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Subject : Internet and Web Programming.

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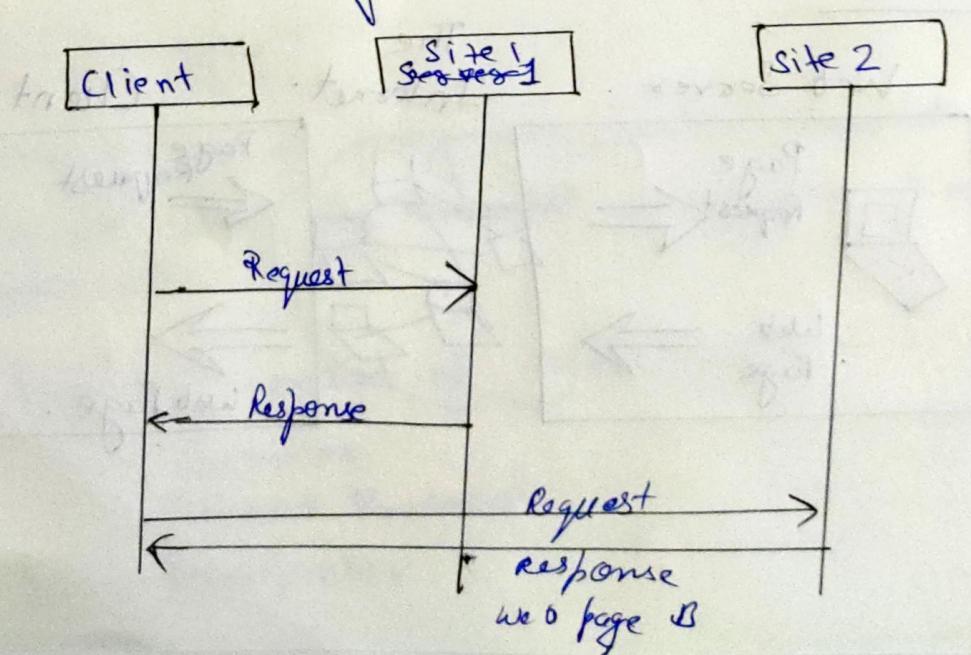
Slot : A21 + A22 + A23.

### Term End Examination.

Q1 (a)

The world wide web (www) is a collection of documents and other web resources which are identified by URL's, interlinked by hypertext links and can be accessed or searched by the Browser via internet.

Let us go through a scenario to understand it in a better way.



# Web System Architecture.

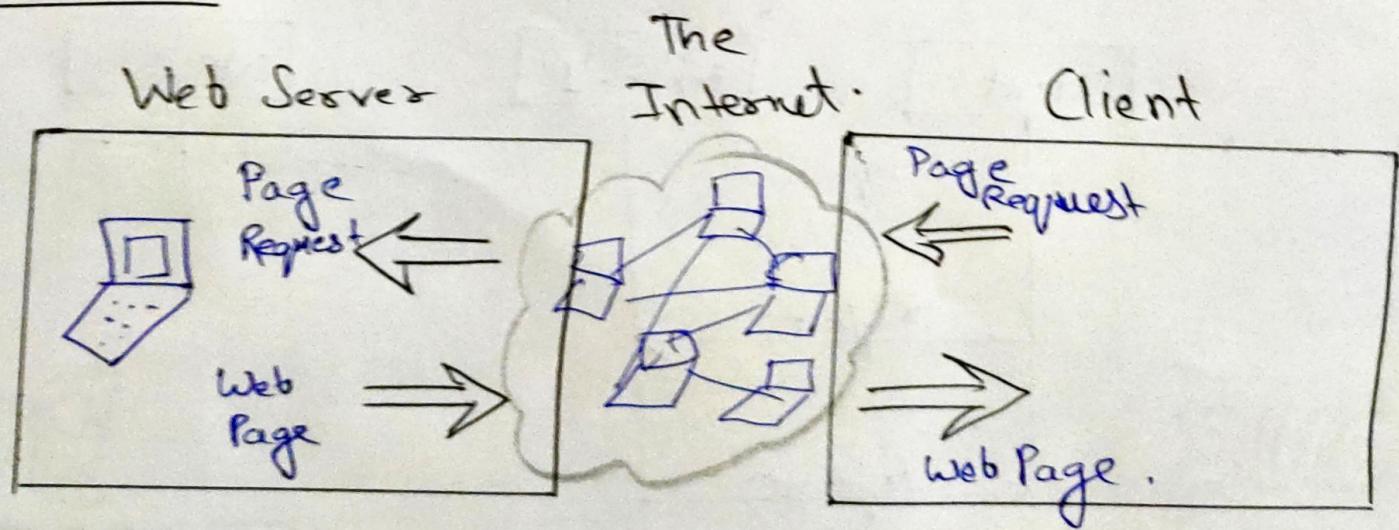
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## ④ Client-Server and 2-tier Architecture.

When we are browsing the internet, we are usually using some web browser. The computer which is running a browser is called client, while the machine that is providing the web pages is called server.

A simple scenario, where the web pages are connected to one or more clients known as 2-tier architectural model.

### DIAGRAM



2)

## 3-tier Architecture.

Generally computing applications consists of a three tier architecture.

(3)

### Presentation Services.

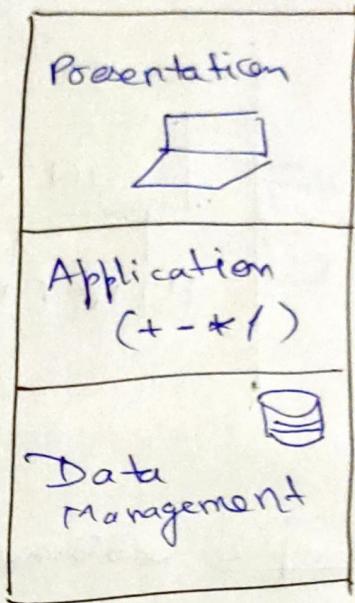
These manifest themselves in form of information display and user data facility.

### Functional logic.

Every application include some data processing.

### Data Management

This layer hold the database of the application.



Also, there are n-tier architectures as well which are offered as multilayer architecture.

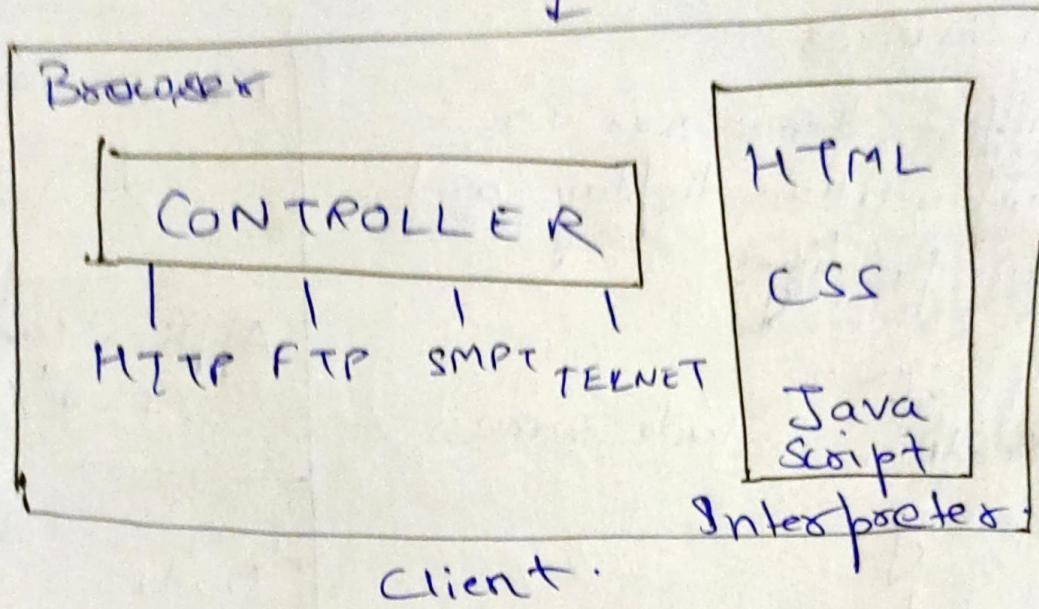
## Client (Browser)

Web Browser is a program, which is used to communicate with the ~~internet~~ web server through the internet.

Each browser consist of three parts:-

- Controller
- Client Protocol
- Interpreter.

(4)



Examples: Web Browser, Email Client, online chat

## Server Side Scripting

Server Side Scripting is a technique used in web development which involves employing scripts on the web server which produces a response customized for each user's (client) request to the website.

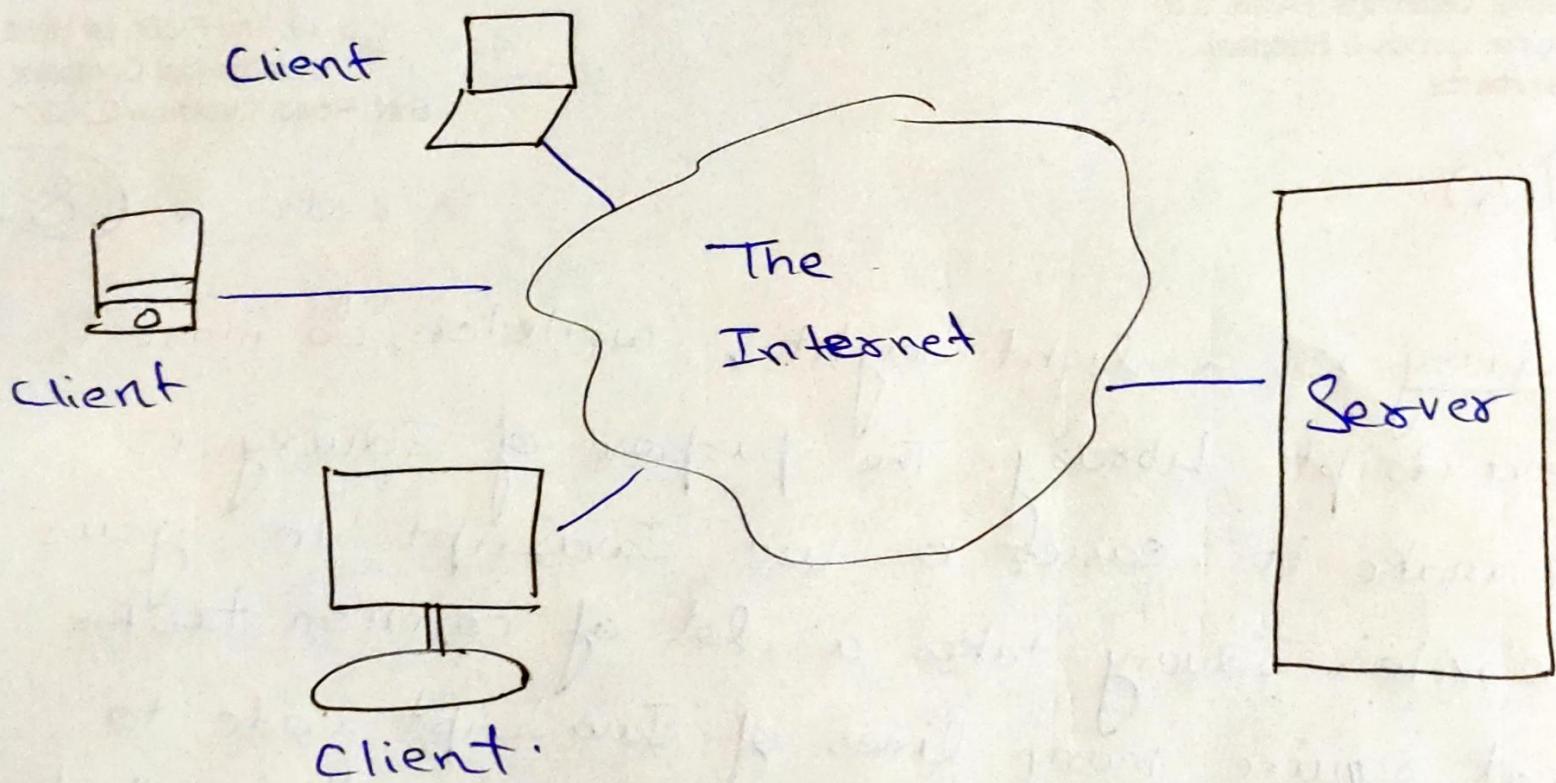
### Example :-

Server-side scripting can be written in a number of programming languages. Popular Examples are :-

• PHP	• Ruby	• C#
• Python	• Java	• JavaScript

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## Client-Server Architecture.



(6)

2] (b)

Responsive Web design is an approach that suggest that the design and development should respond to the user's behaviour and environment based on screen size, platform and orientation.

The practice consists of a mix of flexible grids and layouts, images and an intelligent use of CSS media queries.

Features :-

- Reflowing Content.
- Relative Sizing.
- Breakpoints.
- Adaptation to all devices.

Four Key Components :-

1. Consistency.

Providing an inconsistent browser experience is frustrating so we should always keep it consistent.

## 2. Intuitive Navigation.

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Navigational element of responsive web design is of vital importance. the way elements are placed results in an improve or deproved performance.

## 3. Optimized Images

Image optimisation is a huge important issue. Using large image will slow down our website.

## 4. Compatibility.

No matter what size screen we are using the website on, it should work perfectly. and there should be no trouble for the user.

3](b)

JQuery is a light-weight, "write less, do more", JavaScript Library. The purpose of JQuery is to make it easier to use JavaScript in your website. JQuery takes a lot of common tasks that require many lines of Javascript code to accomplish, and wraps them into methods that we can call in single line of code.

JQuery simplified AJAX calls and DOM Manipulation.

Features of JQuery:

- HTML / DOM Manipulation.
- CSS Manipulation.
- HTML Event methods
- Effect & animations.
- AJAX.
- Utilities.

"JSON is better than XML"

(9)

JSON → JavaScript Object Notation.

JSON is a file format that uses human readable text for storing and transmitting data objects containing key-value pair and arrays.

Features:

- Easy to use
- Good performance.
- Clean language.
- No dependency.

.json

XML → Extensible Markup Language.

XML was designed to store data. It is popularly used for transferring data. It allows us to define markup elements.

.xml

Features:

- Tags are not predefined.
- Markup code is easy to understand.
- Designed to carry data.
- Need to define customized tags.

# Differences between JSON and XML.

(10)

## JSON

- Doesn't object have type.
- Types : number, string, array, etc.
- Data is directly readable.
- Supported by most browsers.
- No display capability.
- Retrieving is easy.
- Less secure.
- Supports UTF-8 encoding.
- No comments supported.

## XML

- These are types.
- Type : String.
- Data needs to be parsed.
- Good browser parsing can be tricky.
- It has display capability.
- Retrieving is difficult.
- More secure.
- Supports various encoding.
- Supports comments.

(W)

Q

JSON is better than XML because JSON is faster and is designed for data exchange.

JSON encoding requires less bytes of space.  
JSON parser are less complex, which requires less time and memory overhead. XML is slower.

### JSON Example.

{

"student": [

  { "id": "01",

    "name": "Abhishek")

  },

  {

    "id": "02",

    "name": "Pavir"

  }

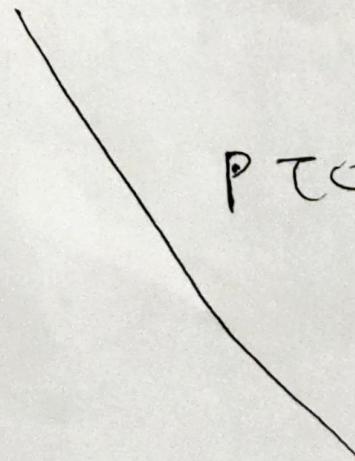
]

}

XML Example

```
<?xml version="1.0" encoding="UTF-8"?>
<root>
  <student>
    <id> 01 </id>
    <name> Abhishek </name>
  </student>
  <student>
    <id> 02 </id>
    <name> Pravir </name>
  </student>
</root>
```

PTO



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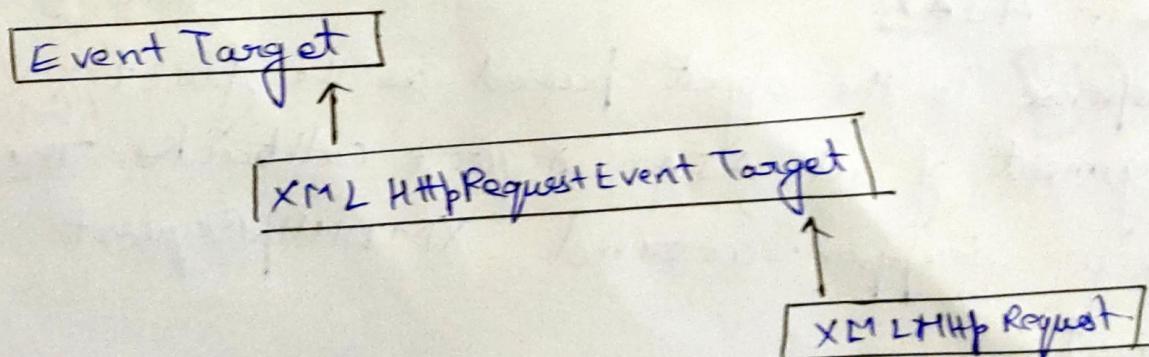
AJAX is a set of web development techniques that uses various web technologies on the client-side to create asynchronous web applications.

AJAX stands for Asynchronous JavaScript and XML.

Request Object: XMLHttpRequest

XMLHttpRequest (XHR) objects are used to interact with the server. You can ~~set~~ retrieve data from the URL without having to do a full refresh of page.

This enables webpage to update a part of page without having to disturb other elements.



Example :

(14)

```
$ .ajax ({  
    url: "http://www.google.com",  
    type: "GET",  
    data: { variable: "data" },  
    success: function (name) {  
        console.log(name);  
    },  
    error: function (result, status, error) {  
        console.log(error);  
    }  
});
```

Request and Response are two essentials objects  
in AJAX.

Response is the object passed as the first  
argument of all AJAX request callbacks. This  
is a wrapper around XMLHttpRequest  
object.

(15)

It normalises cross-browser issue while adding support for JSON as well.

Using the Properties and Methods of XMLHttpRequest  
the Response is handled as well.

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4]

## Transaction

A transaction is a logical, atomic work that contains one or more SQL statements.

A transaction groups SQL statements so that they are either all committed, which means they are applied to the database, or all rolled back, which means they are undone from the database.

## PL/SQL transaction

It is a series of transaction SQL data manipulation statements that are work logical unit.

An atomic transaction is an individual and irreducible series of database operations such that either all occurs or nothing occurs. Guarantee of atomicity prevents update in the database that are partial or incomplete.

Example of an atomic transaction is a monetary transfer from account A to account B.

(17)

It consists of two operations :-

- withdrawing the money from A
- Saving it to B.

Performing these operations on at atomic level ensures that database remains in a consistent state, that is, money is neither lost nor created if either of those transaction fails.