K.S.R. COLLEGE OF ENGINEERING (Autonomous)

Vision of the Institution

- We envision to achieve status as an excellent educational institution in the global knowledge hub, making self-learners, experts, ethical and responsible engineers, technologists, scientists, managers, administrators and entrepreneurs who will significantly contribute to research and environment friendly sustainable growth of the nation and the world.

Mission of the Institution

- To inculcate in the students self-learning abilities that enable them to become competitive and considerate engineers, technologists, scientists, managers, administrators and entrepreneurs by diligently imparting the best of education, nurturing environmental and social needs.
- To foster and maintain a mutually beneficial partnership with global industries and Institutions through knowledge sharing, collaborative research and innovation.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Vision of the Department

- To create ever green professionals for software industry, academicians for knowledge cultivation and researchers for contemporary society modernization.

Mission of the Department

- To produce proficient design, code and system engineers for software development.
- To keep updated contemporary technology and fore coming challenges for welfare of the society.

Programme Educational Objectives (PEOs)

PEO1 : Figure out, formulate, analyze typical problems and develop effective solutions by imparting the idea and principles of science, mathematics, engineering fundamentals and computing.

PEO2 : Competent professionally and successful in their chosen career through life-long learning.

PEO3 : Excel individually or as member of a team in carrying out projects and exhibit social needs and follow professional ethics.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

Department of Computer Science and Engineering

Subject Name: Web Programming

Subject Code: 16CS514 **Year/Semester: III / V**

Course Outcomes: On completion of this course, the student will be able to

CO1 *Demonstrate use of Html in Web development.*

CO2 *Use Scripting language and develop simple web application.*

CO3 *Learn basics of perl programming language and apply in the web development.*

CO4 *Identify the process of developing web applications with perl.*

CO5 *Demonstrate the use of XML in web development.*

Program Outcomes (POs) and Program Specific Outcomes (PSOs)

A. Program Outcomes (POs)

Engineering Graduates will be able to :

PO1 **Engineering knowledge:** Ability to exhibit the knowledge of mathematics, science, engineering fundamentals and programming skills to solve problems in computer science.

PO2 **Problem analysis:** Talent to identify, formulate, analyze and solve complex engineering problems with the knowledge of computer science. .

PO3 **Design/development of solutions:** Capability to design, implement, and evaluate a computer based system, process, component or program to meet desired needs.

PO4 **Conduct investigations of complex problems:** Potential to conduct investigation of complex problems by methods that include appropriate experiments, analysis and synthesis of information in order to reach valid conclusions.

PO5 **Modern tool Usage:** Ability to create, select, and apply appropriate techniques, resources and modern engineering tools to solve complex engineering problems.

PO6 **The engineer and society:** Skill to acquire the broad education necessary to understand the impact of engineering solutions on a global economic, environmental, social, political, ethical, health and safety.

PO7 **Environmental and sustainability:** Ability to understand the impact of the professional engineering solutions in societal and Environmental contexts and demonstrate the knowledge of, and need for sustainable development.

PO8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibility and norms of the engineering practices.

PO9 **Individual and team work:** Ability to function individually as well as on multi-disciplinary teams.

PO10 **Communication:** Ability to communicate effectively in both verbal and written mode to excel in the career.

PO11 **Project management and finance:** Ability to integrate the knowledge of engineering and management principles to work as a member and leader in a team on diverse projects.

PO12 **Life-long learning:** Ability to recognize the need of technological change by independent and life-long learning.

B. Program Specific Outcomes (PSOs)

PSO1 Develop and Implement computer solutions that accomplish goals to the industry, government or research by exploring new technologies.

PSO2 Grow intellectually and professionally in the chosen field.

UNIT – I [CO-1]

1. **What is Features of HTML5? [Remember]**
   The new features of HTML5 include:
   - Support media element like video and audio.
   - Local storage
   - Supporting some new elements and custom attributes.
   - New form elements like url, date, range, time, color etc.

2. **What is HTML5? [Understand]**
   Answer: HTML5 is the latest version of the HyperText Markup Language that can be referred to the WWW (World Wide Web) primary language, this markup language enhances a text file with bits of code, and this code which we can say as "markup" describes the structure of the document.
   HTML5 provides some standard features like that of CSS, HTML, JavaScript, and DOM, which in turn will reduce the requirement of external plugins. It's more markup to replace scripting, better error handling, etc. HTML5 is device independent.

3. **What is the difference between HTML and HTML5? [Understand]**

HTML5	HTML
HTML5 has high-level video and audio support.	High-level video and audio support is not a part of the version and specifications in the previous HTML.
Canvas, SVG and other virtual vector graphics are supported in HTML5.	In HTML, if we want to implement vector graphics, that was only possible by using third party library like VML, Silver-light, etc.
SVG and MathML can be used in text.	This is not possible in HTML.
Web SQL database, application cache and web storage is used as permanent storage.	Browser cache can be used as temporary storage.
HTML5 is more mobile friendly.	HTML is less mobile friendly.
Doctype declaration is simple and easy.	Doctype declaration is long and complicated..
Allows drag and drop effect.	Does not allow drag and drop effect.
Attributes of Async, charset, and ping are available.	These attributes are not available in HTML.
HTML5 support javascript to run in the background.	Does not support javascript to run within the web browser.
We can draw shapes like rectangle, circle, and triangle in HTML5.	It is not possible to draw shapes like rectangle, circle, triangle etc.

4. **What is <!DOCTYPE>? What are the different types of <!DOCTYPE> that are available?[Remember]**
   The <!DOCTYPE> declaration provides instruction to the web browser to understand what information it should be display, and the need to start with <!DOCTYPE> declaration. In HTML5, DOCTYPE declaration is very short, and case-insensitive, and <!DOCTYPE html> is written at the top of every HTML5 page.
   The following DOCTYPE are also supported in HTML5:
   - <!DocTYpe html>

- <!dOCtype html>
- <!doctype html>

There are 3 types of DOCTYPES as mentioned below:

- Strict Doctype
- Frameset Doctype
- Transitional Doctype

5. **What are the New tags in Media Elements in HTML5? [Remember]**
   - **<audio>:** Apply for multimedia contents like sounds, audio streams or music, embed audio content without the requirement of any additional plug-in like flash player.
   - **<video>:** Apply for video content like video streams or movie clip, embed video content etc.
   - **<source>:** Apply for multiple media resources in media elements, such as audio, video, picture etc.
   - **<embed>**: Apply for an external application or embedded content (a plug-in).
   - **<track>:** Apply for text tracks in the media elements such as video or audio. This tag is used for subtitles or caption files while the video media is playing.

6. **What is a tag in HTML5?[Understand]**

   A tag is a special content in HTML5, which is surrounded by an angle bracket (<,>). A slash (/) symbol is used to close the tag after completing the block.

   For Example

   <title> This is my Browser </title>

   An Html5 tag is a set of characters that develop a formatted command for a web page. These formatted commands communicate and send the instruction to the Browser.

7. **What is the minimum number of HTML5 tags that are required to create a Web page? [Create]**

   Minimum 3 HTML5 tags are required to create a Web page, such as (<HEAD>, <BODY>, <HTML>).

8. **What is the importance of Drag and Drop in HTML5? [Analysis]**

   Drag and Drop is the most important User Interface concept which makes it easy to grab an object and Drag it at the place you want with the help of a mouse click.

   Some common features that are mostly used by Drag and Drop operation include move, link or copy. We can drag an image using elements, type = **<img draggable = "true">**, to make an image draggable and set the draggable image attribute to true.

9. **Explain new Form input types in HTML5. [Evaluate]**

   HTML5 has 14 new forms input types:

- **Date:** This is a Date picker, we can pick a date by using type = **"date".**
- **Week:** This is a Week picker, we can pick a week by using type = **"week".**
- **Month:** This is a Month picker, we can pick a month by using type = **"month".**
- **Time:** This is a Time picker, we can pick the time by using type = **"time".**
- **Datetime:** This is a combined date and time, we can pick the combination of date and time by using type = **"datetime".**
- **Datetime-local:** A combined local date and time, we can pick the combination of local date and time using type = **"DateTime-local".**
- **Email:** Allows one or more Email Addresses, we can enter multiple email addresses using type = **"email".**
- **Tel:** Allows different phone numbers around the world. A phone number is validated by the client-side. We can enter a phone number using type = **"tel".**
- **Search:** Allows to search queries by input text. We can enter multiple queries using type = **"search".**
- **Number:** Allows inserting a numerical value with additional attributes such as min, max. etc., and we can enter multiple numerical values using type = **"number".**
- **Url:** A url input type, that is used for the web address. In a single url, we can use multiple attributes using type = **"url".**

- **Color:** Allows to select multiple colors, we can pic multiple color using type = **"color".**
- **Range:** Allows to insert a numerical value within a specific range, Range is similar to the number but it is much specific. We can enter a numerical value within a range using type = **"range".**
- **Placeholder:** Allows to display a short hint (usually in a light color) in the input fields, before we enter the value. We can write a short hint in the input field by using type = **"placeholder".**

10. **What is image map in html5? [Remember]**

    Image maps are a combination of URL and images, where clicking on these images (clickable area of the image) will open different new web pages.

    Two types of image maps are available in HTML5,
    i.e. client side and server side:

    The client-side image map is created by using two elements **<area>** and **<map>**, where the map holds the map information and the area element takes the attributes to define each section of the map. **Server-side image map** created by using **<usemap>** attribute, the usemap attribute is the name of our map.

11. **How to optimize website assets? [Create]**

    Answer: We need to understand some basic optimization rules, in order to optimize website assets. Initially, we should decrease the download size and make fewer http requests.

    To optimize website assets we can follow the below techniques:
    - File compression
    - File concatenation
    - CDN Hosting
    - Offloading assets
    - Re-organizing
    - Refining code

12. **What is the use of MathML Element in HTML5? [Remember]**

    The word MathML (Mathematical Markup Language) is a markup language, that is used to show scientific and mathematical expression on the web. MathML is a form of XML (extensible markup language) to describe the Math notation.

13. **What are the various formatting tags in HTML5? [Understand]**
    - **Marked text:** Represents highlighted text for Reference purposes. We can use **<marks>** tags for text highlight.
    - **Deleted text:** Specifies the deleted block of text. We can use **<del>** tags to implement a deleted text.
    - **Emphasized text:** Defines the emphasized text. We can use **** tags to implement an emphasized text.
    - **Inserted text:** Inserts a block of text into a document. We can use **<ins>** tags to implement an inserted text.
    - **Small text:** Display inserted text in a small size. We can use **<small>** tags to implement a small text.
    - **Superscript text:** This is a superscripted text. We can use **<sup>** tags to implement a superscript text.
    - **Subscript text:** This is a subscripted text. We can use **<sub>** tags to implement a superscript text.

14. **Why do we use HTML5? [Apply]**

    Answer: HTML5 supports animation, drawing, audio, video, etc and it easily embeds a video on the web page. It does not require any additional software like Flash for watching videos.

    Some of the important reasons to use HTML5 are given below:
    - Legacy and cross-browser support
    - Better interactions
    - Smarter storage
    - Cleaner code

15. **What is a hyperlink? Does it only apply to text? [Evaluate]**
Answer: The hyperlink is a link that allows a user to move from one web page to another web page when clicked. Hyperlink concept is used on text and as well as image, and we can convert an image into a link with the help of <a href = " "….> tags.

16. **How to create a link that will connect to another web browser page when clicked in HTML5? [Create]**
Answer: Use the **<href>** tag to create hyperlinks, and these are used to connect to another web page. We can create hyperlink by using type = ** text** tag. When we click the text then, the linked url of the web page will open.

17. **How to Embed Video and Audio in Html5? [Analysis]**
Video:
Example to Embed a video in HTML5 is shown below.

```
<!DOCTYPE html>
<html>
<body>
<video width = "300" height = "250" controls>
<source src = "MyMovie.mp4" type = "video/mp4">
</video>
</body>
</html>
```

Audio:
Example to Embed an Audio in HTML5 is shown below.

```
<audio controls>
<source src = "song.mp3" type = "audio/mpeg">
</audio>
```

18. **What is CSS? [Apply]**
CSS stands for Cascading Style Sheet. It is a popular styling language which is used with HTML to design websites. It can also be used with any XML documents including plain XML, SVG, and XUL.More details.

19. **What is the origin of CSS? [Create]**
SGML (Standard Generalized Markup Language) is the origin of CSS. It is a language that defines markup languages.

20. **What are the different variations of CSS? [Remember]**
Following are the different variations of CSS:
CSS1
CSS2
CSS2.1
CSS3
CSS4

21. **How can you integrate CSS on a web page? [Evaluate]**
There are three methods to integrate CSS on web pages.
    - Inline method - It is used to insert style sheets in HTML document
    - Embedded/Internal method - It is used to add a unique style to a single document
    - Linked/Imported/External method - It is used when you want to make changes on multiple pages.

22. **What are the advantages of CSS? [Understand]**

- Bandwidth
- Site-wide consistency
- Page reformatting
- Accessibility
- Content separated from presentation

23. Name some CSS style components. [Understand]

Some CSS Style components are:

- Selector
- Property
- Value

24. What is the purpose of the z-index and how is it used? [Remember]

The z-index helps to specify the stack order of positioned elements that may overlap one another. The z-index default value is zero and can take on either a positive or negative number.

An element with a higher z-index is always stacked above than a lower index.

Z-Index can take the following values:

Auto: Sets the stack order equal to its parents.

Number: Orders the stack order.

Initial: Sets this property to its default value (0).

Inherit: Inherits this property from its parent element.

25. What is the float property of CSS? [Create]

The CSS float property is used to move the image to the right or left along with the texts to be wrapped around it. It doesn't change the property of the elements used before it.

To understand its purpose and origin, let's take a look at its print display. In the print display, an image is set into the page such that text wraps around it as needed.

UNIT – II [CO-2]

1. **What is Javascript? [Remember]**

Javascript is a client-side language and the programs or codes written in Javascript run on a browser. Using Javascript, it is possible to make a web page more intelligent, as it requires the user to provide all mandatory details before submitting the information (filled in HTML elements) to the server. Not only this, using Javascript, we can also restrict a web page to go back to the visited pages; e.g., security measure in net banking services.

2. **Are Attributes and Property the same? [Evaluate]**

No. Attributes are something that can give more details on an element like id, type, value etc. Whereas, Property is the value assigned to the property like type="text", value='Name' etc.

3. **List out the different ways an HTML element can be accessed in a Javascript code. [Understand]**

Here are the list of ways an HTML element can be accessed in a Javascript code,

(i) getElementById('idname'): Gets an element by its ID name

(ii) getElementsByClass('classname'): Gets all the elements that have the given classname.

(iii) getElementsByTagName('tagname'): Gets all the elements that have the given tag name.

(iv) querySelector(): This function takes css style selector (like #id/.classname/tagname) and returns the first selected element.

(v) querySelectorAll(): Similar to querySelector, this function returns a NodeList of html elements.

4. **What are the new ways to define a variable in Javascript? [Remember]**

There are three possible ways of defining a variable in Javascript (i) var (which is used from the beginning) (ii) const (iii) let. The last two ways are the latest ways of defining a variable and are introduced in ES-2015(ES6 version).

5. **What is a Typed Language? [Understand]**
   Typed Language is in which the values are associated with values and not with variables. It is of two types:
   Dynamically: in this, the variable can hold multiple types; like in JS a variable can take number, chars.
   Statically: in this, the variable can hold only one type, like in Java a variable declared of string can take only set of characters and nothing else.

6. **What does a typeof operator do? [Create]**
   The operator typeof gives the type of a variable/data available in it. The typeof operator can be used on Reference data types also.

7. **Name some of the ways in which Type Conversion is possible. [Apply]**
   Type Conversion is to convert from one data type to another data type.

   (i) Number to String Conversion.

   toString: Other data type to String.
   val = (5).toString(); converts integer to string.
   val = (true).toString(); converts boolean to string.
   Convert from Number/Boolean/Date to String.
   Number to String: String(9) converts num to string
   Boolean to String: String(true) converts bool to str
   Date to String: String(new Date()) date to string
   Array to String: String([2,2,2]) Array to string.

   (ii) String to Number Conversion.

   parseInt: String to Int only (no decimals)
   val = parseInt('11'); outputs 100 as number
   val = parseFloat('22.22') outputs 22.22 as float
   Convert from String/Boolean to Number/Date.
   String to Number: Number('9') converts str - num
   (9).toFixed(4) gives 9.0000 as the output
   Boolean to Number: Number(true) converts to no.
   Null to Number: Number(null) converts to no. (0)
   Chars to Number: Number('ss') give NaN.

8. **What is the difference between Local Storage and Session Storage? [Remember]**
   Local Storage will stay until it is manually cleared through settings or program.
   Session Storage will leave when the browser is closed.

9. **What is the difference between the keywords var and let? [Evaluate]**
   The keyword var is from the beginning of Javascript; whereas, let is introduced in ES2015/ES6. The keyword let has a block scope; whereas, the keyword var has a functional scope.

10. **What is the difference between the operators '==' and '==='? [Evaluate]**
    The operator '==' compares the value; whereas, the operator '===' compares both value and type.

11. **What is the difference between null and undefined?[Understand]**

When used the typeof operator on null; i.e., typeof(null), the value is an object. Whereas, when used the typeof operator on undefined; i.e., typeof(undefined), the value would be undefined.

12. **Are Javascript and JScript the same?[Apply]**
    No, Javascript was provided by Netscape; whereas, JScript was provided by Microsoft.

13. **Are Typescript and Javascript the same? [Apply]**
    Typescript is not the next version of Javascript but is developed by Microsoft and can be taken as a superset to Javascript; the code written in Typescript is later compiled into Javascript. Typescript adds new features like Interfaces, Generics, etc.

14. **Name some of the Javascript frameworks. [Remember]**
    There are many Javascript Frameworks available today, but the most commonly used frameworks are:
    (i) Angular (ii) React (iii) Vue

15. **Explain the typeof operator. [Analysis]**
    The operator typeof is an example of Unary Operators, which is used by placing it before its operand; which can be of any type.

16. **What is the difference between typeof and instanceof operators in Javascript? [Analysis]**
    The typeof operator returns a string of what type the operand is. Whereas, the instanceof operator does not work with primitive data types; but works with objects and checks on what type the object is.

17. **Which keywords are used to handle exceptions? [Remember]**
    Try… Catch---finally is used to handle exceptions in the JavaScript

```
Try{
Code
}
Catch(exp){
Code to throw an exception
}
Finally{
Code runs either it finishes successfully or after catch
}
```

18. **What are the different types of errors in JavaScript? [Create]**
    There are three types of errors:
    - **Load time errors**: Errors which come up when loading a web page like improper syntax errors are known as Load time errors and it generates the errors dynamically.
    - **Run time errors**: Errors that come due to misuse of the command inside the HTML language.
    - **Logical Errors**: These are the errors that occur due to the bad logic performed on a function which is having different operation.

19. **Define event bubbling? [Remember]**
    JavaScript allows DOM elements to be nested inside each other. In such a case, if the handler of the child is clicked, the handler of parent will also work as if it were clicked too.

20. **How are event handlers utilized in JavaScript? [Analysis]**
    Events are the actions that result from activities, such as clicking a link or filling a form, by the user. An event handler is required to manage proper execution of all these events. Event handlers are an extra attribute of the object. This attribute includes event's name and the action taken if the event takes place.

UNIT – III [CO-3]

1. **What is Perl? [Remember]**
   - Perl is a stable, cross platform programming language.
   - Though Perl is not officially an acronym but few people used it as Practical Extraction and Report Language.
   - It is used for mission critical projects in the public and private sectors.
   - Perl is an Open Source software, licensed under its Artistic License, or the GNU General Public License (GPL).
   - Perl was created by Larry Wall.
   - Perl 1.0 was released to usenet's alt.comp.sources in 1987 and the latest version of perl is 5.16.2

2. **What are the features of Perl programming? [Understand]**
   - Perl takes the best features from other languages, such as C, awk, sed, sh, and BASIC, among others.
   - Perls database integration interface DBI supports third-party databases including Oracle, Sybase, Postgres, MySQL and others.
   - Perl works with HTML, XML, and other mark-up languages.
   - Perl supports Unicode.
   - Perl is Y2K compliant.
   - Perl supports both procedural and object-oriented programming.
   - Perl interfaces with external C/C++ libraries through XS or SWIG.

3. **What are data types that perl supports? [Understand]**
   Perl has three basic data types − scalars, arrays of scalars, and hashes of scalars, also known as associative arrays.

4. **What are scalar data types in perl? [Understand]**
   Scalars are simple variables. They are preceded by a dollar sign ($). A scalar is either a number, a string, or a reference. A reference is actually an address of a variable, which we will see in the upcoming chapters.

5. **What are Arrays in perl? [Understand]**
   Arrays are ordered lists of scalars that you access with a numeric index which starts with 0. They are preceded by an "at" sign (@).

6. **What are Hashes in perl? [Remember]**
   Hashes are unordered sets of key/value pairs that you access using the keys as subscripts. They are preceded by a percent sign (%).

7. **How will you declare a variable in perl? [Create]**
   Perl variables do not have to be explicitly declared to reserve memory space. The declaration happens automatically when you assign a value to a variable. The equal sign (=) is used to assign values to variables.

8. **What is the difference between single quoted string and double quoted string? [Analysis]**

```
#!/usr/bin/perl

$var = "This is string scalar!";
$quote = 'I m inside single quote - $var';
$double = "This is inside double quote - $var";

$escape = "This example of escape -\tHello, World!";

print "var = $var\n";
print "quote = $quote\n";
print "double = $double\n";
print "escape = $escape\n";
```

9. **What is V-Strings? [Understand]**

A v-string provides an alternative and more readable way to construct strings, rather than use the somewhat less readable interpolation form "\x{1}\x{14}\x{12c}\x{fa0}".

10. **How will you access an element of a perl array? [Evaluate]**

```
#!/usr/bin/perl
@ages = (25, 30, 40);
@names = ("John Paul", "Lisa", "Kumar");
print "\$ages[0] = $ages[0]\n";
print "\$ages[1] = $ages[1]\n";
print "\$ages[2] = $ages[2]\n";
print "\$names[0] = $names[0]\n";
print "\$names[1] = $names[1]\n";
print "\$names[2] = $names[2]\n";
```

11. **What is range operator? [Remember]**

```
#!/usr/bin/perl
@var_10 = (1..10);
@var_20 = (10..20);
@var_abc = (a..z);
print "@var_10\n";   # Prints number from 1 to 10
print "@var_20\n";   # Prints number from 10 to 20
print "@var_abc\n";  # Prints number from a to z
```

12. **How will you add an element to an end of an array? [Evaluate]**

```
#!/usr/bin/perl
# create a simple array
@coins = ("Quarter","Dime","Nickel");
print "1. \@coins  = @coins\n";
# add one element at the end of the array
push(@coins, "Penny");print "2. \@coins  = @coins\n";
```

13. **How will you get replace elements of an array? [Create]**

```
#!/usr/bin/perl

@nums = (1..20);
print "Before - @nums\n";

splice(@nums, 5, 5, 21..25);
print "After - @nums\n";
```

Before – 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

After – 1 2 3 4 5 21 22 23 24 25 11 12 13 14 15 16 17 18 19

14. **How will you create Hashes in perl? [Apply]**

```
%data = ('John Paul', 45, 'Lisa', 30, 'Kumar', 40);
```

15. **How will you get all keys from Hashes in perl? [Apply]**

```
#!/usr/bin/perl

%data = ('John Paul' => 45, 'Lisa' => 30, 'Kumar' => 40);

@names = keys %data;

print "$names[0]\n";
print "$names[1]\n";
print "$names[2]\n";
```

16. **How will you create a reference for an array, hash and subrouting? [Remember]**

```
$arrayref  = \@ARGV;
$hashref  = \%ENV;
$cref = \&PrintHash;
```

17. **How will you open a file in read-only mode? [Remember]**

```
open(DATA, "<file.txt");
```

18. **How will you open a file in writing mode? [Apply]**

```
open(DATA, ">file.txt") or die "Couldn't open file file.txt, $!";
```

19. **How will you open a file in writing mode without truncating it?[Apply]**

```
open(DATA, "+<file.txt") or die "Couldn't open file file.txt, $!";
```

20. **What is circular reference?[Understand]**

```
#!/usr/bin/perl
my $foo = 100;
$foo = \$foo;

print "Value of foo is : ", $$foo, "\n";
Output: Value of foo is : REF(0x9aae38)
```

21. **What is CGI ? [Understand]**

A Common Gateway Interface, or CGI, is a set of standards that defines how information is exchanged between the web server and a custom script.

The CGI specs are currently maintained by the NCSA and NCSA defines CGI is as follows –

- The Common Gateway Interface, or CGI, is a standard for external gateway programs to interface with information servers such as HTTP servers.
- The current version is CGI/1.1 and CGI/1.2 is under progress.

22. **What is CGI.pm?[Evaluate]**

```
#!/usr/bin/env perl
use strict;
use warnings;
print <<'END';
Status: 200
Content-type: text/html

<!doctype html>
<html> HTML Goes Here </html>
END
```

```
#!/usr/bin/env perl
use strict;
use warnings;
use CGI;
my $cgi = CGI->new();
print $cgi->header;

print <<'END';
<!doctype html>
<html> HTML Goes Here </html>
END
```

23. **List the CGI.pm methods. [Analysis]**

Basic Methods

These are the methods corresponding to the functions in cgi-lib.pl, see table bellow:

cgi-lib.pl	description	CGI.pm	syntax	example ($q is instance)
PrintHeader	generates the required header for a server reply	header ( )	header(content type,status,headers)	print $q->header; or print header;
ReadParse	decode form	ReadParse( )	ReadParse	ReadParse;

	information and place results in %in and @in		(only %in)	
		param ( )	@name= param or param("key1","key2", ...);	$meal = $q->param('order'); or $meal = param('order');
MethGet	returns true if method is GET, false if POST	request_method ( )	request_method	if (request_method) { .....}
HtmlTop	initial HTML tags of a page. You can specify the TITLE: &HtmlTop(This)	start_html ( )	start_html (-title =>"value",-atribute=> "value", ...	print start_html (-title=>"Example of CGI.pm",-BGCOLOR=>"white");
HtmlBot	returns the closing HTML tags of a page.	end_html ( )	end_html	print end_html;
MyFullUrl	returns the full URL of the script	self_url	self_url	print self_url;

CGI Handling	
keywords	Gets keywords from an <ISINDEX> search.
param	Gets (or sets) the value of parameters.
append	Appends to a parameter.
import_names	Imports variables into a namespace.
delete	Deletes a parameter.
delete_all	Deletes all parameters.
save	Saves all parameters to a file.
self_url	Creates self-referencing URL.
url	Gets URL of current script without query information.
header	Creates HTTP header.
redirect	Creates redirection header.
cookie	Gets (or sets) a cookie.
nph	Declares this to be a NPH script.
dump	Prints all name/value pairs.
Form Generation	
start_html	Generates an <HTML> tag.
end_html	Generates an </HTML> tag.
autoEscape	Sets whether to use automatic escaping.

CGI Handling	
isindex	Generates an <ISINDEX> tag.
startform	Generates a <FORM> tag.
start_multipart_form	Generates a <FORM> tag for multipart/ form-data encoding.
textfield	Generates an <INPUT TYPE=TEXT> tag.
textarea	Generates an <TEXTAREA> tag.
password_field	Generates an <INPUT TYPE=PASSWORD> tag.
filefield	Generates an <INPUT TYPE=FILE> tag.
popup_menu	Generates a popup menu via <SELECT SIZE=1> and <OPTION> tags.
scrolling_list	Generates a scrolling list via <SELECT> and <OPTION> tags.
checkbox_group	Generates a group of checkboxes via multiple <INPUT TYPE=CHECKBOX> tags.
checkbox	Generates a single checkbox via a <INPUT TYPE=CHECKBOX> tag.
radio_group	Generates a group of radio buttons via <INPUT TYPE=RADIO> tags.
submit	Generates a <SUBMIT> tag.
reset	Generates a <RESET> tag.
defaults	Generates a <DEFAULTS> tag.
hidden	Generates an <INPUT TYPE=HIDDEN> tag.
image_button	Generates a clickable image button via a <SELECT> tag.
button	Generates a JavaScript button.
Handling Environment Variables	
accept	Gets accept types from ACCEPT header.
user_agent	Gets value of USER_AGENT header.
path_info	Gets value of EXTRA_PATH_INFO header.
path_translated	Gets value of PATH_TRANSLATED header.
remote_host	Gets value of REMOTE_HOST header.
raw_cookie	Gets value of HTTP_COOKIE header.
script_name	Gets value of SCRIPT_NAME header.
referer	Gets value of REFERER header.
auth_type	Gets value of AUTH_TYPE header.
remote_user	Gets value of REMOTE_USER header.
user_name	Gets user name (not via headers).
request_method	Gets value of REQUEST_METHOD header.

24. How to generate simple CGI.pm methods [Apply]

```
#!/usr/bin/perl -w
#cgi script with CGI.pm
use CGI;
$request = CGI::new();
```

```
print $request->header();
print $request->h1("Hello World!");
my $output;// this is one example and another example given below
$output .= $cgi->start_form(
   -method => "post",
   -action => "/path/to/simple.cgi"
);
print $cgi->textfield( -name => 'foo', -value => 'bar' );
print $cgi->submit;
print $cgi->end_form;
```

25. Write the difference between PHP and Perl. [Analysis]

PHP	**PERL**
PHP has become more popular with WEB designers because PHP is slightly easier	In the web development environment, Perl is a very powerful way to create dynamic web pages
PHP code is inserted into the HTML page and executed when the page is requested	Perl scripts are run as stand-alone programs and create HTML pages when the script is run
speed and efficiency: PHP is generally considered to be faster than Perl	Perl is a very powerful, robust language with more history than PHP

26. How the perl file extension used and execute? [Create]

- A PERL file must be saved with a .pl (.PL) file extension in order to be recognized as a functioning PERL script.
- Now to run hello.pl Perl program from the Unix command line, issue the following command at your UNIX $ prompt:

$perl filename.pl

27. How to execute the statements from command line? [Create]

Use -e option at command line which lets you execute Perl statements from the command line.

$perl -e 'print 4;\n'

RESULT: 4

$perl -e "print 'Hello World!\n";'

RESULT: Hello World!

28. List the arithmetic operators in perl. [Evaluate]

Operator	**Definition**	**Example**
+=	Addition	($x += 10)
-=	Subtraction	($x -= 10)
*=	Multiplication	($x *= 10)

/=	Division	($x /= 10)
%=	Modulus	($x %= 10)
**=	Exponent	($x **= 10)

29. Types of conytext in perl? [Remember]

Scalar and List context, Numerical and string context, Boolean context, void context.

30. List any two naming rules in perl? [Create]

- Perl statements end in a semi-colon:
  - **print "Hello, world";**
- Comments start with a hash symbol and run to the end of the line:
  - **# This is a comment**
- Whitespace is irrelevant:
  - **print "Hello, world";**

31. Describe some of the formatting strings in detail. [Evaluate]

Character	**Description**
\L	Transform all letters to lowercase
\l	Transform the next letter to lowercase
\U	Transform all letters to uppercase
\u	Transform the next letter to uppercase
\n	Begin on a new line
\t	Applys a tab to the string
\b	Backspace
\Q	Backslash (escape) all following non-alphanumeric characters.
\E	Ends \U, \L, or \Q functions

32. Define the substr(). [Apply]

The substr() function allows for the temporary replacement of characters in a string.

```
$mystring = "Hello, PERL!";
substr($mystring, 3, 6) = "World!";
print "After replacement : $mystring\n";
```

output;

After replacement : HelWorld!RL!

33. What is meant by Data Manipulation? Give an example for Perl Data Manipulation operations. [Apply]

Example

find the day or week of the year

The day of the year is in the list returned by the localtime function. Without an argument localtime uses the current time.

my $day_of_year = (localtime)[7];

34. What is the use of ARGV in PERL? [Create]

Perl has a special array called **ARGV** . This is the list of arguments passed along with the script name on the command line. Run the following perl script as:

```
perl myscript.pl hello world how are you
foreach (@ARGV) {

    print "$_\n";

}
```

UNIT –IV [CO-4]

1. **What is taint mode? [Understand]**

   CGI programs sometimes use form data in shell-level or system-level commands. This presents a security problem if the user data is not well-formed or even intentionally set to break security of the server.

   One good way to lock out security bugs in Perl code is to turn on taint mode. Taint mode causes a Perl script to automatically treat all user supplied input as tainted and dangerous unless the programmer explicitly OKs the data.

2. **How to upload files? [Remember]**

   $FH = upload('file name');} (A)
   binmode(FH); binmode(OUT); (B)
   while ( ) { print OUT; }

   The CGI.pm function upload (line A) when given the name attribute of the file input field (file name) returns a file handle for reading the uploaded file. To store the file, we use binary mode I/O (line B).

3. **How will you track the user by hidden data ? [Create]**

   <input type="hidden" name="secret" value="some secret data">
   my $secret = param('secret');

   this is syntax for hiding the data on the form. To use this need to complete the full html form by using header, start, body, end scripts in CGI.

4. **How to connect RDBMS with perl. [Create]**

   &dbh=DBI->connect($data_source, $username, $password)

5. **What is Perl-DBI? [Remember]**

   PerlDBI, which means DBI provides an abstraction layer between the Perl code and the underlying database, allowing you to switch database implementations really easily.

6. **Create the code for insert the values into table using DBI. [Analysis]**

```
my $sth = $dbh->prepare("INSERT INTO TEST_TABLE
                (FIRST_NAME, LAST_NAME, SEX, AGE, INCOME )
                  values
                ('john', 'poul', 'M', 30, 13000)");
$sth->execute() or die $DBI::errstr;
```

7. **How to create image in Perl using Graphics Design. [Create]**

I will start by looking at a simple piece of code which writes a text string into a file as a PNG image. The process of creating an image has five stages:

- import the GD module into your script
- create an image
- create a color table which holds information about the colors that you will use in the image
- draw the image
- output the image either to a file or to STDOUT for further processing elsewhere.

GD: image, GD:Font, GD:Polygon

8. **What is HTML:Mason? [Understand]**

Mason can be used with Apache HTTP Server via mod_perl – for which Mason provides its own handler, HTML::Mason::ApacheHandler. It also has support for Common Gateway Interface (CGI), and can therefore run on any CGI-enabled web server.

9. **What is the usages of libwww in perl? [Remember]**
   - In writing web clients and servers in Perl, there are two approaches. You can establish a connection manually using sockets, and then use raw HTTP; or you can use the library modules for WWW access in Perl, otherwise known as LWP.
   - LWP is a set of modules for Perl 5 that encapsulate common functions for a web client or server. Since LWP is much faster and cleaner than using sockets.

10. **List out all LWP modules and its usages. [Apply]**

There are eight main modules in LWP: File, Font, HTML, HTTP, LWP, MIME, URI, and WWW.

- The File module parses directory listings.
- The Font module handles Adobe Font Metrics.
- In the HTML module, HTML syntax trees can be constructed in a variety of ways. These trees are used in rendering functions that translate HTML to PostScript or plain text.
- The HTTP module describes client requests, server responses, and dates, and computes a client/server negotiation.
- The LWP module is the core of all web client programs. It allows the client to communicate over the network with the server.
- The MIME module converts to/from base 64 and quoted printable text.
- In the URI module, one can escape a URI or specify or translate relative URLs to absolute URLs.
- Finally, in the WWW module, the client can determine if a server's resource is accessible via the Robot Exclusion Standard.

UNIT – V [CO-5]

1. **What is XML? [Remember]**

   XML is a set of rules for structuring, storing and transferring information. This language is used to describe the data which will be passed from one computer application to another. XML tells a computer what the actual data is, not what it should look like.

2. **What is the main disadvantage of HTML? [Remember]**

   The main disadvantage was that it was not designed to share information between computers, and so XML was developed to overcome this limitation.

3. **What are the uses of XML? [Understand]**

   · Connecting databases to the Web; exchanging data automatically between different computer applications;
   · Moving the processing from a Web server to the local PC;
   · Using the same information in many different ways;
   · Changing the presentation of information automatically for different viewing devices.

4. **What is the emergence of XML? [Understand]**

   · XLINK - a standard designed to hyperlink between XML documents;
   · XML Query - a language used to query XML documents;
   · XSL - a style sheet language for XML;
   · Resource Description Framework (RDF) - a standard for metadata. This will be similar to library cards and should make searching the Web much faster

5. **What are the major XML news formats? [Apply]**

   The major XMLNews formats are XMLNews-Story and XMLNews-Meta,

6. **What are markup and text in an XML document? [Analysis]**

   XML documents mix markup and text together into a single file: the markup describes the structure of the document, while the text is the documents content

7. **Write the rules of XML declaration. [Evaluate]**

   · The XML declaration is case sensitive: it may not begin with "<?XML" or any other variant;
   · If the XML declaration appears at all, it must be the very first thing in the XML document: not even white space or comments may appear before it; and
   · It is legal for a transfer protocol like HTTP to override the encoding value that you put in the XML declaration, so you cannot guarantee that the document will actually use the encoding provided in the XML declaration.

8. **Write the rules of XML element. [Apply]**

   Elements may not overlap: an end tag must always have the same name as the most recent unmatched start tag. The following example is not well-formed XML, because "</person>" appears when the most recent unmatched start tag was

   a. "<function>":
   b. <!-- WRONG! -->
   c. <function><person>President</function> Habibe</person>

9. **Write on Attributes. [Understand]**

XML start tags also provide a place to specify attributes. An attribute specifies a single property for an element, using a name/value pair. One very well known example of an attribute is href in HTML:

Yahoo!

10. **Different between XML and HTML. [Understand]**

1. XML is not a replacement for HTML.
2. XML and HTML were designed with different goals:
3. XML was designed to transport and store data, with focus on what data is.

1. HTML was designed to display data, with focus on how data looks.
2. HTML is about displaying information, while XML is about carrying information.

11. **Define Document Type Declaration. [Remember]**

The document type declaration consists of the markup codes or the DTD according to which the XML document has to be written.

· The document type declaration can also point to an external file that contains the DTD. The document type declaration follows the XML declaration.

Example:

<?xml version=”1.0”?>

<!DOCTYPE lib SYSTEM “lib.dtd”>

12. **Define Name space. [Remember]**

An XML namespace is identified by a URI reference; element and attribute names may be placed in an XML namespace using the mechanisms described in this specification.

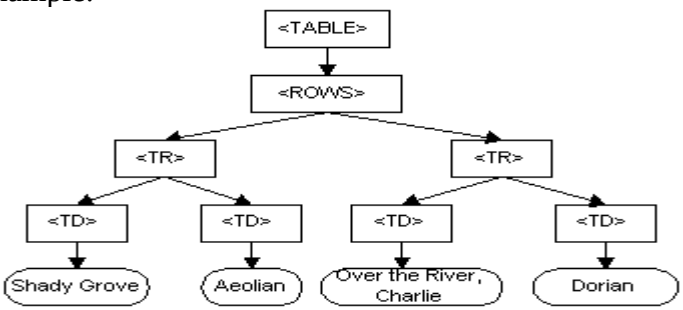
13. **Define XML schema. [Evaluate]**

An XML Schema consists of components such as type definitions and element declarations. These can be used to assess the validity of well-formed element and attribute information items (as defined in [XML-Infoset]), and furthermore may specify augmentations to those items and their descendants.

14. **What is Document object model? [Remember]**

The Document Object Model (DOM) is a programming API for HTML and XML documents. It defines the logical structure of documents and the way a document is accessed and manipulated.

Example:



15. **State the role of XML::Parser? [Remember]**

The XMLin() method reads an **XML** file or string and converts it to a **Perl** representation; the XMLout() method does the reverse, reading a **Perl** structure and returning it as an **XML** document instance.

Example:

```
use XML::Parser;
$p1 = XML::Parser->new(Style => 'Debug');
$p1->parsefile('REC-xml-19980210.xml');
$p1->parse('<foo id="me">Hello World</foo>');
```

Part – B

Unit- I

1. Discuss the various HTML tags in detail. [Remember]
2. Write short notes on the following i. IMG tag ii. TABLE tag iii. FRAME tag [Create]
3. Write an HTML document to provide a form that collect name and telephone numbers. [Remember]
4. Explain HTML forms in detail along with form elements, attributes & methods. [Apply]
    i. <form method=”how to send” ACTION=”URL of script”>
    ii. …form data…
    iii. </form>
    iv. Form fields & attributes:
    v. <TEXTAREA> element
    vi. <INPUT> tag: text, password, checkbox, radio, hidden, reset, submit,
    vii. button<SELECT> tag
5. List any four events associated with DHTML and explain each one with an example.
6. Write the XHTML markup to create a frame with a table of contents on the left side of the window and have each entry in the table of contents use internal linking to scroll down the document frame to the appropriate subsection. [Evaluate]
7. What are HTML tags? List the commonly used HTML commands.[Analysis]
8. Design a web page that allows the user to choose from a series of images and to view the image in color and grayscale. [Create]
9. Develop a html page using CSS which accepts and change color of following [Understand]
    i. -Any mathematical expression
    ii. -Evaluate the expression
    iii. -Displays the result of the evaluation
10. How to create user interactive web pages using form objects and form elements? [Create]
11. What is HTML?List the goals of SGML. explain the various html tags to develop the web Pages. [Apply]
12. Create a HTML Form page for Railway Registration Form. [Create]

Unit- II

1. State and explain the types of statements in JavaScript. [Remember]
2. Explain how functions can be written in JavaScript with an example. [Understand]
3. Write JavaScript to find sum of first ‘n’ even number and display the result. Get the value of n from user. [Evaluate]
4. Write JavaScript to find factorial of a given number. [Analysis]
5. Explain the JavaScript array handling and array methods. [Remember]
6. Explain the following JavaScript objects (1) RegExp (2) Math [Create]

7. Describe how do you use JavaScript for form validation? Develop a complete application that would include function to validate the user data. [Evaluate]
8. Discuss about JavaScript objects in detail with suitable examples. [Understand]

Unit – III

1. Give some of the elements and components within PERL? Illustrate it. [Remember]
2. Summarize the execution process of PERL Script. [Understand]
3. Specify the basic rules applied for naming the PERL variables. [Apply]
4. Brief the looping statement supported by PERL with its syntax and example. [Create]
5. Discuss the various Perl parsing rules with example. [Analysis]
6. What is meant by control structures? Explain it with neat example. [Remember]
7. Explain in details any five CGI.pm modules and methods. [Understand]
8. How to handle session and cookies in Perl? [Evaluate]

Unit – IV

1. Explain in detail web development programming using perl. [Remember]
2. How will you get 10 student marks in the html and store in RDBMS. Give example. [Create]
3. Is it possible to track the user by hidden data? Justify. [Evaluate]
4. Why GD is used in Perl? Create images using perl and manipulate it. [Analysis]
5. Create HTML page to get Username, Age, User Id, Address and Mobile no. store all details into database. Retrieve the values based on User Id, using DBI in Perl. [Apply]

Unit –V

1. Give an XML program for storing book details. [Apply]
2. Discuss about XML Parser's and their method with an example. [Understand]
3. Explain in detail to display XML data on browser. [Analysis]
4. Explain in detail about various XSL tags with an example [Understand]
5. Explain briefly XSLT with a program. [Create]
6. Write sort note on following Xml Schema, XQuery. [Remember]
7. Discuss about XSL Elements and how to handle DOM with PERL. [Evaluate]