Tool**: The Shape Tool is used to modify and refine shapes that have been created with other tools. It enables users to edit individual nodes and control the curvature of the shapes. This tool is ideal for adjusting the details of vector objects, such as rounding corners, changing the shape's path, or fine-tuning the design. — (3)

18. Define what a variable is in PHP and discuss the different variable scopes within the language

(1+3=4)

Answer : Variable : In PHP, a variable is a symbolic name associated with a value, which can be modified during script execution. Variables in PHP start with a dollar sign (\$), followed by the variable name (e.g., \$variable). They can hold different types of data, such as integers, strings, arrays, and objects — (1)

Scope of Variable : There are two scopes :

- i. **Local Scope :** Variables declared inside a function or a block are local to that function or block. They are not accessible outside of it. For example:

```
function example() {
    $localVar = "I'm local";
}
```

// \$localVar is not accessible here — (2 1/2)

- ii. **Global Scope:** Variables declared outside of functions are in the global scope and can be accessed throughout the script. To use a global variable inside a function, the global keyword must be used:

```
$globalVar = "I'm global";
```

```
function example() {
    global $globalVar;
    echo $globalVar;
}
```

— (4)

19. You are tasked with designing a school logo using CorelDRAW. The logo should include a combination of text and a desired vector shape. Explain the basic steps you would follow to create this logo, including how to lock objects in this logo. (2+2=4)

Answer : To design a school logo using CorelDRAW, follow these basic steps:

1. **Start a New Document:** Open CorelDRAW and create a new document by selecting "File" > "New." Set the desired dimensions and resolution for your logo.
2. **Draw Vector Shapes:** Use the **Pen Tool** or **Shape Tool** to create the vector shapes for the logo. For example, draw a shield, circle, or any shape that fits your design. Customize the shape's color, outline, and style using the properties bar. — (1)
3. **Add Text:** Select the **Text Tool** and click on the canvas to type the school's name or motto. Choose an appropriate font, size, and style that complements the vector shapes.
4. **Arrange and Align:** Use the **Pick Tool** to move, resize, and align text and shapes. Utilize alignment and distribution options under the "Arrange" menu to ensure proper positioning.
5. **Group Elements:** To keep the design organized, select all elements (shapes and text) and group them by pressing Ctrl+G. This ensures they move together as a single unit. — (2)

Steps to Lock Objects :

6. **Lock Objects:** To prevent accidental changes, lock objects by selecting them, right-clicking, and choosing "Lock Object." This will keep them in place while you work on other parts of the design. — (3)
7. **Save Your Work:** Save your logo by choosing "File" > "Save As" and select the desired file format, such as CDR or PDF. — (4)

OR

Compare bitmap and vector images in terms of resolution and scalability. How does each type affect image quality when resized? — 4

Answer : Bitmap and vector images differ significantly in terms of resolution and scalability.

Bitmap images (also known as raster images) are made up of pixels, with each pixel representing a specific color. As a result, the resolution of a bitmap image is fixed. When you enlarge a bitmap image beyond its original resolution, the image becomes pixelated, leading to a loss in quality. This is because the fixed number of pixels gets stretched, causing visible distortions and blurriness. — 1

On the other hand, **vector images** are composed of mathematical formulas that define shapes, lines, and colors. Since vectors are not dependent on resolution, they can be scaled infinitely without any loss of quality. When resized, a vector image retains its sharpness and clarity, making it ideal for logos, icons, and other designs that need to be resized frequently. — 2

Comparison can be done in tabular form.

Answer the following question (Word limit 300 words)

(5*2=10)

20. What is a Data Dictionary in the context of database management? Describe the different types of Data Dictionaries and explain how each type serves a unique purpose in managing and organizing data. (2+3=5)

Answer : In database management, a Data Dictionary is a centralized repository that stores metadata about the database's structure and organization. It provides information about the database schema, including tables, columns, data types, relationships, constraints, and access permissions. The Data Dictionary helps in managing, maintaining, and understanding the database efficiently by serving as a reference for database administrators, developers, and users. — 2

Types of Data Dictionaries

1. Active Data Dictionary:

- Definition: Integrated into the database management system (DBMS) and updated automatically as changes are made to the database schema.
- Purpose: Ensures real-time synchronization between the database schema and its metadata. It provides immediate access to current database definitions and structures. This type is essential for dynamic environments where the schema frequently changes. — 3
- Example: Oracle's data dictionary views like USER_TABLES and ALL_COLUMNS that automatically reflect changes to the schema. — 4

2. Passive Data Dictionary:

- Definition: Maintained separately from the DBMS, often as documentation or a set of files that must be updated manually. (4)
- Purpose: Used for documentation and reference purposes. It helps in understanding the database schema but requires manual updates to reflect changes in the actual database. This type is often used in environments where schema changes are infrequent.
- Example: A spreadsheet or document listing database tables, columns, and relationships that is updated manually by database administrators. (5)

OR

You have given an table name <STUDENT> in MYSQL with following data :

Student ID	Name	Marks_Term 1	Marks_Term 2
001	Naman	50	86
002	Neha	85	95
003	Ojas	75	60
004	Sumit	88	40

2+2+1
= (5)

write the code utilizing appropriate functions in MY/SQL to accomplish the following tasks:

- Display the name of student who scored greater than 80 marks in Term 1.
- Display StudentID of student who scored less than 70 marks in Term 2.
- Display Maximum marks in term 1.

Answer : (a) we use the SELECT statement to display the names of students who meet the condition Marks_Term_1 > 80 (1)

SELECT Name

FROM STUDENT

WHERE Marks_Term_1 > 80;

This will display two names i.e Neha and sumit (2)

- Here we will use select statement to fetch StudentID of those student who meet the condition (3)

SELECT StudentID

FROM STUDENT

WHERE Marks_Term_2 < 70;

This will display two names i.e Ojas and sumit

(c) To display the maximum marks in Term 1, you can use the MAX() function in MySQL:

SELECT MAX(Marks_Term_1) AS Max_Marks_Term_1

FROM STUDENT;

21. Amazon and Flipkart operate in both B2C (Business-to-Consumer) and B2B (Business-to-Business) e-commerce models. Explain how these platforms utilize both types of e-commerce. (5)

Answer : Amazon and Flipkart are prominent e-commerce platforms that effectively operate in both B2C (Business-to-Consumer) and B2B (Business-to-Business) models, addressing a wide range of market needs.

In the B2C model, both platforms focus on selling directly to individual consumers. They offer a diverse array of products, such as electronics, clothing, home goods, and groceries, through their online marketplaces. To enhance the consumer experience, Amazon and Flipkart invest in creating user-friendly interfaces, personalized recommendations, and efficient search functionalities. They also emphasize providing detailed product descriptions, customer reviews, and ratings to aid in decision-making. Their logistics networks are designed to ensure prompt delivery, with options for same-day or next-day service, free shipping on certain orders, and easy returns. Dedicated customer support teams handle inquiries and after-sales services, aiming to provide a seamless shopping experience.

In the B2B model, Amazon and Flipkart facilitate transactions between businesses, allowing them to buy and sell products in bulk or source necessary materials. They offer wholesale services where businesses can purchase items in large quantities at discounted rates, which is particularly advantageous for retailers and resellers. These platforms also connect suppliers and manufacturers with businesses seeking products, providing tools for managing bulk orders, tracking shipments, and accessing a broad range of business-oriented goods. Additionally, they offer business-specific features such as tax exemptions, integration with procurement systems, and advanced reporting tools to help businesses manage their purchases and inventory effectively.

By integrating both B2C and B2B models, Amazon and Flipkart are able to expand their market reach and diversify their revenue streams, serving the needs of both individual consumers and businesses.

OR

What are the primary advantages of social media in education? Provide examples of how students can use social media platforms to enhance their learning. (5)

Answer : Social media has become an integral part of education, offering numerous advantages that help students enhance their learning experience. The primary benefits include increased collaboration, accessibility to diverse learning resources, real-time communication, and the ability to engage with global communities. (1)

1. **Collaboration and Group Learning:** Social media platforms like Facebook, WhatsApp, and Slack allow students to create study groups, share resources, and collaborate on projects in real-time. For example, students working on a group assignment can use these platforms to discuss ideas, delegate tasks, and provide instant feedback, even if they are not physically together. (2)
2. **Access to a Wealth of Information:** Platforms like YouTube, Instagram, and LinkedIn host a plethora of educational content, ranging from tutorials and lectures to infographics and case studies. For instance, students can watch YouTube videos to understand complex topics such as calculus, coding, or historical events. LinkedIn Learning provides courses on various professional skills, enabling students to supplement their academic learning. (3)
3. **Real-Time Communication and Feedback:** Social media allows for instant communication between students and teachers. Twitter, for example, can be used by educators to share important announcements, links to academic articles, or updates on assignments. Students can also ask questions and receive real-time answers, promoting continuous learning. (4)
4. **Engagement with Global Communities:** Social media breaks down geographical barriers, enabling students to connect with peers, professionals, and subject matter experts worldwide. Platforms like Reddit and Quora have educational forums where students can engage in discussions, ask questions, and gain insights from global contributors. This exposure to different perspectives enhances critical thinking and broadens their understanding of various subjects. (5)

Answer the following questions with proper programming code

(5*3=15)

22. You are developing a student grading system for a class using PHP. The grades should be given based on students %age score and display a message. Using if-else statement in PHP, explain how you would implement the following grading criteria: (5)

1. Assign a grade of "A" for scores 90% and above.
2. Assign a grade of "B" for scores between 80% and 60%.
3. Assign a grade of "C" for scores between 50% to 40%.
4. Assign Grade D for score below 40%.
5. Display a message for the student, such as "Excellent", "Good", "Fair", based on their grade.

Answer : <?php

// Function to determine the grade based on percentage score

```
function determineGrade($percentage) {
```

```
    if ($percentage >= 90) {
```

```
        return "A+";
```

```
    } elseif ($percentage >= 80) {
```

```
        return "A";
```

```
    } elseif ($percentage >= 70) {
```

```
        return "B+";
```

```
    } elseif ($percentage >= 60) {
```

```
        return "B";
```

```
    } elseif ($percentage >= 50) {
```

```
        return "C+";
```

```
    } elseif ($percentage >= 40) {
```

```
        return "C";
```

```
    } else {
```

```
        return "F";
```

```
    }
```

```
}
```

Question can
be solve without
creating function

// Example student score

\$studentScore = 75; // Replace with the actual score

\$percentage = \$studentScore; // Assume \$studentScore is the percentage

// Get the grade

```
$grade = determineGrade($percentage);
```

```
// Display the results
```

```
echo "Student's percentage: " . $percentage . "%<br>";
```

```
echo "Student's grade: " . $grade;
```

```
?>
```

OR

PL/SQL is an extension of SQL that adds procedural capabilities. Analyze the five key differences between SQL and PL/SQL in terms of their structure, execution, error handling procedures and facilities.

— (5)

Answer:

S.No	Criteria	SQL (Structured Query Language)	PL/SQL (Procedural Language/SQL)
1	Purpose and Structure	Declarative language used for querying and manipulating data.	Procedural extension of SQL, supporting variables, loops, and conditions.
2	Execution Mode	Executes one statement at a time (independent operations).	Executes multiple statements in a block, allowing control flow logic.
3	Error Handling	Limited error handling, mainly at the query level (e.g., constraint violations).	Advanced error handling using EXCEPTION blocks for handling runtime errors.
4	Procedural Capabilities	Lacks procedural constructs (no loops, if-else, etc.).	Supports procedural constructs like loops (FOR , WHILE), conditionals (IF-ELSE), and functions.
5	Data Handling	Direct interaction with databases for data retrieval and manipulation.	Can manage data using SQL queries, plus logic to manipulate and control flow using variables and procedures.

23. You are assigned the responsibility of designing and managing a database for a school's student records using MySQL. Your task involves creating a table named studentDB to store detailed student information such as Name, Class, Roll No, Student ID, and Address. How would you write and execute the MySQL commands to create this table?

Answer : CREATE TABLE studentDB (

Name VARCHAR(100) NOT NULL,

Class VARCHAR(20) NOT NULL,

RollNo INT NOT NULL UNIQUE,

StudentID VARCHAR(20) PRIMARY KEY,

Address TEXT

);

Can
Student should
describe use
of each column
with datatype.

OR

Describe how DDL (Data Definition Language) commands are utilized to define and modify the structure of database objects. Additionally, explain any two DDL commands with suitable examples. $(2+1+1) = 5$

Answer : Data Definition Language (DDL) commands play a crucial role in SQL for defining and altering the structure of database objects, such as tables, indexes, and schemas. These commands enable users to create, modify, and delete the components of a database, facilitating the organization and storage of data effectively. By using DDL commands, users can establish the rules and layout of their databases, ensuring that data is structured appropriately for their needs.

Two DDL commands are as follows :

1. **CREATE:** This command is used to create new database objects. For example, to create a new table, you specify the columns, their data types, and any rules (constraints).

Example : CREATE TABLE Students (

StudentID INT PRIMARY KEY,

Name VARCHAR(100),

Age INT,

4

Marks DECIMAL(5,2)

);

3. **ALTER:** This command is used to change the structure of an existing database object. You can use it to add new columns, change data types, or remove columns from a table.

— (5)

ALTER TABLE Students

ADD Email VARCHAR(100);

- 24 (i) Create a program in PL/SQL to display greater between 3 given Numbers (3)

DECLARE

num1 NUMBER := 15; -- Replace with your first number

num2 NUMBER := 30; -- Replace with your second number

greatest NUMBER;

— (6)

BEGIN

-- Compare the numbers and determine the greatest

IF num1 >= num2 AND THEN

greatest := num1;

— (2)

ELSE

greatest := num2;

END IF;

-- Display the greatest number

DBMS_OUTPUT.PUT_LINE('The greatest number is: ' || greatest);

— (3)

END;

/

(ii) Create a program in PHP to determine whether the given number is even or odd (2)

```
<?php
```

```
$inputNumber = 7; // You can change this value to test with other numbers
```

```
if ($inputNumber % 2 == 0)
{
    echo "$inputNumber is Even.";
} else {
    echo "$inputNumber is Odd.";
}
?>
```

①

②

Blueprint for Marks Distribution :

Sr No	Type of Question	Marks Awarded	No of Question	Total Marks
1.	MCQ	1	12	1*12=12
2.	Very Short Answer Type Questions	5 (2+3)	2	5