CS6501   **INTERNET PROGRAMMING**   **L T P C**
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OBJECTIVES:
The student should be made to:
- Learn Java Programming.
- Understand different Internet Technologies.
- Be exposed to java specific web services architecture.

UNIT I   JAVA PROGRAMMING   9
An overview of Java – Data Types – Variables and Arrays – Operators – Control Statements – Classes – Objects – Methods – Inheritance - Packages – Abstract classes – Interfaces and Inner classes – Exception handling - Introduction to Threads – Multithreading – String handling – Streams and I/O – Applets.

UNIT II   WEBSITES BASICS, HTML 5, CSS 3, WEB 2.0   8
Web 2.0: Basics-RIA Rich Internet Applications - Collaborations tools - **Understanding websites and web servers:** Understanding Internet – Difference between websites and web server- Internet technologies Overview –Understanding the difference between internet and intranet; **HTML and CSS:** HTML 5.0 , XHTML, CSS 3.

UNIT III   CLIENT SIDE AND SERVER SIDE PROGRAMMING   11
Java Script: An introduction to JavaScript–JavaScript DOM Model-Date and Objects,-Regular Expressions- Exception Handling-Validation-Built-in objects-Event Handling- DHTML with JavaScript. **Servlets:** Java Servlet Architecture- Servlet Life Cycle- Form GET and POST actions- Session Handling- Understanding Cookies- Installing and Configuring Apache Tomcat Web Server;- DATABASE CONNECTIVITY: JDBC perspectives, JDBC program example **- JSP:** Understanding Java Server Pages-JSP Standard Tag Library(JSTL)-Creating HTML forms by embedding JSP code.

UNIT IV   PHP and XML   8
An introduction to PHP: PHP- Using PHP- Variables- Program control- Built-in functions-Connecting to Database – Using Cookies-Regular Expressions; **XML:** Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation, News Feed (RSS and ATOM).

UNIT V   INTRODUCTION TO AJAX and WEB SERVICES   9
AJAX: Ajax Client Server Architecture-XML Http Request Object-Call Back Methods; **Web Services:** Introduction- Java web services Basics – Creating, Publishing ,Testing and Describing a Web services (WSDL)-Consuming a web service, Database Driven web service from an application – SOAP.

                                TOTAL (L:45+T:15): 60 PERIODS
OUTCOMES:
At the end of the course, the student should be able to:
- Implement Java programs.
- Create a basic website using HTML and Cascading Style Sheets.
- Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms.
- Design rich client presentation using AJAX.
- Design and implement simple web page in PHP, and to present data in XML format.
- Design and implement server side programs using Servlets and JSP.

TEXT BOOKS:

1. Deitel and Deitel and Nieto, "Internet and World Wide Web - How to Program", Prentice Hall, 5th Edition, 2011.
2. Herbert Schildt, "Java-The Complete Reference", Eighth Edition, Mc Graw Hill Professional, 2011.

REFERENCES:

1. Stephen Wynkoop and John Burke "Running a Perfect Website", QUE, 2nd Edition,1999.
2. Chris Bates, Web Programming – Building Intranet Applications, 3rd Edition, Wiley Publications, 2009.
3. Jeffrey C and Jackson, "Web Technologies A Computer Science Perspective", Pearson Education, 2011.
4. Gopalan N.P. and Akilandeswari J., "Web Technology", Prentice Hall of India, 2011.
5. Paul Dietel and Harvey Deitel, "Java How to Program", , 8th Edition Prentice Hall of India.
6. Mahesh P. Matha, "Core Java A Comprehensive Study", Prentice Hall of India, 2011.
7. Uttam K.Roy, "Web Technologies", Oxford University Press, 2011.

1. What are the main differences between Java and C++?

Java	C++
Java is a true and complete object oriented language.	C++ is an extension of C with object oriented behavior. C++ is not a complete object oriented language as that of Java.
Java does not provide template classes.	C++ offers Template classes.
Java supports multiple inheritance using interface.	C++ achieves multiple inheritance by permitting classes to inherit from multiple classes.
Java does not provide global variables.	Global variables can be declared in C++.
Java does not support pointers.	C++ supports pointers.
In Java, destruction of objects is performed in finalize method.	In C++, destruction of objects is performed by destructor function.
Java doesn't provide header files.	C++ has header files.

2. List the features of Java.
- **1.** Simple
- 2.Object-Oriented
- 3.Platform independent
- 3. Secured
- 5.Robust
- 6.Architecture neutral
- 7. Portable
- 8. Dynamic
- 9.Interpreted
- 10. High Performance
- 11.Multithreaded
- 12.Distributed

3. What is bytecode?

Bytecode is a highly optimized set of instructions designed to be executed by the java run-time system. This is called the java virtual machine (JVM). JVM is an interpreter for bytecode.

4. What is a Literal? What are the different types of literals?

A Literal represents a value of a certain type where the type describes the behaviors of the value. The different types of literals are:
- Number literals
- Character literals
- Boolean literals
- String literals

5. What is a Character literal?

Character literals are expressed by a single character enclosed within single quotes. Characters are stored as Unicode characters.

Escape	Meaning
\n	Newline
\t	Tab
\b	Backspace
\r	Carriage return
\f	Form feed
\\	Backslash

6. What is a String literal?

A string is a combination of characters. String literals are a set of characters that are enclosed within double quotes. As they are real objects, it is possible to concatenate, modify and test them. For example, "This is a test string" represents a string. Strings can contain character constants and Unicode characters.

7. What are token in Java?

Token means, the smallest individual units of program. In Java the following token are available.

White space   Identifiers   Literals

Comments   Separators   Keywords

8. What is a variable? How to declare variable in java?

The variable is the basic unit of storage in a java program. A variable is defined by the combination of an identifier, a type, and an optional initialize. All variables must be declared before they can be used. The basic form of a variable declaration is shown have

Type identifier [= value], [, identifier [=value]]

The type in one of java's atomic types. The identifier is the name of the variable. For example

int a,b,c;

int d=3,c=5;

9. What are the different types of variables?

Variable are locations in the memory that can hold values. Java has three kinds of variable namely,

- Instance variable
- Local variable
- Class variable

Local variables are used inside blocks as counts or in methods as temporary variables. Once the block or the method is executed, the variable ceases to exist. Instance variable are used to define attributes or the state of a particular object. These are used to store information needed by multiple methods in the objects.

10. Write a note on integer data types in Java.

Integers are used for storing integer values. There are four kinds of integer types in Java. Each of these can hold a different range of values. The values can either be positive or negative

Type	Size
byte	8 bits
short	16 bits
int	32 bits
long	64 its

11. Write a note on float data types in Java.

Float is used to store numbers with decimal part. There are two floating point data types in Java namely, the float and the double

Type	Size
float	32 bits
double	64 its

12. What are the difference between static variable and instance variable?

The data or variables, defined within a class are called instance variables.

Instance variables declared as static are, essentially, global variables. When objects of its class are declared, no copy of a static variable is made.

13. Define Array? How to declare an array?

An array is an object that stores a list of items. Each slot in an array holds individual elements. An array should be of a single type, comprising of integers, strings and so on. To create an array, a variable to hold the array is declared, and a new object is created and assigned to it.

14. Write a note on conditional operator in Java.

The conditional operator is otherwise known as the ternary operator and is considered to be an alternative to the if else construct. It returns a value and the syntax is:

<test> ? <pass> : <fail>

Where,<test> is the condition to be tested. If the condition returns true then the statement given in <pass> will be executed. Otherwise, the statement given in <fail> will be executed.

15. List out the operator in Java.

- Arithmetic Operators
- Increment and Decrement Operators

- Bitwise Operators
- Relational Operators
- Logical Operators
- Assignment Operators

16. What are jump statements in Java?

In java have three jump statements
- return
- continue
- break

17. Differentiable between break and continue statements.

The break keyword halts the execution of the current loop and forces control out of the loop. The term break refers to the act of breaking out of a b lock of code. Continue is similar to break, except that instead of halting the execution of the loop, it starts the next iteration.

18. What is means by Garbage Collection?

In certain languages like C++, dynamically allocated objects must be manually released by use of a delete operator. In Java deallocation happens automatically. The technique that accomplishes this is called garbage collection.

19. What is a class? Give an example?

A class defines the shape and behavior of an object and is a template for multiple objects with similar features.

<p align="center">(OR)</p>

A class is a new data type. Once defined, this new type can be used to create objects of that type. Thus, a class is a template for an object, and an object is an instance of a class.

20. Distinguish between a class and an object.

A class is a template for an object, and an object is an instance of a class

21. Define abstract class.

Abstract classes are classes from which instances are usually not created. It is basically used to contain common characteristics of its derived classes. Abstract classes are generally higher up the hierarchy and act as super classes. Methods can also be declared as abstract. This implies that non-abstract classes must implement these methods

23. What is meant by an innerclass?

An inner class is a nested class whose instance exists within an instance of its enclosing class and has direct access to the instance members of its enclosing instance

```
class <EnclosingClass>
    {
        class <InnerClass>
            {

            }
    }
```

24. What are constructors?

A constructor initializes an object immediately upon creation. It has the same name as the class in which it resides and is syntactically similar to a method. Once defined, the constructor is automatically called immediately after the object is created, before the ***new*** operator completes.

25. Define method overloading.

In Java it is possible to define two or more methods within the same class that share the same name, as long as their parameter declarations are different. When this is the case, the methods are said to be *overload,* and the process is referred to as *method overloading*.

26. Define method.

Methods are functions that operate on instances of classes in which they are defined. Objects can communicate with each other using methods and can call methods in other classes. Just as there are class and instance variable, there are class and instance methods. Instance methods apply and operate on an instance of the class while class methods operate on the class.

27. What are the uses of the keyword 'final'?

- The class can be declared as final, if instances or subclasses are not to be created.
- The variables are declared as final, value of the variable must be provided at the time of declaration.
- The Method can be declared as final indicating that they cannot be overridden by subclasses.

28. What are static methods?

Static methods and variables can be used independently of any object. To do so, you need only specify the name of their class following by the dot operator.

29. What is inheritance?

In Object-Oriented programming, inheritance refers to the properties of a class being available to many other classes. A derived class / sub class is one that has been created from an existing class. Inheritance is the process of deriving a class from a super class or a base class. No changes are made to the base class. The derived class has a larger set of properties that its base class. Inheritance has two advantages

  a) Reusability of code

  b) Data and methods of a super class are physically available to its subclasses

30. What is a package?

Packages contain a set of classes in order to ensure that class names are unique. Packages are containers for classes that are used to compartmentalize the class name space. Packages are stored in a hierarchical manner and are explicitly imported into new class definition. A period is used as separator to enable this.

31. Write a note on import statement.

Classes external to a program be imported before they can be used. To import a class the *import* keyword should be used as given below

    import <classname>

  The classes in Java are arranged in hierarchical order. The Java library consists of a number of package. These package contain a set of related classes. The whole path of the class must be specified to import a class from the Java library, For instance, to import the Data class from the **util** package use the following code.

    import java.util.Date;

It is also possible to import all classes that belong to a package using the * symbol.

32. Define interface.

An interface is a collection of abstract behavior that individual classes can implement. It is defined like a class. An interface consists of a set of method definition. Any class implementing it should provide code for all its methods

33. Define an exception.

An exception is an abnormal condition, which occurs during the execution of a program Exceptions are erroneous events like division by zero, opening of a file that does not exist, etc. A java execution is an object, which describes the error condition that has materialized in the program.

34. Mention the uses of try and catch clause.

The try and catch clause is used to handle an exception explicitly. The advantages of using the try and catch clause are that, it fixes the error and prevents the program from terminating abruptly.

35. What is use of 'throw statement' give an example? (or) state the purpose of the throw statement.

Whenever a program does not want to handle exception using the try block, it can use the throws clause. The throws clause is responsible to handle the different types of exceptions generated by the program. This clause usually contains a list of the various types of exception that are likely to occur in the program.

36. List any three common run time errors.

Exception	Meaning
ArithmeticException	Arithmetic error, such as divide-by-zero
ArrayIndexOutOfBoundsException	Array index is out-of-bounds
IllegalThreadStateException	Requested operation not compatible with current thread state

37. Define multithreading?

A thread is a line of execution. It is the smallest unit of code that is dispatched by the scheduler. Thus, a process can contain multiple threads to execute its different sections. This is called multithread.

38. List out the advantages of multithreading.

The advantages are as follows
- Can be created faster
- Requires less overheads
- Inter-process communication is faster
- Context switching is faster
- Maximum use of CPU time

39. Define the term thread.

A thread is a line of execution. It is the smallest unit of code that is dispatched by the scheduler. Thus, a process can contain multiple threads to execute its different sections. This is called multithread.

40. List the several states of 'Thread' in Java.

There are four states associated with a thread namely – new, runnable, dead, blocked

41. What is synchronization? Briefly explain.

Two or more threads accessing the same data simultaneously may lead to loss of data integrity. For example, when two people access a savings account, it is possible that one person may overdraw and the cheque may bounce. The importance of updating of the pass book can be well understood in this case.

42. What is the use of 'Super' Keyword? Give an example.

Usage of 'super' keyword'
1. The first calls the superclass constructor
2. To access a member of the superclass that has been hidden by a member of a subclass

43. What are applets?

An applet is a dynamic and interactive program that runs inside a web page displayed by a Java capable browser. This can also be executed using the appletviewer.

44. What is Byte Stream in Java?

The byte stream classes provide a rich environment for handling byte-oriented I/O.
List of Byte Stream classes
- ByteArrayInputStream
- ByteArrayOutputStream
- FilteredByteStreams
- BufferedByteStreams

45. What is Character Stream in Java?

The Character Stream classes provide a rich environment for handling character-oriented I/O.
List of Character Stream classes
- FileReader
- FileWriter
- CharArrayReader
- CharArrayWriter

46. Write a note on char Array Reader

The CharArrayReader allows the usage of a character array as an InputStream. The usage of CharArrayReader class is similar to ByteArrayInputStream. The constructor is given below:

    public CharArrayReader(char c[ ])

47. How will you find out the length of a string in java? Give an example?

length( ) method is used to number of characters is string. For example,

String str="Hello";

System.out.println("Length of string is "+str.length( ));

48. Name any three tags used in Java Doc Comment

Java supports three types of comments. The first two are the // and the /*. The third type is called a documentation comment. It begins with the character sequence /**. It ends with*/.

In Java have javadoc tags

Tag	Meaning
@author	Identifies the author of a class
@deprecated	Specifies that a class or member is deprecated
@param	Documents a method's parameter
@return	Documents a method's return value

49. List the AWT controls.

- Label
- Button
- Checkbox
- Text Component
- Choice
- List
- Scrollbar

50. Write a note on push Button Control.

A push button is a component that contains a label and that generates as event when it is pressed. Push buttons are objects of type Button. Button defines these two constructors.

a)Button( ) b)Button(String str)

The first version creates an empty button. The second creates a button that contains str as a label.

51. Write a note on Borderlayout.

The BorderLayout class implements a common layout style for top-level windows. It has four narrow, fixed-width components at the edges and one large area in the center. The four sides are referred to as north, south, east, and west. The middles area is called the center. Here are the constructors defined by BorderLayout

a) BorderLayout( ) b)BorderLayout(int horz, int vert)

52. Write a note on check box control in Java.

A check box is a control that is used to turn an option on or off. It consists of a small box that can either contain a check mark or not. There is a label associated with each check box that describes what option the box represents. You change the state of a check box by clicking on it. Check boxes can be used individually or as part of a group. Check boxes are objects of the Checkbox class.

Checkbox ( )

Checkbox (String str)

Checkbox (String str, Boolean on)

Checkbox (String str, Boolean on, CheckboxGroup cbGroup)

53. Distinguish between component and container.

Component is an abstract class that encapsulates all of the attributes of a visual component. All user interface elements that are displayed on the screen and that interact with the user are subclasses of Component.

The container class is a subclass of Component. It has additional methods that allow other Component objects to be nested within it. Other Container objects can be stored inside of a container.

PART – B (16 Marks)

1. Discuss exception handling mechanism in detail with suitable example.
2. Explain how to create a package in Java with example
3. Explain the salient features of java in detail.

4. (i) Write a Java program to create a user-defined exception and use it in the main method.

(ii) Write a Java program to implement the following in-built exceptions:

ArithmeticException and NumberFormatException

5.Discuss about the polymorphism and abstract classes in java.

6.Write a JAVA program using an Interface which has a class called Account that creates the following: Data members: Name of the depositor, AccountNo, Account Type, Balance amount in the Account. Methods: To assign initial values, to deposit an amount, to withdrawn amount after checking balance and to display the name and balance.

7.Explain various control structures used in Java.

8.Discuss the different types of operators used in Java.

9.Develop a Java Program to demonstrate Multilevel Inheritance using the classes Faculty (Data members – FacultyId, name, dept, specialization), Student(Data members – RegNo, name, dept) and Research Scholars (Data members – RegNo, course, specialization). Include Constructor in each class and set of methods in each class and display the details.

10. (i) Discuss the role of JVM in java platform. (8)

(ii) How do you set CLASSPATH? (4)

(iii) List any three packages and its uses. (4)

11. Explain any three Layout Managers in detail with their methods.

12. Illustrate the creation of command buttons and action events with suitable example program.

13. Write a Java program to handle mouse and Keyboard events using delegation model.

14. What is Garbage collection? How strings are handled in Java? Explain the concepts with an example

15. Discuss the following Event listener interfaces with suitable example. (i) Action Listener (4+4+4+4) (ii) ComponentListener (iii) ContainerListener (iv) WindowListener

16. Illustrate the creation of frames and scroll bar and action events with suitable example.

17. (i) Write a Java program to convert an integer into binary, hexadecimal and octal. (8)

(ii). Write a java program to create a simple calculator application using AWT Frame class. (8)

18. (i) Create a class called Exam that is a Java Applet that has two buttons Fill and No Fill. When the applet is started it should display a black rectangular outline. If the Fill button is pressed the rectangle should become filled with the colour red. If the No Fill button is pressed, the rectangle should revert to the black rectangular outline that was displayed when the Applet started. (8)

(ii) Design an Applet to demonstrate College Information and use appropriate layout for alignment. (8)

19. Explain how multithreading is achieved in java with suitable examples.

20. Explain any four java.lang package in details.

UNIT - II
PART – A (2 Marks)

1. **Define Website and Web page?**

A website is a set of linked documents associated with a particular person, organization or topic that is held on a computer system and can be accessed as part of the world wide web.

Web page, a document on the World Wide Web written in HTML and displayed in a web browser.

2. **Define Web server.**

The web server on the other side is a computer program, which delivers content, such as websites or web pages, for example, over the World Wide Web from a web server to your computer.

2. **Describe about head element.**

Every XHTML document contains a head element, which generally contains information, such as a title, and a body element, which contains the page content. Information in the head element generally is not rendered in the display window but may be made available to the user through other means.

3. What is the use of title element?

The title element names a Web page. The title usually appears in the colored bar (called the title bar) at the top of the browser window and also appears as the text identifying a page when users add userr page to their list of Favorites or Bookmarks.

4. What is the purpose of using headers?

XHTML provides six headers (h1 through h6) for specifying the relative importance of information. Header element h1 is considered the most significant header and is rendered in a larger font than the other five headers. Each successive header element (i.e., h2, h3, etc.) is rendered in a smaller font.

5. Define anchors.

Users can insert links with the (anchor) element. The most important attribute for the a element is href, which specifies the resource (e.g., page, file, e-mail address, etc.) being linked. Anchors can link to an e-mail address using a mailto URL. When someone clicks this type of anchored link, most browsers launch the default e-mail program (e.g., Outlook Express) to initiate e-mail messages to the linked addresses.

6. How do users include images in web page?

The img element's src attribute specifies an image's location. Optional attributes width and height specify the image width and height, respectively. Images are measured in pixels ("picture elements"), which represent dots of color on the screen. Every img element in a valid XHTML document must have an alt attribute, which contains text that is displayed if the client cannot render the image.

7. Describe about br and hr element.

The br element causes most browsers to render a line break. Any markup or text following a br element is rendered on the next line. Most browsers render a horizontal rule, indicated by the <hr/> tag, as a horizontal line. The hr element also inserts a line break above and below the horizontal line.

7. What is the use of tables?

XHTML tables mark up tabular data and are one of the most frequently used features in XHTML.
 • The table element defines an XHTML table. Attribute border specifies the table's border width, in pixels. Tables without borders set this attribute to "0".
 • Element summary summarizes the table's contents and is used by speech devices to make the table more accessible to users with visual impairments.
A table can be split into three distinct sections: head (thead), body (tbody) and foot (tfoot). The head section contains information such as table titles and column headers. The table body contains the primary table data. The table foot contains information such as footnotes.

8. What are table elements?

Element tr, or table row, defines individual table rows. Element th defines a header cell. Text in th elements usually is centered and displayed in bold by most browsers. This element can be present in any section of the table.

Element colgroup groups and formats columns. Each col element can format any number of columns (specified with the span attribute).

9. How to place a background for a single table cell?

User can put a background for a single table cell in two ways, either by
• using HTML
• Using CSS

10. What are differences between DIV and SPAN?

DIV is used to select a block of text so that one can apply styles to it. SPAN is used to select inline text and let users to apply styles to it. The main difference between DIV and SPAN is SPAN does not do formatting by itself. Also the DIV tag is used as a paragraph break as it creates a logical division of the document in which it is applied. This is in contrast to the SPAN as SPAN simply dos the functionality of applying the style and alignment whatever was specified in it. DIV has ALIGN attribute in it which is not present in case of SPAN. Thus DIV is used in cases where one wants to apply styles to a block of text. But there may be situations in which there might not be clear well structured block of text to work with. In those cases one can opt to apply SPAN which is used to apply styles inline. That is in other words DIV is generally used for block of text and SPAN is generally used for words or sentences.

11. What are the differences between cell spacing and cell padding?

Cell padding is used for formatting purpose which is used to specify the space needed between the edges of the cells and also in the cell contents. Cell spacing is one also used f formatting but there is a major difference between cell padding and cell spacing. It is as follows: Cell padding is used to set extra space which is used to separate cell walls from their contents. But in contrast cell spacing is used to set space between cells.

12. How to specify page breaks in HTML?

Here is no way in standard HTML to specify where page breaks will occur when printing a page. HTML was designed to be a device-independent structural definition language, and page breaks depend on things like the fonts and paper size that the person viewing the page is using.

13.How to close a browser window with HTML code?

Use the below code example. < type="button" value="Close this window" onclick="self.close()">

14. Is it possible to make the HTML source not viewable?

There is no real method or script for making standard HTML source code not viewable.
There are various script that Disable Right click feature.

15. How to do multiple colors of text?

To do the multicolor texts adjust the color of userr font tag as:
< font color="blue">blue

16. How to make a picture a link?

Use the A HREF link tag around the IMG image tag as:
< A HREF="http://www.computerhope.com"> < image SRC="title.gif">

17. List down the ways of including style information in a document.

There are 4 ways style information can be included in a document, which are,
   a)Linked style sheet
   b)Inline Style sheet
   c) Embedded Style sheet
   d)Using classes

18. Define Cascading?

Cascading refers to a certain set of rules that browsers use to determine how to use the style information. Such a set of rules are useful in the event of conflicting style information because the rules would give the browser a way to determine, which style is given precedence.

19. What are the style precedence rules when using multiple approaches?

   a)Inline styles override both linked style sheets and style information stored in the document head with <style> tag ie., embedded style sheet.
   b) Styles defined in the document override the linked style sheets
   c) Linked style sheets override browser defaults

20. Give the syntax to specify characteristics in linked style sheet.

   {characteristic: value}
   If there is multiple characteristic/ value pairs they should be separated by semicolons.

21. List down the font characteristics permitted in Style sheets.

   a)Font-family
   b)Font-size
   c)Font-weight
   d)Font-style
   e)Font-variant

22. Write a note on content positioning characteristic "Visibility".

This characteristic enables the document author to selectively display or conceal positioned content. Possible values to this characteristic are show or hide.

23. What are the parts of Style sheets?

   a)Selector – It tells a browser which element in a page governed by the particular rule
   b)Properties - it tells a browser how to display elements that are selected by the particular rule.

24. List out the features of Style sheets.

   a)Style sheets makes the HTML document less messy
   b)It reduces the time for developing and maintaining HTML documents
   c)It provides flexibility with in a web document.

25. What is the use of ul element?

The unordered list element ul creates a list in which each item begins with a bullet symbol (called a disc).

Eg,
```
<ul>
<li><a href = "http://www.deitel.com">Deitel</a></li>
<li><a href = "http://www.w3.org">W3C</a></li>
<li><a href = "http://www.yahoo.com">Yahoo!</a></li>
<li><a href = "http://www.cnn.com">CNN</a></li>
</ul>
```

26. Define internal linking.

It is a mechanism that enables the user to jump between locations in the same document. Internal linking is useful for long documents that contain many sections. Clicking an internal link enables users to find a section without scrolling through the entire document.

27. State the attributes of meta element.

One way that search engines catalog pages is by reading the content in each page's meta elements, which specify information about a document. Two important attributes of the meta element are name, which identifies the type of meta element and content, which provides the information search engines use to catalog pages.

28. Describe about password element.

The "password" input inserts a password box into a form. A password box allows users to enter sensitive information, such as credit card numbers and passwords, by "masking" the information input with another character. Asterisks are the masking character used for password boxes. The actual value input is sent to the Web server, not the asterisks that mask the input.

29. Define CSS.

It is a W3C technology called Cascading Style Sheets (CSS) that allows document authors to specify the presentation of elements on a Web page (spacing, margins, etc.) separately from the structure of the document (section headers, body text, links, etc.). This separation of structure from presentation simplifies maintaining and modifying a document's layout.

30. Define span element.

Element span is a grouping element—it does not apply any inherent formatting to its contents. Its primary purpose is to apply CSS rules or id attributes to a block of text. Element span is an inline-level element—it is displayed inline with other text and with no line breaks.

31. Define User Style Sheets.

Users can define their own user style sheets to format pages based on their preferences. For example, people with visual impairments may want to increase the page's text size. A Webpage author needs to be careful because they may inadvertently override user preferences with defined styles.

32. Name some browsers?

Microsoft Internet explorer, Netscape, Google Chrome, Mozilla Firefox.

33. Write Short notes on FRAMESET element.

It is a Frame container for dividing a window into rectangular subspaces called frames. In a Frameset, the outermost FRAMESET takes the place of BODY and immediately follows HEAD. FRAMESET element contains one or more FRAMESET or FRAME elements. Rows & cols are the attributes of FRAMESET element which defines the dimensions of each frame in the set.
```
<FRAMESET ROWS="" COLS="">
----HTML ELEMENTS---
</FRAMESET>
```

34. List out the attributes that the <BODY> tag can take.

Attributes of <BODY> tag are,
BGCOLOR – Background color
Background – Background image
LINK – Unvisited link color
ALINK – Active Link Color
VLINK – Visited Link Color
Text – Text Color

35. Give the structure of HTML program.

```
<HTML>
<HEAD>
<TITLE>Title of HTML Page</TITLE>
</HEAD>
<BODY>
--Body content of HTML page--
</BODY>
</HTML>
```

36. What are the demerits of HTML?

a)Using HTML, it is possible to browse thro' the HTML documents by creating Hyperlinks. But it does not take user inputs or respond to the user requests.

b)It is used to created static web pages.

PART – B (16 Marks)

1. To calculate the volume, the user should input the radius through an HTML text field and press an HTML button to initiate the calculations.

2. Write a XHTML program to create a web page for your college information using any one CSS type (Assume your own data) .Explain the various CSS properties in detail. Write a suitable code each property.

3. Design a web page with a text box (username) where the user can enter a name and another text box (ID) where the user enter an only four digit ID.NO and a button "validate". Validate the entered username and ID field for the following using java script.

   i. Both the fields should not be empty

   ii. Name field should have alphabets

   iii. ID field should have numeric.

4. Explain the concept of CSS and its properties and its uses with an example.

5. What are Style Sheets? List down the ways of including style information in a document. Explain about types of cascading style sheet? Explain with example.

6. What is CSS? List out the Various CSS Properties. Explain the various concepts of CSS properties with neat example.

7. Explain about cascading style sheets in detail.

   i. Style sheet rules

   ii. Styling a page

   iii. Linking style sheets

   iv. Inline style sheets

UNIT - III
PART – A (2 Marks)

1. What is a Javascript statement? Give an example.

A JavaScript statement is a command to a browser. The purpose of the command is to tell the browser what to do. This JavaScript statement tells the browser to write "Hello Dolly" to the web page: document.write("Hello Dolly");

It is normal to add a semicolon at the end of each executable statement. Most people think this is a good programming practice, and most often you will see this in JavaScript examples on the web.

2. Why JavaScript has been called dynamically typed language?

JavaScript performs many conversions between data types automatically. It is also possible to store different data types in the same variable which is not possible in other languages like Java and C++ which are called statically typed languages. According to the data type stored the type of the variable is determined and it is not necessary for variable type declaration. Hence JavaScript is called dynamically typed language.

            e.g i=3
            i="text"

3. Explain array creation in Java script with example.

Array can be defined in three ways

i. Using the array constructor directly in a call with no argument.

E.G: VAR ARY1=NEW ARRAY();
    ARY1[0]=4;
    ARY1[1]=TRUE;
    ARY1[2]=”OK”

ii. By supplying two or more arguments to the array Constructor
    VAR ARY2=NEW ARRAY(4,TRUE,”OK”);4

iii. The Array built-in object can be used to construct object with special properties and that inherit various methods
    VAR ARY2=[4,TRUE,”OK”];

4. What are the types of positioning?
- Normal flow positioning
- Relative positioning
- Absolute positioning
- Float positioning

5. Define font family?

Font family is a collection of related fonts, and a font is a mapping from a character (Unicode Standard code point) to a visual representation of the character (a glyph).

6. Define the term *glyph*.

Glyph is a rectangular character cell or the characters content area.

7. List out the class of selectors

i. ID Selectors
ii. Class and pseudo-class selectors
iii. Descendent and type selectors
iv. Universal selectors

8. What are Interpreted languages?

Programming languages that does not need to be compiled before execution are known as interpreted languages.

9. What are host objects?

Objects that are required by the ECMAScript definition for Javascript implementation is provided by the hosting environment are known as host objects.

10. What are native objects?

A built-in object is a native object that is automatically constructed during scripting engine initialization rather than being constructed during program execution. E.g. window

11. What are the two components of Javascript implementation?

The primary component is a *scripting engine,* which includes a Javascript interpreter as well as core ECMAScript functionality that must be present regardless of the scripting environment.

The second component is a *hosting environment,* which provides environment specific capabilities to Javascript programs running within the environment.

12. What do you mean by global object?

Global object is named *window* as global variables declared by your program are actually stored as properties of this object. All built-in and host objects are also stored as properties of global object

13. List out some of the built-in objects of JavaScript?

Built-in objects of JavaScript are STRING, NUMBER, BOOLEAN, DATE, MATH, REGEXP.

14. What are the six JavaScript data types?

i. Number
ii. String
iii. Boolean
iv. Null

14. What are the three types of statements in JavaScript?
- Expression statement: that consists entirely of an expression
- Block statement: that consists of set of statements enclosed in braces { }
- Keyword statement: that begin with keywords such as *var, if, for etc*

15. What is DOM?

DOM (Document Object Model) is an API that defines how JavaScript programs can access and manipulate the HTML document currently displayed by a browser. It includes the definition of the properties of *document* object, many of which are themselves objects with their own properties.

16. List out some of the HTML intrinsic event attributes. (APRIL/MAY 2011)

onload, onclick, ondblclick, onmousedown, onmouseup, onmousemove, onfocus, onblur, onkeypress, onkeydown, onselect, onchange, onsubmit, onreset etc.

17. What is Node object?

Every element in a document tree refers to a Node object. Some nodes of the tree are JavaScript objects corresponding to HTML elements such *html* or *body*.

18. List out the properties of a Node object.

Properties of a Node object are

- nodeType
- nodeName
- parentNode
- childNodes
- previousSibling
- nextSibling
- attributes

19. What do you mean by *document* node?

The *document* object itself is considered to be DOM tree node with node type 9 and symbolic constant DOCUMENT_NODE and it has its own properties and methods

20. List out some possible values for the nodeType property of Node instances.

Value	Symbolic Constant	Host Object Type
1	Node.ELEMENT_NODE	Element
2	Node.ATTRIBUTE_NODE	Attr
3	Node.TEXT_NODE	Text
8	Node.COMMENT_NODE	Comment
9	Node.DOCUMENT_NODE	Document
10	Node.DOCUMENT_TYPE_NODE	DocumentType

21. List the possible opacity attributes of dynamic positioning.

HTML: The basic building block.

- **Document Object Model:** The objects that make up the contents of any Web page.
- **JavaScript:** A scripting language that can manipulate the objects.
- **Positioning:** The placement of objects within the document.

22. What is *Event Listener?*

An Event Listener is simply a function that takes a single argument that is an instance of an *Event*. A call to the addEventListener() method on a node object associates an event listener with a type of event occurring on that node.

23. What are the types of Events?

i. HTML intrinsic events
ii. HTML Events
iii. UI Events
iv. Mutation Events

24. What do you mean by *bubbling listener?*

Bubbling listener is a listener associated with an ancestor of the target node and that was created with a call to addEventListener() and had its third argument set to *false*
e.g. ancestor.addEventListener('click",listener3,false);

25. List out some common *window* object methods.

alert(String), confirm(String), prompt(String, String), open(String, String) close(), focus(), blur(), print()

26. List out some common *window* object methods related to time.
      i) setTimeout(String, Number)
      ii) clearTimeout(Number)
      iii) setInterval(String, Number)
      iv) clearInterval(Number)

27. Define servlet.
      A *servlet* is a java class that a web server instantiates when the server is started. A particular method is called in this instance when the server receives certain HTTP requests.

28. What are servlet life cycle methods?
      The methods of servlet life cycle are INIT(), SERVICE() AND DESTROY()

29. What are servlet listener classes?
      Listener classes is used to initialize a web application consisting of multiple servlets rather than a single servlet and can be created and registered with the server so that they will be called when certain event occurs, including life-cycle events.

30. What are the functions of doGet() and doPost() methods?
      doGet()-Browser will append the query string it constructs to the form's action URL and performs an HTTP GET using the resulting URL.
DOPOST() – Same query string will be constructed , but it will be passed to the server via the body of the HTTP request rather than as part of the URL.

31. Define Session.
      Collection of HTTP requests, all associated with a single session ID, is known as a *session.* Sessions are maintained by communication between clients and servers.

32. How the session is terminated?
      By default the time interval for a session is 20 minutes.
      The session can also be forced to terminate by calling invalidate() method.
      The time interval for the session can be set using setMaxInactiveInterval() method.

33. Define *cookie.*
      A cookie is a name-value pair that a web server sends to a client machine as part of an HTTP response, specifically through the Set-cookie header field.

34. Explain the difference between get request and post request type.
      The HTML specifications *technically* define the difference between "GET" and "POST" so that former means that form data is to be encoded (by a browser) into a URL while the latter means that the form data is to appear within a message body.

35. List out the methods of Cookie class.
      Cookie, getName(), getValue(), setMaxAge()

36. Define Thread.
      A *thread* is the Java VM's abstract representation of the processing to be performed to accomplish a particular task, possibly concurrently with other tasks.

37. What is JSP?
      JSP, an extension of servlet technology simplifies the delivery of dynamic web content. They enable web application programmers to create dynamic content by reusing predefined components and by interacting with components using server side scripting. JSP programmers can reuse JavaBeans and create custom tag libraries that encapsulate complex, dynamic functionality

38. Write some commonly used video file formats. (APRIL/MAY 2008)
- .wmv
- .mov
- .mpg
- .avi
- MPEG2

39. What is WAR file?

A Web application has a well-known directory structure in which all the files are part of the application reside. This directory structure can be created by the server administrator in the *webapps* directory, or the entire directory structure can be archived in a Web Application Archive file. Such an archive is known as a WAR file and ends with the .war file extension. If a WAR file is placed in the webapps directory, then when the Tomcat server begins execution, it extracts the contents of the WAR file into the appropriate webapps subdirectory structure.

40. Explain in brief about JavaScriplet.

JSP Scriptlets or scripting elements, enable programmers to insert Java code that interacts with components in a JSP and possible other Web application components to perform request processing.

41. What are the types of directives in JSP.

There are two types of directives in JSP

- page: Multiple page attributes can be included in a single page directive using the standard XML syntax of separating attribute specification with white space
- include: It imports text from another file into the JSP document at the point at which the directive appears.

42. What are JSP scripting components?

JSP scripting components include Scriptlets, comments, expressions, declarations and escape sequences.

43. List out the scope of Implicit Objects

Implicit objects have four scopes: application, page, request and session.

- The JSP and servlet container application owns object with *application scope*. Any servlet or JSP can manipulate such objects.
- Objects with *page scope* exist only in the page that defines them. Each page has its own instances of the page-scope implicit objects.
- Objects with *request scope* exist for the duration of the request.
- Objects with *session scope* exist for the client's entire browsing session.

44. What are JSP Standard Actions?

JSP standard actions provide JSP implementers with access to several of the most common tasks performed in a JSP, such as including content from other resources, forwarding requests to other resources and interacting with JavaBeans. JSP containers process actions at request time. Actions are delimited by <jsp:action> and </jsp:action>, where action is the standard action name.

45. What are directives?

Directives are messages to the JSP container that enable the programmer to specify page settings, to include content from other resources and to specify custom tag libraries for use in a JSP. Directives delimited by <%@ and %> are processed at translation time. Thus directives do not produce any immediate output, because they are produced before the JSP accepts any requests. There are two directive types namely page directive and include directive.

46. What is page Directive?

The page Directive specifies global settings for the JSP in the JSP container. There can be many page directives, provided that there is only one occurrence of each attribute. The only exception to this is the import attribute, which can be used repeatedly to import Java packages used in the JSP.

47. What is include Directive?

The include directive includes the content of another resource once, at JSP translation time. The include directive has only one attribute, *file*–that specifies the URL of the resource to include. The difference between directive include and action <jsp: include> is noticeable only if the included content changes.

48. What is the use of <jsp: useBean> Action?

Action <jsp: useBean> enables a JSP to manipulate a Java object. This action creates a Java object or locates an existing object for use in the JSP. If attributes class and beanName are

not specified, the JSP container attempts to locate an existing object of the type specified in attribute type.

49. List out JSTL functional areas.

The JSTL is divided into several separate functional areas, each with its own namespace. List of all the JSTL functional areas along with the suffices of the respective namespace names are as follows

Functional Area	Namespace Name Suffix
Core	CORE
XML Processing	Xml
Functions	FUNCTIONS
Database	Sql
Internationalization	FMT

PART – B (16 Marks)

1. What are the methods associated with array object in JavaScript? Explain each one with an example.

2. Write a JavaScript to display a welcome button of an html form is pressed

3. What do you mean by CSS? Discuss the properties of CSS-level-1 in detail with suitable example.

4. Write a JavaScript program to demonstrate the JavaScript events.

5. Design a webpage with a textbox where the user can enter a four digit number and a button "validate" . Validate the entered number for the following using java script. No zero as the first digit Entered number must be in ascending order of digits (Ex:1234,5678…)

6. Write the complete JavaScript to prompt the user for the radius of the sphere and call function sphere Volume to calculate and display the volume of the sphere. Use the statement. Volume=(4.0/3.0)*Math.PI*Math.pow(radius,3).
Explain the document object model architecture

7. Explain the various event handlers in java script. Give an example.

8. Write a java script program to develop the arithmetic calculator

9. Write a java script program to perform the validation process in an application programs

10. Write short notes on scripting languages.

11. What are the various java script objects? Explain each with an example.

12. How to validate the check box and check box group?

13. Write a program to check for an authentication where the matching information is stored in a database using Java servlets.

14. Design a JSP to builds a table of contents from the client side.

15. Write a Servlet program to open a text file for reading it from the client side.

16. How JSP work? Explain it with an example.

17. Write a servlet program to display a 'welcome' message on the client system.

18. Explain the various standard actions of JSP.

19. Write a servlet program to retrieve data from the database.

## UNIT - IV
PART – A (2 Marks)

1. What is PHP?
- PHP: Hypertext Preprocessor
- Originally called "Personal Home Page Tools"
- Popular server-side scripting technology
- Open-source
  - Anyone may view, modify and redistribute source code
  - Supported freely by community
- Platform independent

2.Give some examples for Regular expressions Pattern matching templates
- ereg function
- ereg_replace function
- preg_match function

3. Draw the PHP Architecture.
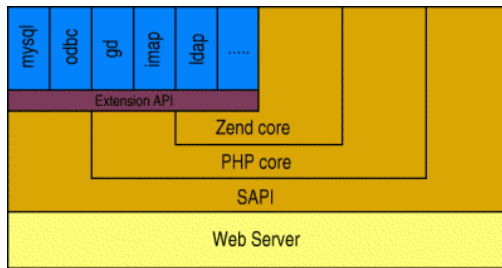
4. What is the use of phpinfo() function?
- The phpinfo() function shows the php environment
- Use this to read system and server variables, setting stored in php.ini, versions, and modules
- Notice that many of these data are in arrays
- This is the first script you should write

5. List the control structures available in php.

Wide Variety available
- if, else, elseif
- while, do-while
- for, foreach
- break, continue, switch
- require, include, require_once, include_once

6. What is well-formed document?

An HTML or XML document is said to be well formed when it contains elements with proper tagging and no syntactic errors.

7. What is DTD?

A Document Type Declaration enables an XML parser to verify whether an XML document is valid, i.e. its elements contain the proper attributes in the proper sequence.

8. What is XML Namespace? (APRIL/MAY 2011)

An XML namespace is a collection of element and attribute names. Each namespace has a unique name that provides a means for document authors to unambiguously refer to elements with the same name in order to prevent collisions.

9. What is the use of XML declaration?

XML declaration is a special tag used to specify the version of XML used to write the document and optionally some additional meta-information about the document such as the character set/encoding used. For e.g the syntax of XML declaration is

<? XML VERSION="1.0"?>

10. What is RSS?

RSS stands for RDF (Resource Description Framework) Site Summary and is also known as Rich Site Summary and Really Simple Syndication. RSS is popular and simple XML format designed to share headlines and web content between Web sites.

11. What are the types of XML Parsers?

There are two types
- Validating Parsers
- Non-Validating Parsers

12. What are XML Parsers?

XML Parsers are used to check whether the document is well formed and valid.

13. How is XML parsing done with SAX? (NOV/DEC2011)

A SAX parser is a mechanism for transforming an XML text document into stream of events corresponding to the markup and character data contained in the original document.

14. Explain Event-oriented parsing.

In this parsing, Parser interacts with an application as its reads an XML document when certain events occur and this approach is used by SAX (Simple API for XML) based parsers.

15. What are the components of XSL?
- XSLT-XSL Transformations which defines the semantics of the various elements and attributes of the XSL namespace.
- XPATH – XML Path Language which defines the syntax and semantics of many of the attribute values used in XSL elements for accessing positions of the input XML document
- XSL-FO – XSL Formatting Objects is a separate vocabulary for defining style properties of an XML document.

16. What is the purpose of XSLT? (NOV/DEC2011)
    The XSLT stands for XSL Transformations and XSL stands for eXtensible Stylesheet Language. The XSLT is used for defining the XML document transformation and presentations.

17. What are XML Schemas?
    XML Schemas are part of the XML vocabulary and its addresses the standard for XML document validation by including a definition of a collection of standard data types which are used to describe data structures.

18. Write the expansion for the following. i) XSL ii) JAXP III) CGI iv) JSP
- JAXP – Sun Java SPI for XML Processing
- XSL - Extensible Style Sheet Language
- CGI – Common Gateway Interface
- JSP – Java Server Pages

PART-B (16 Marks)

1. Explain PHP Control structures with example.
2. Write a note on i)Cookies   ii)Regular Expressions
3. Create a XML document to store voter ID, voter name, address and date of birth details. Create a DTD to validate the document.
2. Explain how XML parser works? Write a XML document for displaying your contact details (address, e-mail, mobile no, etc)?
3. Explain in detail the various methods of DOM.
4. Explain how XML parser works?

UNIT - V
PART – A (2 Marks)

1. What are Web Services?
    Web Services are software systems that are designed to be accessed using web protocols and technologies that are intended to be used by other software applications rather than directly by end users.

2. What is SOAP?
   SOAP-Simple Object Access Protocol
    Soap gives set of rules for moving data directly to the recipient or through and intermediate message queue. SOAP uses common web protocols like HTTP, FTP and SMTP to enable communication across the web.

2. What are the things available in Web Services?
   i. Describing: Web services describe its functionality and attributes
   ii. Exposing: Web services register with a repository that contains a white pages holding basic service-provider information, a yellow pages listing services by category, and a green pages describing how to connect and use the services.
   iii. Being invoked: When a web service has been located, a remote application can invoke the services.
   iv. Returning a response: When a service has been invoked, results are returned to the requesting application.

3. What Qualifies as Web Services?
 A Web service is anything that can define itself via an internet. The things that can be expressed as web services:
   i. Software Component or Application
   ii. A Movie review

iii. A travel package

4. List out the advantage of Web services technology?
i. Decide on the service it wants to provide
ii. Pick a registry for uploading it's information
iii. Decide how to list its service at the registry
iv. Define explicitly how users can connect to its service

5. What are the major aspects of Web service technologies?
- A service provider provides an interface for software that can carry out a specified set of tasks.
- A service requester discovers and invokes a software service to provide business solution.
- A repository or broker manages and publishes the service. Service providers publish their services with the broker, and requests access those services by creating bindings to the service provider.

6. List out the key technologies?
- UDDI is a protocol for describing Web services components that allows businesses to register with an Internet directory and advertise their services.
- WSDL is the proposed standard for describing a Web services. WSDL is built around an XML-based service Interface Definition Language that defines both the service interface and implementation details.
- SOAP is a protocol for communicating with a UDDI service.

7. What is UDDI?
UDDI means Universal Description, Discovery and Integration. UDDI is a protocol for communicating with registries. The core of UDDI is the UDDI Business Registry, a global, pubic, online directory.

8. What are Web Services Registry Directories?
White Pages: holding basic service-provider information
Yellow Pages: listing services by category
Green Pages: describing how to connect and use the services.

9. What is WSDL?
WSDL is Web Service, Definition Language. WSDL is the piece of Web services framework that describes how to connect to web service providers. The WSDL specification supports the building of web based computing services that target computer programs rather than human users.

10. What are the risks in Web Services?
• Maturity: Different implementation may not work together.
• Security: SOAP messages on port 80 bypass firewalls. So network administrator has to implement necessary security to prevent attacks.
• Transaction: Transaction must be specified outside the web services framework such as .NET or J2EE.
• Configuration Management: Change management is not addressed.

11. What is meant by WSDL?
WSDL is Web Services Definition Language which is based on XML. WSDL defines the web service like operation, parameter, return values and communication protocols.

12. What is the use of WSDL?
Web Services Definition Language (WSDL) is used to describe the operations provided by a web service which includes defining the data to be passed from the client to the operation as well as the return value of the operation using SOAP.

13. What is XSL and why it is used?
The Extensible Stylesheet Language (XSL) is an XML vocabulary typically used to transform XML document from one form to another form. XSL document are well-formed XML documents.

14. Write the expansion for the following i) SOAP ii) JWSDP iii) SAAJ iv) ODBC
SOAP- Simple Object Access Protocol
JWSDP – Java Web Services Developer Pack
SAAJ – SOAP with Attachments API for Java
ODBC – Open Data Base Connectivity

15. When it is useful to redirect a request to a different resource.

Sometimes it is useful to redirect a request to a different resource. For example, a servlet could determine the type of the client browser and redirect the request to a Web page that was designed specifically for that browser. The RedirectServlet receives a page parameter as part of a get request, then uses that parameter to redirect the request to a different resource.

16. Define service endpoint interface.

Service endpoint interface is a Java interface that specifies the operations that will be provided by the service which is essentially an API for the service.

17. What is the basic difference between get request and post request types for service endpoint interface?

The basic rules for service endpoint interface are
* The interface must extend directly or indirectly the *java.rmi.Remote* interface.
* Every method in the interface must throw *java.rmi.RemoteException*.
* Every method parameter and every return value must conform to certain restrictions on the allowed data types
* The interface must not contain any *public static final* declarations.

18. What are the tools available in JWSDP 1.3?

Web services can be built using two tools.
* **wscompile:** converts Java files into a WSDL document along with another intermediate output file.
* **wsdeploy:** is used to package our service before finally deploying it as a web application.

19. What are built-in data types for XML Schema?

The data types defined by the XML Schema specification itself are called its built-in data types. Fr e.g xsd:integer, xsd:decimal, xsd:string, xsd:boolean, xsd:float etc.

20. What are the classifications XML Schema data types?

There are two classes of XML Schema data types. They are
(i)Simple (ii) Complex

21. How and why soap binding used in web services?

A Web service SOAP binding is a protocol that describes how messages between Web service providers and requests are defined and transferred.

22. What is AJAX stands for?

Ajax Stands for Asynchronous JavaScript and XM.

<div align="center">

PART – B (16 Marks)

</div>

1. Explain Ajax Client server Architecture.
2. Describe the significance and working of WSDL with an example.
3. Describe the major elements of SOAP.
4. Describe in detail about Web services architecture.
5. Explain in detail about overview of web services.
6. Explain WSDL with example codes.
7. Write a note on SOAP.