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

PART – I

(Answer any 5 questions from 1 to 6. Each carries 1 score.)   **(5 × 1 = 5)**

1. **Queue organizes data based on _____ principle.**
   Answer: (a) FIFO
2. **Which hyperlink protocol is used to create an e-mail hyperlink?**
   Answer: (b) mailto:
3. **In JavaScript, which of the following keyword is used to convert data into number type?**
   Answer: (d) Number( )
4. **In PHP, _____ is a collection of key and value pairs.**
   Answer: Arrays
5. **The scientific study associated with the design, fabrication, theory and application of robots is called _____.**
   Answer: Robotics
6. **A virtual world where communication takes place only over the internet is called _____.**
   Answer: Cyberspace

PART – II

(Answer any 9 questions from 7 to 18. Each carries 2 score.)   **(9 × 2 = 18)**

7. **What is memory leak?**

   If the memory allocated using new operator is not freed using delete a part of the memory seems to disappear on every run of the program. This situation is known as memory leak.

8. **Compare empty tag and container tag.**
   - Empty tags don't require closing tags (e.g., `<br>`, `<img>`)
   - Container tags have both opening and closing tags (e.g., `<p>…</p>`, `<div>…</div>`)

9. **(a) Expand CSS.**
   Answer: Cascading Style Sheets
   (b) Which are the different ways to implement CSS in a web page?
   - Inline CSS (using style attribute)
   - Internal CSS (using `<style>` tag in head section)
   - External CSS (using separate .css file)

10. **Write short note on lists in HTML.**
    - Ordered lists (`<ol>`) display items with numbers
    - Unordered lists (`<ul>`) display items with bullets
    - Definition lists (`<dl>`) for terms and definitions

11. **Complete the table given below:**

Data	Data type in JavaScript
98445	number
"My School"	string
True	boolean
"False"	string

12. **Rewrite the given JavaScript code segment with suitable code elements to display even numbers upto 10 on a web page.**

```
<SCRIPT language="JavaScript">
var N;
N=2;
while(N<=10)
{
document.write(N + "<br>");
N=N+2;
}
</SCRIPT>
```

13. **Write short note on various types of web hosting.**
    - o Shared hosting: Multiple websites share same server resources
    - o VPS hosting: Virtual private server with dedicated resources
    - o Dedicated hosting: Entire server for one website

14. **What is responsive web design?**
    - o Design approach that makes web pages render well on all devices
    - o Uses flexible grids and layouts
    - o Implements media queries to adapt to different screen sizes
    - o Includes flexible images and media

15. **Write a brief description about the users of database.**
    - o Database Administrators: Manage and maintain DBMS
    - o Application Programmers: Develop applications using database
    - o Sophisticated users: Interact with database with their own queries
    - o Naive Users: Interact with database through applications

16. **Which are the aggregate functions in SQL?**
    - o COUNT(): Counts number of rows
    - o SUM(): Calculates sum of values
    - o AVG(): Calculates average value
    - o MAX(): Finds maximum value
    - o MIN(): Finds minimum value

17. **Compare GET and POST methods in PHP.**
    - o GET: Data visible in URL, limited length
    - o GET: Can be bookmarked, cached, remains in browser history
    - o POST: Data not visible in URL, no size limit
    - o POST: More secure for sensitive data, can't be bookmarked

18. **What is the difference between echo and print statements in PHP?**
    - Both echo and print allows us to generate output in php.
    - echo supports multiple output where as print supports only single output.
    - echo is faster than print.
    - print can return a true or false while echo cannot.

PART – III

19. **(a) What is structure in C++?**
    User-defined data type that groups different data types under one name
    (b) Define a structure 'FeeCard' to store the details Admission number, Name and Amount.

```
struct FeeCard
{
    int AdmNo;
    char Name[50];
    float Amount;
};
```

20. **Consider the array Num[5] of int type. Ptr an integer pointer then predict the output of**

    the following C++ statements:
    Ptr=Num;
    (a) cout<<(Num+1); → Memory Address of second element -**1004**
    (b) cout<<(Num+1); → *Value of second element -* **42**
    (c) for(int i=0; i<5; i++)
       cout<<(Ptr + i)<<"\n"; → Prints all array elements **37, 42, 57, 62, 67**

21. **(a) Define the OOP concept Inheritance.**
    Mechanism where a class (derived) acquires properties and behaviors of another class (base)
    (b) Write a brief note on different types of inheritance.
    - Single inheritance: One derived class from one base class
    - Multiple inheritance: One derived class from multiple base classes
    - Multilevel inheritance: Derived class acts as base for another class
    - Hierarchical inheritance: Multiple derived classes from single base class
    - Hybrid inheritance: a combination of two or more types of inheritance

22. **Write the algorithm to perform PUSH operation in a stack.**

```
Start
    1:  If (TOS < N-1) Then          /
    2:       TOS = TOS + 1
    3:       STACK[TOS] = VAL
    4:  Else
    5:       Print "Stack Overflow "
    6:  End of If
Stop
```

23. **(a) Write short note on linked list.**
    Linear data structure where elements are linked using pointers
    Each node contains data and pointer to next node
    Dynamic size, efficient insertions/deletions
    (b) List the operations that can be performed on linked list.
    - creation
    - Insertion
    - Deletion
    - Traversing (visiting each node)

24. **Compare static and dynamic web pages.**

Static web page	Dynamic web page
The content and layout of a web page is fixed.	The content and layout may change during run time.
Static web pages never use databases.	Database is used to generate dynamic content through queries.

25. **List any three attributes of `<BODY>` Tag with their use.**
    - bgcolor: Sets background color of page (e.g., bgcolor="yellow")
    - text: Sets default text color (e.g., text="blue")
    - background: Sets background image (e.g., background="image.jpg")
    - link: Sets color of unvisited links
    - vlink: Sets color of visited links

26. **List the advantages of DBMS.**
    - Reduces data redundancy (duplication)
    - Controls data inconsistency
    - Enforces data integrity and security
    - Provides data sharing among users
    - Maintains backup and recovery

27. **Write the output of the following JavaScript statements based on the given code segment:**
    ```
    var x, A,B,C;
    x="All the Best";
    A=x.toUpperCase();
    B=x.length;
    ```
    (a) alert(A); → "ALL THE BEST"
    (b) alert(B); → 12
    (c) alert(isNaN(x)); → true (1)

28. **Answer the following questions based on the given table STUDENT as per instructions:**

Reg_No	Name	Batch	Result	Marks
1101	Sachin	Science	Pass	480
1107	Rithu	Science	Fail	200
1234	Joseph	Commerce	Pass	350

(a) **Write the output of the operation σ *Result="Pass"* (STUDENT)**

Reg_No	Name	Batch	Result	Marks
1101	Sachin	Science	Pass	480
1234	Joseph	Commerce	Pass	350

(b) **Write the output of the operation σ *Result="Pass"* ∧ *Batch="Science"* (STUDENT)**

Reg_No	Name	Batch	Result	Marks
1101	Sachin	Science	Pass	480

(c) **Write relational operation to get Reg_No, Result of all students from STUDENT**

π *Reg_No,Result* (STUDENT)

Reg_No	Result
1101	Pass
1107	Fail
1234	Pass

29. **Explain the cloud service models.**

- o **IaaS (Infrastructure as a Service):** Provides basic storage and computing capabilities as standardised services over network.
- o **PaaS (Platform as a Service):** Gives access to the components that require to develop and operate applications over internet. The customer has the freedom to build his own applications.
- o **SaaS (Software as a Service):** - A complete application is offered to the customer, as a service on demand.In a SaaS agreement, customers have the least control on cloud

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PART – IV

(Answer any 2 questions from 30 to 32. Each carries 5 scores.) **(2 × 5 = 10)**

30. **(a) List the tags used to create table in HTML with their use.**

- o **<table>:** Defines the entire table
- o **<caption>:** Provides title/description for table
- o **<tr>:** Defines a table row
- o **<th>:** Defines a header cell (bold and centered by default)
- o **<td>:** Defines a standard data cell

(b) Write HTML code to display the following table in a web page:

DETAILS OF STUDENTS		
Chest No	Name	No. of attempts
123	Rithu	3
125	Ananya	2

```
<html>
<body>
<table border="1" align="center">
<tr>
    <th colspan="3">DETAILS OF STUDENTS</th>
</tr>
<tr>
   <th>Chest No</th>
   <th>Name</th>
   <th>No. of attempts</th>
</tr>
<tr>
   <td>123</td>
   <td>Rithu</td>
   <td>3</td>
</tr>
<tr>
   <td>125</td>
   <td>Ananya</td>
   <td>2</td>
</tr>
</table>
</body>
</html>
```

31. **Consider the given SQL query,**
    ```
    CREATE TABLE Book
    (Book ID INT PRIMARY KEY,
    Book Name VARCHAR(25),
    Publisher VARCHAR(25),
    Price INT,
    NOT NULL(Book_Name, Publisher));
    ```
    Answer the following
    (a) Write the table constraint used in the query.
      NOT NULL
    (b) Write SQL query to display whole table.
      SELECT * FROM Book;

    (c) Write SQL query to display the list of books with price below 200.
      SELECT * FROM Book WHERE Price<200;

    (d) Write SQL query to display Book name in the ascending order of price.
      SELECT Book Name FROM Book ORDER BY Price;

(e) Rewrite the above query with proper changes so that the Book_ID to be unique and price decimal type.

```
CREATE TABLE Book
 (
    Book_ID INT UNIQUE,
    Book_Name VARCHAR(25) NOT NULL,
    Publisher VARCHAR(25) NOT NULL,
    Price DECIMAL(10,2)
 );
```

32. **(a) Define e-Learning.**

The use of electronic media and ICT (Information and Communication Technologies) in education is termed eLearning. Electronic learning that uses digital technologies to deliver educational content outside traditional classroom.

(b) List any 4 e-Learning tools.

    i. Electronic Book reader: - used for reading digital books and documents.

    ii. E text: - Easily searchable and accessible on different devices.

    iii. Online chat: - Real-time communication through text over the internet.

    iv. E content: - Can be accessed anytime for self-paced learning

    v. Educational TV Channel: - Enhances learning through visual and auditory content

(c) Explain any 4 cyber-crime against individuals.

- **Identity theft** occurs when someone uses another person's identifying information, like their name, credit card number, etc. without their permission to commit fraud or other crimes.
- **Harassment** means posting humiliating comments focusing on gender, race, religion, nationality at specific individuals in chat rooms, social media, e-mail, etc. is harassment.
- **Impersonation and cheating:** Impersonation is an act of pretending to be another person forthe purpose of harming the victim.
- **Violation of privacy:** Violation of privacy is the intrusion into the personal life of another,without a valid reason.
- **Dissemination of obscene material:** The Internet has provided a medium for the facilitation of crimes like pornography. The distribution and posting of obscene material is one of the important cyber crimes today.