

SECOND YEAR HIGHER SECONDARY EXAMINATION, MARCH 2021

Part III
COMPUTER SCIENCE
Maximum: 60 Scores

Answer any number of questions from 1 to 44. Maximum Score 60.

1. Question from (a) to (e) carries 1 score each.

(5x1 = 5)

(a) Which keyword is used to define a structure in C++?

Ans: struct

(b) Which type of inheritance has one base class and two or more sub-classes?

Ans: Hierarchical inheritance

(c) Name the PHP operator to join two strings.

Ans: Concatenation operator ('.')

(d) Name the application of computational intelligence that refers to metrics related to human characteristics and traits.

Ans: Biometrics

(e) Give an example of Common Service Centre associated with e-Governance of Kerala.

Ans: Akshaya centres/CSC Digital Seva etc.

Questions from 2 to 21 carries 2 score each.

(20x2 = 40)

2. What is the use of structure data type in C++ programs ?

Ans: Structure data type is used to store together elements of different data types. The keyword struct is used to define a structure.

3. Explain the reason for memory leak in programming.

Ans: Memory leak occurs when programmers allocates memory by using the keyword *new* and forgets to de-allocate the memory by using *delete* operator.

4. If `int num = 5;` write C++ statements to declare a pointer variable and store the address of num into it.

Ans: `int *n = &num ;`

5. Write any two features of Object Oriented Programming.

Ans: Follows bottom up approach/Adding new data and functions are easy/Overloading is possible/More secure/Inheritance is allowed/They have access specifiers private, public, protected (Any 2)

6. What is polymorphism in OOP? Which are the two classifications of it?

Ans: Polymorphism (from the Greek meaning "having multiple forms") is the ability to assign different meanings in different contexts, to an entity such as object, function or operator. Two types of polymorphism are compile time polymorphism and run time polymorphism.

7. What is the advantage of circular queue over linear queue ?

Ans: Easier for insertion-deletion. Efficient utilization of memory/No wastage of memory.

8. Distinguish dynamic web page from static web page.

Ans:

Static web page	Dynamic web page
Contents and layout is fixed.	Contents and layout may change during run time.
Never use databases.	Database is used.
No server side applications	Runs Server side applications
Easy to develop	Required programming skills

9. Prepare a short note on Cascading Style Sheet.

Ans: CSS describes how HTML elements are to be displayed on screen. CSS saves a lot of work. It can control the layout of multiple web pages all at once.

10. Write any two attributes of tag and their effects in the web page.

Ans: *Face*:- To specify font face. *Color*:- To set font color. *Size*:- To set font size. (Any 2)

11. Write the two tags associated with <DL> tag and the use of each in making a definition list.

Ans: <DT> tag For definition term <DD> tag For definition description

12. What is hyper linking in a web page ? Name the tag used for it.

Ans: Hyperlink (link) is an element, a text, or an image used to navigate to another section or another page. The anchor tag <A> is used for hyperlink.

13. What is the use of Action attribute in <FORM> tag ?

Ans: The action attribute specifies where to send the form data when the form is submitted. This usually specifies a URL.

14. How will you declare a variable in JavaScript? Give an example.

Ans: Variable is declared using the keyword *var* in JavaScript. E.g. var a = 10;

15. Write a JavaScript code to display the numbers from 1 to 100.

Ans:

```
for(var i=1 ; i<= 100; i++)  
{ document.write(i+ " "); }
```

16 Write any two limitations of free hosting.

Ans: There may be restriction on the uploading file size. Domain name is usually provided as a subdomain of the service provider.

17. What is the use of FTP client software? Give an example.

Ans: FTP is used to transfer files from one computer to another on the internet. Examples include FileZilla, SmartFTP, CuteFTP etc.

18. Which are the four components of DBMS ?

Ans: Hardware, software, data, users, procedures

19. If a table has 10 rows and 5 columns, what will be its degree and cardinality?

Ans: Cardinality is 10 and degree is 5.

20. What is the advantage of using VARCHAR data type over CHAR data type in SQL ?

Ans: The VARCHAR type saves memory since it does not append spaces with the values when they are stored. CHAR type uses fixed length memory for all data.

21. Write a short note on Infringement.

Ans: Infringement is the unauthorized use of intellectual property rights such as patents, copyrights and trademarks. Infringement is a punishable offence under law.

Questions from 22 to 41 carries 3 scores each.

(20 x 3 = 60)

22. Compare the two types of memory allocations in C++.

Ans: (Any 3)

Static Memory Allocation	Dynamic Memory Allocation
In this case, variables get allocated permanently	In this case, variables get allocated while program unit is active
Allocation is done before program execution	Allocation is done during program execution
Less efficient	More efficient
There is no memory reusability	There is memory reusability
Memory cannot be freed	Memory can be freed when not required
No special operators used	<i>new</i> operator for memory allocation and <i>delete</i> operator for memory release
E.g. Array	E.g. Linked list

23. Write an algorithm to perform PUSH operation in a stack.

Ans: 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

24. Explain any three operations performed on data structures.

Ans: (Any 3)

1. **Traversing**: -It is the operation of visiting each element in a database. Usually traversal is done by starting with the first element to the last element.
2. **Searching**: - It is the process of finding the location of a particular element in a data structure.
3. **Inserting**: - It is the operation of adding a new data to a particular place in a data structure.
4. **Deleting** :- It is the operation of removing an element from a data structure.
5. **Sorting**: - It is the process of arranging elements in a data structure in ascending or descending order. Sorting makes searching easier.
6. **Merging**: - It is the process of combining elements of two data structures to form a new one.

25. What is the use of each of the following text formatting tags in HTML?

(a)

Ans: Bold text

(b) <SUP>

Ans: Superscript

(c) <U>

Ans: Underline

26. List any three features of web server.

Ans: Web server is the powerful computer which hosts websites. Web servers are always on, and connected to a high bandwidth internet connection. It has multiple processors, Very fast memories and high performance hard disks. Servers are installed on data centres.

27. How does client side scripting differ from server side scripting?

Ans: (Any 3)

Client side scripting	Server side scripting
Script is copied to the client browser	Script remains in the server
Executed in the client browser	Executed in the server
Used for validation of data at the client	Used to connect to databases
Users can block	Users cannot block
Browser type and version effects the script working	Browser type does not affect script working

28. Write HTML code to display the following list in a web page.

Higher Secondary Education

- Science group
- Humanities group
- Commerce group

Ans:

```
<H3>Higher Secondary education</H3>
<UL>
  <LI>Science group </LI>
  <LI>Humanities group </LI>
  <LI>Commerce group </LI>
</UL>
```

29. List any three values provided to Type attribute of <INPUT> tag and specify the use of each.

Ans: Values of the type attribute can be text-for text box, password- for password box, checkbox- for checkbox, radio-for radio button, reset-for reset button, submit-for submit button, button-for other button.

30. What is meant by nesting of <FRAMESET>? Explain its need.

Ans: The <FRAMESET> tag allows setting multiple web pages in a single window. Nesting of this tag is used to divide the one row into multiple columns or one column into multiple rows. <FRAME> is an empty tag which defines the frames inside the <FRAMESET> tag.

31. List three data types in JavaScript and give example for each.

Ans:

- 1. Number:-** All positive numbers, negative numbers, integers, floating point numbers etc. are included in this type. E.g. -247, 3.86
- 2. String:-** Any combination of characters enclosed within double quotes is included in this type. E.g. "India", "245", "#1"
- 3. Boolean:-** Boolean can have only two values, true or false.

32. Explain the working of the following JavaScript functions and specify the output of each.

(a) `isNaN("254")`

Ans: **False**

(b) `"Covid-19".charAt(3)`

Ans: **i**

(c) `"MASK".toUpperCase()`

Ans: **MASK**

33. Prepare short notes on three types of web hosting.

- Ans: **1. Shared hosting:-** It is the most common type of web hosting. Different websites are stored on a single server and they share resources like RAM and CPU. Shared hosting is most suitable for small websites with less traffic. Shared web servers are cheap and easy to use.
- 2. Dedicated hosting:-** In dedicated hosting, the client leases the entire web server and all its resources. Here the client has full control over the web server. It provides guaranteed performance, but it is expensive. It is suitable for large organizations, govt. departments etc.
- 3. Virtual Private Server:-** A Virtual Private Server (VPS) is a physical server that is virtually partitioned in to several servers using the virtualization technology. Each VPS works similar to a dedicated server. VPS provides almost the same services at a lesser cost than that of dedicated hosting. Some popular server virtualization softwares are VMware, Virtualbox, FreeVPS etc.

34. Explain three types of data abstractions in DBMS.

Ans: The process of hiding irrelevant details from user is called data abstraction. Three levels of abstractions are physical level, logical level and view level.

1. Physical level:- This is the lowest level of data abstraction. It describes how data is actually stored in database. You can get the complex data structure details at this level.

2. Logical level (Conceptual level) :- This is the middle level of data abstraction. It describes what data is stored in database and what relationships exist among the data.

3. View level :- It is the highest level of data abstraction. This level is closest to the users. The system may provide many views for the same database.

35. List any three constraints used with CREATE TABLE command and specify the use of each.

Ans: **1. NOT NULL:-** This specifies that a column can never have NULL values.

2. AUTO_INCREMENT:- MySQL will assign serial numbers automatically for a column with this constraint. In a table only one auto_ increment column is allowed.

3. UNIQUE:- If a column is set with this constraint, then no two rows will have the same value.

4. PRIMARY KEY:- Most tables require a primary key. It can be considered as a combination of UNIQUE and NOT NULL.

5. DEFAULT:- A default value can be set for a column, using this constraint.

36. Explain the use of any three DML commands in SQL.

Ans: **SELECT:-** Used to select data from the table, **INSERT:-** Used to insert data to the table, **UPDATE:-** Used to alter data in a table. **DELETE:-** Used to delete a data from the table.

37. Briefly describe three optional clauses used with SELECT command in SQL.

Ans: **DISTICT**:- It is used to select distinct data from a table. **WHERE**:- It is used to give a particular condition for selection. **BETWEEN AND** :- It is used to select data which satisfies a range of values

38. Write the syntax of for loop in PHP and explain its working.

Ans: The syntax of for loop is
for (initialization; test; update)
{
 body;
}

First initializes. Then test the condition, if it is true then the body is executed. Then updates the variable and again test the variable. If true, the body is executed. Update-test-body cycle is executed until the testing fails.

39. Explain two types of arrays in PHP.

Ans: **Indexed array**:- Arrays with numeric index are called indexed arrays. They use non-negative integers as keys. This array can store numbers, strings etc. but their index will be numbers.

Associative array:- Arrays with named keys are called associative arrays. Their index is string

40. Write a brief note on three services of cloud computing.

Ans: 1. **SaaS (Software as a Service)**

- An application is offered to the customer as a service on demand.
- In this model Customers have least control over the cloud.
- E.g. Google docs.

2. **PaaS (Platform as a Service)**

- The platforms used to design, develop, build and test applications are provided to the customer.
- In this the customer has the freedom to build his own applications, which run on the provider's infrastructure.
- E.g. Google's App Engine, Microsoft Azure.

3. **IaaS (Infrastructure as a Service)**

- IaaS provides basic storage and computing capabilities as standardised services over the network
- The customer would typically set up his own software on the infrastructure.
- Amazon Web Services, Joyent, AT&T, GoGrid, etc.

41. Write any three advantages of e-Learning.

Ans: Offers variety of courses from different institutions in the world

- Cost is very less
- Time and place is not an issue in e-Learning
- No need to travel which saves time

Questions from 42 to 44 carries 5 scores each.

(3 x 5 = 15)

42. A web page is to be developed for Kerala Tourism.

(a) Write the basic structure of HTML program to design the page.

Ans:

<HTML>

```

<HEAD><TITLE>Kerala Tourism</TITLE></HEAD>
<BODY>
<CENTER>
<I><H1>Kerala Tourism</H1>
<H3>Welcome to God's own country</H3></I>
<U><H2>TouristDestinations</H2></U>
<FONT Face=Arial Color=Red size=5 >
    Munnar<BR>
    Alappuzha<BR>
    Wayanad<BR>
    Kochi<BR>
    Thekkadi
</FONT><BR><BR>
</CENTER>
</BODY>
</HTML>

```

(b) Which attribute will be used to give green colour to the background?

Ans: <BODY Bgcolor= "Green">

(c) Write the HTML statement to insert an image file "kerala.jp

Ans:

(d) Write the HTML statement to scroll the text "God's own country".

(2+1+1+1=5)

<MARQUEE>God's won country </MARQUEE>

43 Write HTML code to create a table in a web page as shown below.

2021	Science	Humanities	Commerce
Std XI	165	58	109
Std XII	173	64	112

Ans:

```

<HTML>
<HEAD><TITLE>Table</TITLE></HEAD>
<BODY>
<TABLE Border = "3" >
    <TR><TH>2021</TH><TH>Science</TH><TH>Humanities</TH><TH>Commerce</TH></TR>
    <TR><TD>Std XI</TD><TD>165</TD><TD>58</TD><TD>109</TD></TR>
    <TR><TD>Std XII</TD><TD>173</TD><TD>64</TD><TD>112</TD></TR>
</TABLE>
</BODY>
</HTML>

```

44. Observe the following tables in DBMS.

Football

Pcode	Pname	Class
101	Rahul	12C
105	John	11A

Athletics

Pcode	Pname	Class
103	Renjith	12B
105	John	11A

107	Noufal	12A
-----	--------	-----

110	Irfan	12A
-----	-------	-----

(a) Explain UNION operation with the help of the above two tables.

Ans: UNION operation returns a relation containing all tuples appearing in either or both of the two relations. The resulting relation is

Pcode	Pname	Class
101	Rahul	12C
103	Renjith	12B
105	John	11A
107	Noufal	12A
110	Irfan	12A

(b) What will be the result if INTERSECTION operation is performed on these tables?

Ans:

Pcode	Pname	Class
105	John	11A

(c) Which operation is to be performed to get the list of students in Football from class 12A ?

Ans:

$\sigma_{\text{Class} = \text{"12A"}}(\text{Football})$

OR

SELECT * from Football where Class = "12A" ;