SECTION A [50 MARKS]
(Attempt ALL questions.)

Question 1 [1 x 10 = 10]

Directions: For each question, there are four alternatives: A, B, C and D. Choose the correct alternative and circle it. **DO NOT** circle more than **ONE** alternative. If there are more than one choice circled, **NO** score will be awarded.

a. All of the tags below has to be included inside the head tag **EXCEPT**

    A   <form>.
    B   <link>.
    C   <script>.
    D   <title>.

b. When we include an image inside our web page, using **<img>** tag, the location of the image has to be the value of

    A   `href` attribute.
    B   `src` attribute.
    C   `target` attribute.
    D   `vlink` attribute.

c. Study the HTML tags given and answer the question that follows.

```
<ol start="50">
<li>Coffee</li>
<li>Tea</li>
<li>Milk</li>
</ol>
```

The output of the HTML tags above will be:

A	B	C	D
50. Coffee	50. Milk	1. Coffee	i. Coffee
51. Tea	51. Tea	2. Tea	ii. Tea
52. Milk	52. Coffee	3. Milk	iii. Milk

d. Dorji owns a hardware store in Bajo. He plans to develop a website for his store so that customers can view the availability of items in his store. Which one of the following is the recommended domain name for his store?

    A   DorjiStore.org.bt
    B   DorjiStore.com
    C   DorjiStore.edu.bt
    D   DorjiStore.net

e. Kiba opens a web browser and types **www.kuenselonline.com** in the address bar. Which protocol is she using to access the website?

A HTTP
B FTP
C SMTP
D TELNET

f. Which one of the following software is **NOT** a scripting tool?

A Dreamweaver
B Front page
C Mozilla Firefox
D Notepad

g. Study the script given below and answer the question that follow.

```
<script>
  var passmark = 40;
  var averagemark = 55;
  document.write("passmark: " + passmark + " average mark: " +
  averagemark);
</script>
```

The output of the above JavaScirpt code will be

A passmark: 40 average mark: 55.
B passmark:40 average mark:55.
C passmark: 40 Average mark: 55.
D passmark:+40 average mark:+55.

h. **var result = (2 + 6) % 7 – 1;**

The value of variable **result** will be

A 0.
B 0.14.
C 2.
D -1.

i. **var cars = [“Alto”, “Santro”, “Prado”];**

The index of the element "Santro" from the cars array is

A 0.
B 1.
C 2.
D 3.

j. Study the script given below and answer the question that follow.

```
<script>
var first_number = 12;
var second_number = 5;
function add()

        {
                var third_number = 2;
                var sum = first_number+second_number+third_number;
                document.write(sum);
        }
        function subtract()
        {
                var fourth_number = 2;
                var difference = first_number-fourth_number;
                document.write(difference);
        }
add();
subtract();
</script>
```

Which statements is **NOT TRUE** about the variables declared in the script?

A   Variable **first_number** can be accessed by function **add()**.
B   Variable **first_number** can be accessed by function **subtract()**.
C   Variable **second_number** can be accessed by function **subtract()**.
D   Variable **third_number** can be accessed by function **subtract()**.

Question 2   **[10 x 1 = 10]**

Direction: *Fill in the blanks with appropriate words or phrases.*

a. A programmer from Department of Revenue and Custom (DRC) developed an online PIT (personal income tax) calculation webpage using HTML and JavaScript. The page requires the user to provide his/her basic salary to calculate his/her PIT. The programmer of DRC can ask user input using _____ of JavaScript.

b. In HTML, there are _____ levels of heading tags for writing heading in webpage.

c. To change the distance between cell border and the cell content of a table, we need to set value for _____ attribute.

d. Facebook status update and comment feature can be developed using _____ tag.

e. Bhutan Telecom, Tashi cell and DrukCom are examples of _____ in Bhutan.

f. Dorji writes a JavaScript statement to output the integer value of 23.55 as **parseInt(document.write(23.55))**. When he ran the code, he did not get the expected output. To get the correct output, he should restructure the statement as

_____.

g. The comparison **x != y** will return **true** if value of *x* and *y* is _____.

h. The output of the code, **<script>var i=2; alert(++i); </script>**, will be

_____.

i. In a program a function is defined as function **calculate(a,b) {return a*b;}**. A variable **x** holds the result returned by the function **calculate(2,5)**. In this case, the value of **x** after function execution is _____.

j. A string variable named as **myString** is a user defined variable whose value has been assigned as **myString = "This is string array"**. The expression **document.write(myString.length)** will output
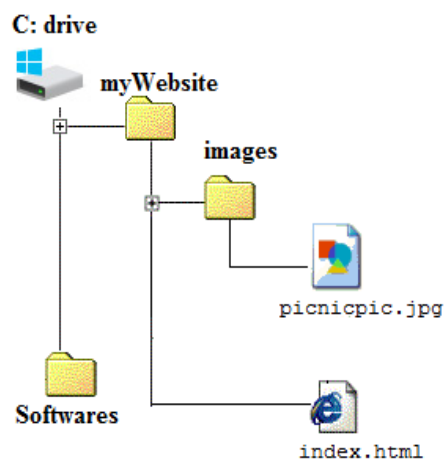
_____.

Question 3   **[15 x 2 = 30]**

Directions: *While answering these questions, briefly indicate your working and reasoning wherever required.*

a. Write down the purpose of HTML and Browsers.

b. Give an example each for ordered list and unordered list.

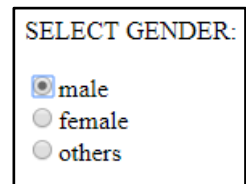c. Using the file structure given below, answer the question that follow.

Write a HTML code to insert **picnicpic.jpg** image in **index.html** file and set the height of the image to 200 pixel.

d. Write a HTML tag to create a link with the text "Visit Kuensel". When a user clicks on the text, it should open the URL **https://www.kuenselonline.com** in a new tab.

e. Write HTML tag to create a table with three columns with the texts **First Name**, **Last Name** and **Age**. The table should have a border of 2 pixels with a green background.

f. Kiran wants to create an HTML form which contains radio buttons for the user to select the gender option as shown in the figure. Write the HTML codes he can use to achieve that.

g. What is Domain Naming System? State ONE reason why it is useful to the users surfing the World Wide Web.

h. *"HTML form validation with JavaScript is not enough. Server side form validation using some other scripting language is needed".* Justify the statement.

i. Write a JavaScript code which takes user's age as input and checks whether the age is less than 18 or not. If the user enters an age less than 18, it should alert the user with the message "You are not allowed to drive!" otherwise it should alert the user with the message "Tashi Delek, you are allowed to drive".

j. Examine the codes given in the table. How would the output of the two codes vary? Explain.

Code A	Code B

`<script>`
`  var i=3;`
`  --i;`
`  document.write(i)`
`</script>`
	`<script>`
	`  var i=3;`
	`  /*--i;*/`
	`  document.write(i)`
	`</script>`

k. Write a code that uses button click event which evokes a function that asks user to enter their name and alerts a message *"Happy Birthday"* along with their name.

l. Write a code that uses Math object to find the square root of a number provided by the user.

m. Tandrel wrote a JavaScript code to calculate the average mark of a student as shown below. She got errors when she tried to execute the code. Analyse her code and point out the errors in her code so that the code runs and gives the required output after rectifying the errors.

```
<script>
  Variable declaration and assignment
  var eng=54;
  var dzo=35;
  var math=67;
  var evs=74;
  Function avg(english, dzongkha, math, evs)  //function definition
  {
        var average=(english+dzongkha+math+evs)/4
        return average;
  }
  var average_mark=avg(eng);
  //output the value return by function avg()
  document.write(average_mark);
</script>
```

n. Differentiate JavaScript object properties and object methods with an example each.

o. Examine the code given below and create a new code which uses a function to get the same output.

```
<script>
   var f=prompt("Enter the temperature in Fahrenheit");
   var x=(5/9)*(f-32);
   document.write(x);
</script>
```

SECTION B [50 Marks]

Attempt **ANY FIVE** questions

Question 4   [10]

a. HTML stands for Hyper Text Markup Language. In this context, explain the meaning of term Hyper Text and Markup Language separately.   [3]

b. Developers from Github (software company) has developed a JavaScript code with the name **cf.js** (located at **https://www.Github.com/jsfiles**) to calculate the circumference of a circle. Their code is shown below.

```
function circumference()
{
  radius=prompt("Enter the radius of the circle");
  var c= 2*3.14*radius;
  document.write("Circumference of the circle is "+c);
}
```

Write an HTML code that uses **onclick()** event which will call the function **circumference()** from **cf.js** file. Include appropriate tag to reference **cf.js** file in your HTML document.   [3]

c. Give ONE example of editor to write a script apart from notepad.   [1]

d. *"Programmers in the current era are giving focus on the concept of clean code. A clean code are easy to understand and change. It is easy to read, whether that reader is the original programmer of the code or somebody else. Its meaning is clear so it minimizes the need for guesswork and possibility for misunderstandings."*

Kinley has written a code to calculate the simple interest for money deposited to a Bank as shown in figure below. Using the concept of clean code mentioned in the above paragraph, rewrite her code following at least 3 good programming practices to make her code as clean as possible.

[3]

```
<script>
                    var x=prompt("Enter the amount borrowed(in Nu.)" );
  var y=prompt("Enter the interest rate(in %)");
  var time=prompt("Enter the time period for the deposition(in years)");
          Funtion myFuntion (principal,interestrate,time)
  {
      var interest=(principal*interestrate*time)/100;
        return interest;
  }
      var simpleInterest= myFuntion(x,y,time);
  document.write("Your simple interest recievable is Nu."+ simpleInterest);
</script>
```

Question 5 [10]

a. Explain the use of alt attribute of **<img>** tag with an example. [2]

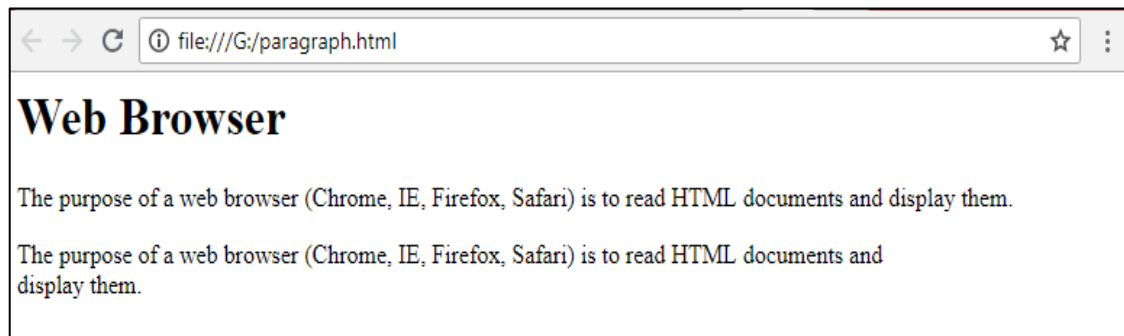b. Compare and contrast the difference between the two tags shown below. [2]

A	B
`<img src="background.jpg" height="100%" width="50%"/>`	`<img src="background.jpg" height="100px" width="50px"/>`

c. What are the possible values for the align attribute of **<table>** tag? [1]

d. A browser output of some HTML tags is shown in figure below. Write the HTML tags that would have been used to produce this output.   [2]
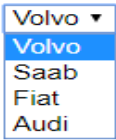

e. Differentiate between JavaScript and HTML by providing TWO differences.   [2]

f. List any TWO scripting language other than JavaScript?   [1]

Question 6   **[10]**

a. Match the form elements in column A with their pictures in column B.   [3]

Column A	Column B
A. Input element with type attribute text	1) choose a car Volvo ▼ Volvo Saab Fiat Audi
B. Textarea element	2) Enter your name: [＿＿＿＿＿]
C. Select element	3) comments: Write you comments here
	4) [••••|]

b. Write the output of the codes in the output column.   [2]

Code A	Output
```<script>\nvar str="Best of luck";\nvar x=str.toUpperCase();\ndocument.write(x);\n</script>```	
Code B	
```<script>\nvar x=Math.abs(-1.8);\ndocument.write(x);\n</script>```	

c. Bhutan National Bank wants to find out the largest amount deposited in a day by the clients. Deposit amounts are shown in array as [128, 70450, 5023, 142330, 12350, 30500, 90345]. Write a function which returns the largest deposit from the array. [3]

d. Draw a table which will be created by the tags below. [2]

```
<table border="1">
<tr>
<th colspan="2">Dzongkha</th>
<th rowspan="2">Math</th>
</tr>
<tr>
<td>Dzo1</td>
<td>Dzo2</td>
</tr>
</table>
```

Question 7 **[10]**

a. "FrontPage editor is a good tool for novices to create web pages". Explain TWO features of FrontPage to support this statement. [2]

b. Rearrange the steps given below for web hosting in the correct order. [2½]
    *   Design your website and webpages.
    *   Register a Domain name with one of ISP
    *   Upload your website to the server space.
    *   Test your website on the internet.
    *   Test your website on your computer.

c. Thrimshing Central School and Rabsel Tours and Travels are hosting websites. They want to register a domain name with Bhutan Telecom. Can you suggest one meaningful and fully qualified domain names for each of these two agencies? [2]

d. Explain the use of **&&**, **||** and **!** logical operators in JavaScript. [1½]

e. Bhutan Football Federation is holding a coaching camp. The coach has listed the age of the participants in an array as **var Age = new Array(12,13,14,11)**. Write a code to output the elements in **Age** array in reverse order. [2]

Question 8 [10]

a. Read the code below and answer the questions.

```
var x=10;
x+=5;
```
i) Write the final value of x. [1]

ii) Write an alternative assignment operator that can replace **x += 5** in the above code which will produce the same output. [1]

b. Differentiate between absolute and relative file path with an example each. [2]

c. Will the two tags shown below give you the same output? Give ONE reason to support your answer. [2]
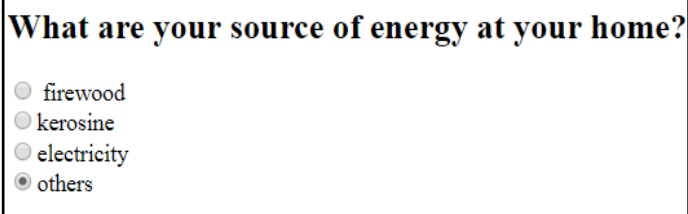
```
<img src="background.jpg">
<IMG SRC="BACKGROUND.JPG">
```

d. Using **while** loop create a JavaScript program to check whether the number entered by the user is prime or not. It should then display the message "It is prime number" or "It is not prime number". [4]

Question 9 [10]

a. Dema, a surveyor in Ministry of Agriculture, creates a form using Google forms. She used radio buttons for a particular question of her survey as shown in screen shot of her survey form below.

What are your source of energy at your home?
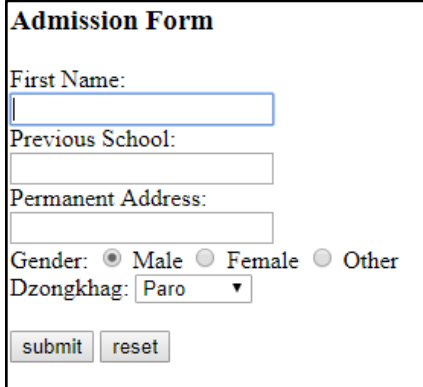
○ firewood
○ kerosine
○ electricity
◉ others

Has she used the correct form element for this question? Justify. [1]

b. Write HTML tags to create the form shown using appropriate form elements. [4]

Admission Form

First Name:

Previous School:

Permanent Address:

Gender: ◉ Male ○ Female ○ Other
Dzongkhag: Paro ▼

submit reset

c. Give simple HTML tag to insert an image as background of table. [1]

d. When a webpage loads, the browser creates a Document Object Model of the page. Draw the HTML DOM tree of Objects for the basic HTML tags given below. [2]

```
<html>
  <head>
  <title>
       my title
  </title>
  </head>
  <body>
       <a href="https://www.bbs.bt">visit bbs</a>
  </body>
</html>
```

e. Rinchen says that Document Object Model is a part of JavaScript language. Do you agree with Rinchen? Give justification for your decision. [2]
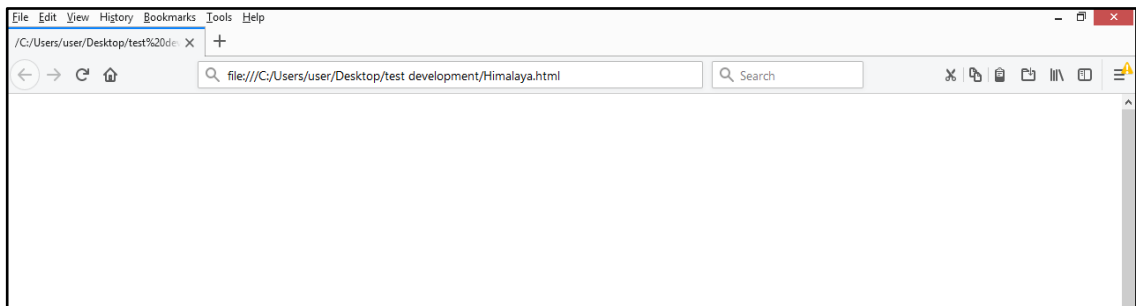
Question 10 **[10]**

a. Explain the difference between **while loop** and **do while loop** in JavaScript with a short appropriate example each. [2]

b. Analyse the code and write down the output for each string methods used in the code. [3]

```
<Script>
  var str="Every child should be provided with free education
  in Bhutan";
  var pos1=str.indexOf("with",40);
  var pos2=str.search("with");
  var pos3=str.indexOf("with");
  document.write(pos1);
  document.write(pos2);
  document.write(pos3);
</script>
```

c. Reshma has developed a JavaScript code that has a button which when clicked opens a new window which loads a page called **himalaya.html**. Her code to open the new window and the screenshot of the new opened window is shown below.

```
<html>
   <head>
   </head>
   <body>
        <script>
              function openNewWindow()
              {
              newWindowObj = window.open("BhutanInfo.html",
              "WindowName", "toolbar=0, menubar=0, scrollbars=0");
              }
        </script>
   <button type="button" onclick="openNewWindow()">open new
   window</button>
   </body>
<html/>
```


Compare the code (that generated the window) with the screenshot and rewrite the code by making necessary changes to include the features displayed in the screenshot. Also add a function to close the newly generated window in your corrected code.   [5]