Total Nos. of Questions 6]   **Roll No.**

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COLLEGE OF ENGINEERING, NASHIK – 4.

T.E. (Computer Engineering)

WEB TECHNOLOGIES (2015 Pattern)

IN-SEM EXAM MARCH-2019

Time : 1 Hour   *[Max. Marks : 30]*

Instructions to the candidates:

    1)   *Solve Que. 1 or 2, Que.3 or 4, Que. 5 or 6.*

    2)   *Neat diagrams must be drawn wherever necessary.*

    3)   *Assume suitable data if necessary.*

    4)   *Figures to the right indicate full marks.*

WT MODEL ANSWER INSEM MARCH – 2019

Q1 a) List & Discuss different design issues in Web Development?[5M]
Ans

Browser Compatibility:- The web page should be properly displayed on different browsers like chrome, Firefox , IE and mobile compatible browser like safari and opera Mini. Hence while building website, the web pages should be checked on all possible browsers and os, with old and latest versions.

Screen Resolution:- Usually common resolution of screen is 1024*768 pixels, but now there is growing trend towards higher resolution. If the website is designed for higher resolution, it may be possible that some low resolution screens may not be able to display contents.

Internet Speed:- Near about 50% of web users expect that the web page should be loaded in 2 sec oe even less. Use of more images or heavy media like animations or video slow down the downloading process of web pages.

Scalability:- Scalability is another issue which a developer need to keeps in mind while developing. Scalability is the process of balancing the loads between the servers. scalability factor comes into play when the traffic of a page of website suddenly increases. so the developer should design the website in a way that additional servers can be added if needed.

Security:- Security is a factor which cannot be neglected at any cost because data breach can be very harmful for any online business or any personal website. Developers need to consider about many things when it comes to security like denial of service attacks, safety of users data like name and contact information, database malfunctioning. unauthorized access, and other security threats like phishing, ,shell injection and cross site scripting.

Q1b) Describe the steps involved when a web browser requests for and obtains a web page from a web server.[5M]

1. You **type an URL** into address bar in your preferred browser.
2. To reach the host, it first needs to **translate** the human readable host **into an IP number**, and it does this by doing a DNS lookup on the host
3. Then a **socket needs to be opened** from the user's computer to that IP number, on the port specified (most often port 80)
4. When a connection is open, the **HTTP request is sent** to the host
5. The host **forwards the request** to the server software (most often Apache) configured to listen on the specified port
6. The **server inspects the request** (most often only the path), and **launches the server plugin needed** to handle the request (corresponding to the server language you use, PHP, Java, .NET, Python?)
7. The plugin gets access to the full request, and starts to prepare a HTTP response.
8. To construct the response a **database** is (most likely) **accessed**. A database search is made, based on parameters in the path (or data) of the request
9. Data from the database, together with other information the plugin decides to add, is **combined into a long string** of text (probably HTML).
10. The plugin **combines** that data with some meta data (in the form of HTTP headers), and **sends the HTTP response** back to the browser.
11. The browser receives the response, and **parses the HTML** (which with 95% probability is broken) in the response
12. A **DOM tree is built** out of the broken HTML
13. **New requests are made** to the server for each new resource that is found in the HTML source (typically images, style sheets, and JavaScript files). Go back to step 3 and repeat for each resource.
14. **Stylesheets are parsed**, and the rendering information in each gets attached to the matching node in the DOM tree
15. **Javascript is parsed and executed**, and DOM nodes are moved and style information is updated accordingly
16. The browser **renders the page** on the screen according to the DOM tree and the style information for each node
17. **You see** the page on the screen
18. You get annoyed the whole process was too slow.

Q2a) What are the strengths of XML technology? Explain the need of XML.[5]

Advantages of XML include the following:

- XML uses human, not computer, language. XML is readable and understandable, even by novices, and no more difficult to code than HTML.
- XML is completely compatible with Java™ and 100% portable. Any application that can process XML can use your information, regardless of platform.
- XML is extendable. Create your own tags, or use tags created by others, that use the natural language of your domain, that have the attributes you need, and that makes sense to you and your users.'

XML is widely used in the era of web development. It is also used to simplify data storage and data sharing

　　　　1) XML separates data from HTML

　　　　2) XML simplifies data sharing

　　　　3) XML simplifies data transport

Q2b) Write and explain ant 5 differences between HTML and HTMl5. [5M]

Html	Html5
Doctype declaration in Html is too longer <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org /TR /html4 /strict.dtd">	**DOCTYPE declaration in Html5 is very simple** "<!DOCTYPE html>
character encoding in Html is also longer <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">	character encoding (charset) declaration is also very **simple** <meta charset="UTF-8">
Audio and Video are not part of HTML4	Audio and Videos are **integral part of HTML5** e.g. <audio> and <video> tags.
Html5 use cookies.	It provides local storage in place of cookies.
Not possible to draw shapes like circle, rectangle, triangle.	Using Html5 you can draw shapes like circle, rectangle, triangle.
Does not allow JavaScript to run in browser. JS runs in same thread as browser interface.	Allows JavaScript to run in background. This is possible due to JS Web worker API in HTML5
Works with all old browsers	Supported by all new browser.

Q3a)When to use JQuery? What are the advantages of using JQuery over java script.[5M]

jQuery is a JavaScript library, so it operates on top of JavaScript. It cannot exist on its own, so you can't use one over the other. You can use just JavaScript or JavaScript and jQuery. jQuery was introduced to make development with JavaScript easier. It will reduce the development time. Use it to add animation and even handling on your website.

jQuery simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development. jQuery is easier to use compared to JavaScript and its other JavaScript libraries. You need to write fewer lines of code while using jQuery, in comparison with JavaScript.

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Advantages of using JQuery over java script

- The amount of code you need to write is vastly smaller
- It handles cross browser differences for you
- Easy DOM manipulation
- It presents a single events API
- Effects such as fading, sliding and more
- It makes Ajax much much MUCH simpler

Q3b)What are different data types available in Java Script? Explain correct syntax of declaration of it.[5M]

Two Kinds of Data Types

In JavaScript there are two different kinds of data: **primitives**, and **objects**. A primitive is simply a data type that is not an object, and has no methods.

In JS, there are six primitive data types:

- Boolean
- Number
- String
- Null
- Undefined
- Symbol

Boolean

A boolean represents only one of two values: **true**, or **false**. Think of a boolean as an on/off or a yes/no switch.

var boo1 = true;
var boo2 =
false;*Number*

There is only one type of Number in JavaScript. Numbers can be written with or without a decimal point. A number can also be +Infinity, -Infinity, and NaN (not a number).

var num1 = 32;
var num2 = +Infinity;

String

Strings are used for storing text. Strings must be inside of either double or single quotes. In JS, Strings are immutable (they cannot be changed).

var str1 = 'hello, it is me';
var str2 = "hello, it's me";

Null

Null has one value: **null.** It is explicitly nothing.

var nothing = null;

Undefined

A variable that has no value is **undefined**.

var testVar;
console.log(testVar); // undefined

Symbol

Symbols are new in ES6. A Symbol is an **immutable** primitive value that is **unique**. For the sake of brevity, that is the extent that this article will cover Symbols.
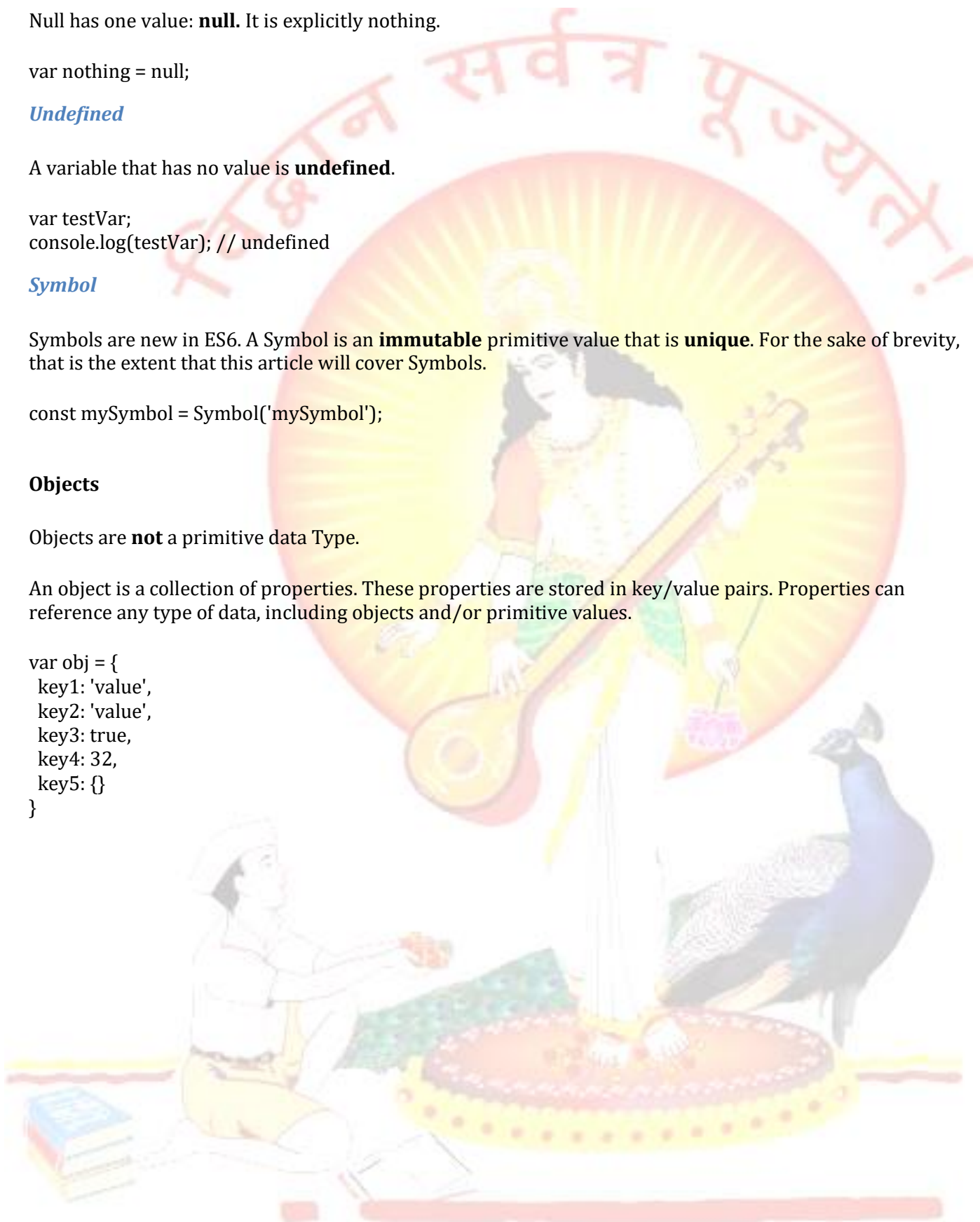
const mySymbol = Symbol('mySymbol');

Objects

Objects are **not** a primitive data Type.

An object is a collection of properties. These properties are stored in key/value pairs. Properties can reference any type of data, including objects and/or primitive values.

```
var obj = {
  key1: 'value',
  key2: 'value',
  key3: true,
  key4: 32,
  key5: {}
}
```

Q4a)How to create array in Java Script? Brief reading of array in Java Script[5M]

Using an array literal is the easiest way to create a JavaScript Array.

Syntax: var *array_name* = [*item1*, *item2*, ...];

Example
var cars = ["Saab", "Volvo", "BMW"];

Access the Elements of an Array

You access an array element by referring to the **index number**.

This statement accesses the value of the first element in cars:

var name = cars[0];

Example
var cars = ["Saab", "Volvo", "BMW"];
document.getElementById("demo").innerHTML = cars[0];

Looping Array Elements

The safest way to loop through an array, is using a for loop:

Example
var fruits, text, fLen, i;
fruits = ["Banana", "Orange", "Apple", "Mango"];
fLen = fruits.length;

for (i = 0; i < fLen; i++) {
fruits[i]; }

Q5a)List and elaborate any 5 implicit JSP object.[5M]

Implicit Objects in JSP. These Objects are the Java objects that the JSP Container makes available to the developers in each page and the developer can call them directly without being explicitly declared. JSP Implicit Objects are also called **pre-defined variables**.

Following table lists out the nine Implicit Objects that JSP supports –

S.No.	Object & Description
1	**request** This is the **HttpServletRequest** object associated with the request.
2	**response** This is the **HttpServletResponse** object associated with the response to the client.
3	**out** This is the **PrintWriter** object used to send output to the client.
4	**session**

	This is the **HttpSession** object associated with the request.
5	**application** This is the **ServletContext** object associated with the application context.
6	**config** This is the **ServletConfig** object associated with the page.

Q5b)Write a Java Servlet Program which will display "Welcome to Servlet" Message.[5M]

```
import javax.servlet.*;
import javax.servlet.http.*;
import java.io.*;
public class SimpleServlet extends GenericServlet
{
  public void service (ServletRequest request, ServletResponse response) throws     IOException,
ServletException
  {
   response.setContentType("text/html");
   PrintWriter out = response.getWriter();
   out.println("<b>Welcome to Servlet</b>");
   out.close();
  }
}
```

Q6a)What is use of isThreadSafe in JSP? Also explain single thread model in JSP. [5M]

isThreadSafe:

- It defines the threading model for the generated servlet.
- It indicates the level of thread safety implemented in the page.
- Its default value is true so simultaneous
- We can use this attribute to implement SingleThreadModel interface in generated servlet.
- If we set it to false, then it will implement SingleThreadModel and can access any shared objects and can yield inconsistency.

Syntax of isThreadSafe:

<% @ page isThreadSafe="true/false" %>

Here true or false represents if synchronization is there then set as true and set it as false.

Example:

<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
   isThreadSafe="true"%>

How do you implement Single Thread Model in JSP?
By simply include a page directives
<%@page isThreadSafe="false" %>

The JSP programmer can implement SingleThreadModel interface to ensure that it can handle only one request at a time.

Q6b)Write a servlet which will accept username and password in a form , which will compare both in a code to display success or failure.[5M]

login.jsp

```
<html>
<body>
        <h2>Login Page</h2>
        <p>Please enter your username and password</p>
        <form method="GET" action="loginServlet">
                Username <input type="text" name="userName" size="50">
                Password <input type="text" name="password" size="20">
                <input type="submit" value="Submit" name="B1">
        </form>
        </body>
</html>
```

LoginServlet.java

```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

public class LoginServlet extends HttpServlet {
        public void doGet(HttpServletRequest request, HttpServletResponse response)
                        throws ServletException, IOException {
                response.setContentType("text/html");
                PrintWriter out = response.getWriter();
                String un = request.getParameter("userName");
                String pw = request.getParameter("password");
                if (un == 'admin' && pw == 'admin')
                out.println("Success");
                else
                out.println("Failure");

        }
}
```