

MODEL EXAMINATION MARCH 2021

COMPUTER SCIENCE

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

Answer the following questions from (a) to (e). Each carries 1 score,

(a) In C++,..... operator is used to get the address of a variable.

Ans: &

(b) is a prototype/blue print that defines the specifications common to all objects of a particular type.

Ans: Class

(c) Write any one core data type in PHP.

Ans: Integer/Float/Double, String, Boolean

(d) Name a SaaS provider.

Ans: Google/Amazon/Salesforce/Adobe/Microsoft/Facebook/Netflix etc.

(e) KITE VICTERS is an example for..... ICT service.

Ans: E-learning tool/Educational TV channel

Answer the following questions from 2 to 21. Each carries 2 scores.

2. Write the use of new and delete operators in C++.

Ans: The operator *new* is used for memory allocation during run time (dynamic memory allocation). The *delete* operator is used to de-allocate this memory.

3. What is memory leak?

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

4. Mention any two advantages of Object Oriented Programming (OOP).

Ans: Data abstraction and Inheritance is possible in OOP. OOP is more secure.

5. Briefly explain about polymorphism.

Ans: Polymorphism is the ability to assign different meanings in different contexts, to an entity such as object, function or operator. For example, the + operator can work as addition with integers and concatenation with strings.

6. What do you mean by queue overflow?

Ans: Queue overflow happens when we try to insert a new item to a queue which is already full.

7. Differentiate between static web page and dynamic web page.

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

8. Write the name of any four scripting languages.

Ans: JavaScript, VB Script, PHP, JSP

9. Which are the HTML tags used to divide the browser window?

Ans: <FRAMESET> and <FRAME>

10. Differentiate between internal linking and external linking in HTML.

Ans: Internal link is the link to a particular section of the same document. Name and Href attributes of <A> tag are used for internal linking. External link is the link from one web page to another web page. Href attribute of <A> tag is used for external linking.

11. What are the different ways to include Java Script in HTML?

Ans: Script code (using <SCRIPT> tag) can be written inside <HEAD> section, or anywhere inside <BODY> section or as an external file with extension .js

12. Why do we use FTP client software? Write an example for FTP client software.

Ans: FTP client software is used to transfer files from one computer to another on the internet. FileZilla, SmartFTP are examples.

13. Write a short note on free hosting.

Ans: Free hosting provides web hosting services free of charge. There may be restriction on the uploading file size. Free hosting service usually provide either their own sub domain or as a directory service. E.g. blogspot.in

14. Write any four advantages of Data Base Management System (DBMS).

Ans: Controlling redundancy, efficient data access, data consistency and data security are advantages of DBMS.

15. Differentiate between Degree and Cardinality of a relation.

Ans: The number of attributes in a relation is known as degree and the number of tuples in relation is known as cardinality.

16. Write the names of any four constraints used in Structured Query Language.

Ans: NOT NULL, UNIQUE, PRIMARY KEY, DEFAULT

17. Differentiate between static and dynamic memory allocations.

Ans: (Any two differences from the following)

Static Memory Allocation	Dynamic Memory Allocation
In this case, variables get allocated permanently	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

18. Briefly explain the structure of an HTML document.

Ans:

```
<HTML>
<HEAD><TITLE> This is the Title </TITLE></HEAD>
```

<BODY>

Hello, This part will be displayed on the page.

</BODY>

</HTML>

19. Write any two tags used for creating definition list in HTML.

Ans: <DL>, <DT> or <DD>

20. How to create a variable in Java Script?

Ans: Variable is created in JavaScript using the keyword **var**. E.g. var x =3; var y = " Hai " ;

21. Write your opinion about enforcement of cyber laws in our society.

Ans: Cyber law is the law governing the use of computers and internet. IT ACT 2000 is India's legislation regulating the use of computers and internet. Since the number of cybercrimes are increasing exponentially over the years, strict enforcement of these laws are essential.

Answer the following questions from 22 to 41. Each carries 3 scores.

22. A structure definition for date is given below. Fill the blanks in it.

..... date

{

..... day;

int month ;

int ;

};

Ans:

struct date

{

int day;

int month;

int **year**;

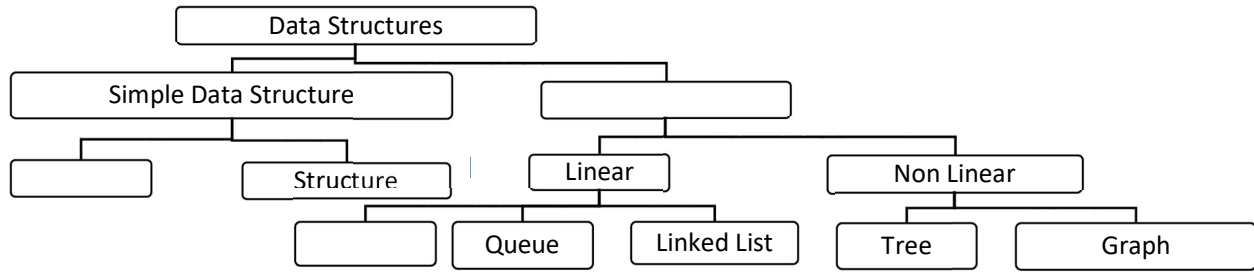
};

23. Write a short note on operations on data structures.

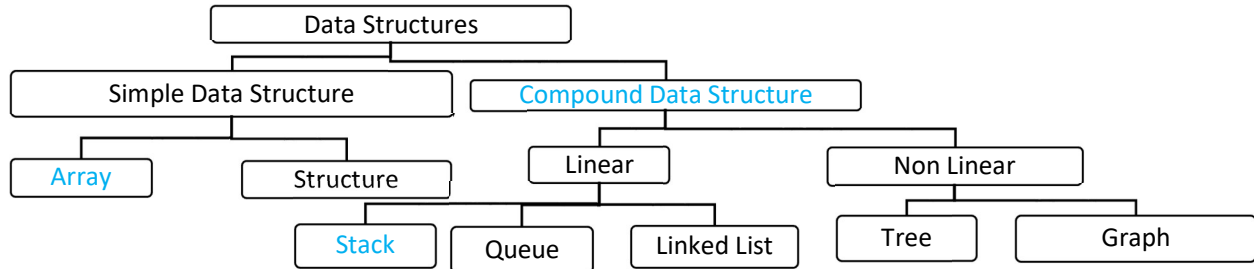
Ans: Different Operations are given below. (Write any three)

- Traversing - Visiting each element.
- Searching - Finding the location of a particular element.
- Inserting - Adding a new element.
- Deleting - Removing an element.
- Sorting - Arranging elements.
- Merging - Combining elements

24. Fill the empty boxes in the diagram regarding the classification of data structures.



Ans:



25. Write the HTML code fragment to print the following:

(a) $x^2 + y^2$

Ans: `x²+y²`

(b) H_2SO_4

Ans: `H₂SO₄`

(c) $a > b$

Ans: `a > b`

26. Prepare a short note on attributes of <BODY> tag in HTML.

Ans: Bgcolor, background and text are important attributes of <BODY> tag. Its usages are

Bgcolor - Used to give a background colour

Background - Used to give a background picture

Text - Used to give default text colour in the document.

27. Write a short note on <INPUT> tag in HTML.

Ans: INPUT is an important tag used in a form. It has an attribute *Type* to specify the type of input control. Values of the type attribute can be text, password, checkbox, radio, reset, submit or button. Different elements are constructed according to the value of type attribute of INPUT tag.

28. Describe about <TR> <TD> <TH> tags in HTML.

Ans: <TR> tag is used to insert a new raw in an HTML table. <TD> tag is used to insert Table Data in a particular cell of the table. <TH> tag is used to insert Table Heading data to a particular cell.

29. Prepare a brief explanation about the operators in JavaScript.

Ans: JavaScript operators are

Arithmetic operators - +, -, ÷, *, %

Relational operators - <, <=, >, >=, ==, !=

Logical operators - &&, ||, !

Assignment operator - =

String addition operator - The operator + can also be used to concatenate two strings.

30. Write the use of following built in functions in JavaScript.

(a) alert()

Ans: It is used to display a message on the screen with a new window.

(b) `isNaN()`

Ans: This function is used to check whether a value is number or not. This returns true if the given value is not a number.

(c) `charAt()`

Ans: It returns the character at a particular position, and the position starts from 0.

31. Write a brief explanation about 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. This is 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.

3. **Virtual Private Server**

A Virtual Private Server (VPS) is a physical server that is virtually partitioned into several servers using the virtualization technology. VPS provides almost the same services at a lesser cost than that of dedicated hosting.

32. What is data independence? What are the different levels of data independence?

Ans: The ability to modify the schema definition at one level without affecting the schema definition at the next higher level is called data independence. Two types of data independence are physical data independence and logical data independence.

1. **Physical data independence**

It is the ability to modify the schema at the physical level without affecting the schema at the conceptual level.

2. **Logical data independence**

It is the ability to modify the schema at the logical level without affecting the schema at the view level. Logical data independence is difficult to achieve than physical data independence.

33. How do you use ORDER BY clause along with SELECT command?

Ans: The ORDER BY command is used to retrieve sorted data. The keywords ASC (for ascending) and DESC (for descending) are used along with ORDER BY.

E.g. `SELECT * FROM student ORDER BY name ASC;` (To retrieve student details in Ascending order of their names from the student table)

34. What are the different data types used in SQL? Explain.

Ans: Data types are int, dec, char, varchar, date and time.

INT – Used for integers

DEC – Used for decimal numbers. `dec(5,2)` means we can use 5 digits in which 2 digits are after the decimal point.

CHAR – Used for fixed length characters. `char (10)` means 10 character memory will be allocated for all data.

VARCHAR – Used for variable length characters. `varchar (10)` only allocates as many memory as needed up to 10 characters.

DATE – To represent date. SQL date format is YYYYMMDD

TIME – For representing time. Format is HH:MM:SS

35. What is cloud computing? What are the services offered by cloud?

Ans: It is a computing model, where resources such as computing power, storage, network and software are combined and provided as services on the Internet in a remotely accessible fashion. It is a pay as you use model. There are three service models in cloud. Those are

1. SaaS (Software as a Service)
2. PaaS (Platform as a Service)
3. IaaS (Infrastructure as a Service)

36. Prepare a short note on e-learning.

Ans: The use of electronic media and ICT in education is known as e-Learning. The tools for e-learning are e-Books, e-Text, online chat, e-Content and Education TV channels. E-learning has the following advantages

- 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

37. Differentiate between echo and print constructs used in PHP.

Ans:

echo	print
It can take more than one parameter	Takes only one parameter
Does not return any value	Returns true or 1 on successful output or false otherwise
Faster than print	Slower than echo

38. Write any three characteristics of client side scripting.

- Script is copied to the client browser
- Executed in the client browser
- Used for validation of data at the client
- Users can block

39. Prepare HTML code to display the following numbered list of High Tech equipment in your class room.

High Tech Class Room

(1) Projector

(2) Laptop

(3) Multimedia Speaker.

Ans:

```
<HTML>
<HEAD><TITLE>Class Room</TITLE></HEAD>
<BODY>
  <H3>High Tech Class Room </H3>
  <OL Type="1">
    <LI> Projector </LI>
    <LI> Laptop </LI>
    <LI> Multimedia Speaker </LI>
  </OL>
</BODY>
</HTML>
```

(This can also be done using
 tag in each line without using list tag.)

40. Write the use of any three DML commands in SQL.

Ans:

SELECT - Used to retrieve data items from a table.

INSERT - Used to add data items to a table.

DELETE - Used to remove data from a table.

41. Illustrate any one loop statement used in PHP.

Ans:

for loop in PHP

The syntax for *for* loop in PHP is

```
for (initialization; test; update)
{
    body;
}
```

For example, to print numbers from 1 to 100, the loop would be

```
for ($i = 1; $i <= 100; $i++)
{
    echo $i." " ;
}
```

Answer the questions from 42 to 44. Each carries 5 scores.

42. Write the use of following tags in HTML.

(a) <BODY>

Ans: Contents inside in this tag will be displayed in the browser window. Bgcolor, background etc. are its attributes.

(b) <P>

Ans: This tag is used to start a new paragraph in the document.

(c) <MARQUEE>

Ans: This tag is used to insert a scrolling text in the page. Height, width etc. are its attributes.

(d)

Ans: This tag is used to insert an image to the page. Href is the main attribute of this tag.

(e) <H6>

Ans: This tag is used to insert the smallest heading in the page.

43. Prepare a web page using HTML to show the following details about prevention of COVID-19.

Break the Chain.

- Sanities your hands.
- Use soap regularly.
- Wear Mask.
- Keep social distancing.

Ans:

```
<HTML>
<HEAD><TITLE>Break the Chain</TITLE></HEAD>
<BODY>
  <H3> Break the Chain </H3>
  <UL Type="disc">
    <LI> Sanities your hands </LI>
    <LI> Use soap regularly </LI>
    <LI> Wear Mask </LI>
    <LI> Keep social distancing</LI>
  </UL>
</BODY>
</HTML>
```

44. (a) Distinguish between primary key and alternate key.

Ans: Primary key is one of the candidate keys chosen by the database designer to be the unique identifier for the table. There will be only one Primary key for a table. A candidate key that is not the primary key is known as alternate key. There may be more than one alternate key in a table.

(b) Write a short note on any three operations in relational algebra.

Ans:

1. SELECT operation

It is used to select rows from a relation that satisfies a given predicate (condition). SELECT operation is denoted using the lower case letter sigma (σ). The general format of select operation is

$\sigma_{\text{condition}}$ (**Relation**)

2. PROJECT operation

It selects some attributes from the table and forms a new relation. It is denoted by the lower case letter pi. The general format of project operation is

$\pi_{A_1, A_2, \dots, A_n}$ (**Relation**) Here $A_1, A_2 \dots$ are attributes in the relation.

3. UNION operation

It is a binary operation. It returns a relation containing all tuples appearing in either or both of the two relations. It is denoted by **U**. The two relations must be union compatible.

E.g. If $A = \{ a, b, c, d \}$ and $B = \{ c, d, e, f \}$, Then $A \cup B = \{ a, b, c, d, e, f \}$