

SECTION A (50 MARKS)
ANSWER ALL QUESTIONS

Question 1

[10]

Direction: 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 is more than one choice circled, NO score will be awarded.

- a) Study the codes given below and answer the question that follows:

```
<html>
  <head>
    <title>Welcome page</title>
  </head>
  <body>
     <br>
    <p> This content appears below the image</p>
    <hr>
  </body>
</html>
```

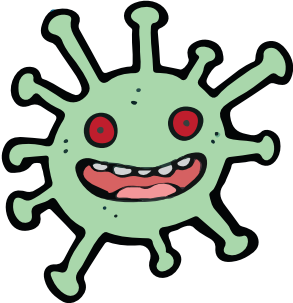
Which one of the following contains only container tags?

- A <html>, <head> and <p>
 - B <html>, <head> and <hr>
 - C <title>, <body> and

 - D <head>, <title> and
- b) Kinley designed a webform to collect information from a user. Which form control is preferred to collect the user's gender information?
- A Text
 - B Radio
 - C Textarea
 - D Checkbox
- c) Pema has her company's website hosted with Druknet. She can update the contact address using a
- A browser.
 - B text editor.
 - C visual editor.
 - D word processor.
- d) JavaScript is used to create mobile apps, desktop applications and games. This is because it
- A is loosely typed.
 - B adds interactivity.
 - C is simple to learn.
 - D requires fewer lines code.

- e) Study the content of a webpage given below and answer the question that follows:

FACT: People of all ages can be infected by the COVID-19 virus



Older people and younger people can be infected by the COVID-19 virus. Older people, and people with pre-existing medical conditions such as asthma, diabetes, and heart disease appear to be more vulnerable to becoming severely ill with the virus.

[Facebook](#) | [Twitter](#)

The correct sequence of the html tags used to render the above webpage is

- A <h3>, , <p>, <a> and <a>.
- B <h3>,
, , <p>,
, <a> and <a>.
- C <h3>, ,
, <p>,
, <a> and <a>.
- D <h3>,
, , <p>,
, <a> and <a>.
- f) Nima developed a website comprising of five pages and intends to use JavaScript to create image sliders in the pages. What is the best way to do it?
- A Embed JavaScript code inline to debug the code
- B Link to external JavaScript file to reuse the code
- C Embed JavaScript code inline to reduce repetition of code
- D Link to external JavaScript file to increase the speed of loading
- g) Study the script given below and answer the question that follows:

```
var i =0;
while()
{
    document.write(i);
    i++
}
```

What should be the condition in the while loop to output “012345”?

- A i<5
- B i>5
- C i<=5
- D i>=5

- h) Study the script given below and answer the question that follows:

```
function myFunction(a, b)
{
    t = a;
    a = b;
    b = t;
    document.write("The value of a is " + a + " and b is "+b+".");
}
myFunction(77, 99);
```

Which statement below represents the output generated by myFunction()?

- A The value of a is 99 and b is t.
 - B The value of a is t and b is 77.
 - C The value of a is 99 and b is 77.
 - D The value of a is 77 and b is 99.
- i) Study the script given below and answer the question that follows:
- ```
var greet= "Computer";
var sub_greet = greet.substring(4,2);
document.write(sub_greet);
```
- The output of the above script is
- A up.
  - B mp.
  - C mpu.
  - D uterCo.
- j) Sonam wants to insert the text "Ministry of Education" between the div tags given below using JavaScript.

```
<div id = "bcsea"></div>
```

Which one of the following statements can insert the text?

- A document.getElementById("id").innerHTML= "Ministry of Education";
- B document.getElementById("div").innerHTML= "Ministry of Education";
- C document.getElementById("id").innerHTML= "Ministry of Education";
- D document.getElementById("bcsea").innerHTML= "Ministry of Education";

## Question 2

[10]

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

- a) The search engine uses \_\_\_\_\_ of the webpage to decide the order when listing them in search results.
- b) When a webpage is rendered by a browser, the content after a heading element will appear in \_\_\_\_\_ line.

- c) A table in html can be made responsive by assigning the value of its width in terms of \_\_\_\_\_.
- d) The navigation bar consists of \_\_\_\_\_ tag to improve user experience.
- e) Gaki played offline game build using JavaScript and was surprised to see Pelzom doing the same online. She realized that JavaScript can also be used to script on \_\_\_\_\_ side.
- f) Tobgay embedded a JavaScript code in a HTML page. The browser displayed his code instead of running the code. This happens when the JavaScript code is not enclosed in \_\_\_\_\_ element.
- g) `var num = 10 % 3`. The value assigned to variable num is \_\_\_\_\_.
- h) In order to use a function within a script, it needs to be \_\_\_\_\_.
- i) Dema followed good programming practice of using indentions and comments to improve the \_\_\_\_\_ of her code.
- j) The do-while loop will execute the block of code within the loop once \_\_\_\_\_ checking the condition.

### Question 3

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

- a) As a student studying Computer Studies, you have been asked to analyse the design of the website of the Ministry of Education. List **FOUR** characteristics the website should display to be classified as a good website.

[2]



- b) Create a webpage with the following features: [2]
- i. Include a heading and a paragraph.
  - ii. Include an image as a link.

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- c) Compare Radio button and Checkbox in terms of functionality with the help of an example each. [2]


- d) “JavaScript is one of the most popular programming languages.” State **FOUR** reasons to support this statement. [2]


e) Contrast between testing and debugging. Mention **TWO** points each.

[2]


f) Organize the codes given below to output the word “Education” three times.

[2]

```
document.write("Education");
count=1;
while(count < 4)
Do {}
count++;
```

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g) Write a JavaScript function to implement the following equation.

[2]

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

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h) The following effects occurred when Namgay visited a webpage:

[2]

- on clicking a button on the webpage, the background image changed,
- when he brought the cursor over the background image, it became darker and
- when he moved the cursor out of the webpage, another background image appeared.

Identify **THREE** events and event handlers that caused these effects.




- i) Debug the following script to alert “You are good in Dzongkha.” keeping the number of statements same. [2]

```
var english == 50;
var dzongkha == 100;
if(dzongkha < English);
 Alert("You are good in Dzongkha.")
elif
 Alert("You are good in English.")
```

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- j) Write a function for the form given below to prevent the user from submitting an empty form. [2]

```
<form name = "myForm" onsubmit = "return validateForm()">
Name: <input type="text" name="fname">
<input type="submit" value="Submit">
</form>
```

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- k) Write an appropriate code to display the name of fruits given below in an ordered list. [2]

Fruits: Apple, Strawberries and Mango.

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- l) You are asked to choose **Notepad** or **Notepad ++** for your programming project. Justify your preference with **TWO** reasons. [2]


- m) Write a JavaScript function to display the current day, month and year. [2]

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n) Compare **&&** and **||** operators with the help of an example each.

[2]


o) Write a JavaScript function to perform the following tasks:

[2]

- i. Get name of the country from the user in lowercase.
- ii. Display the name of the country with the first letter in uppercase.

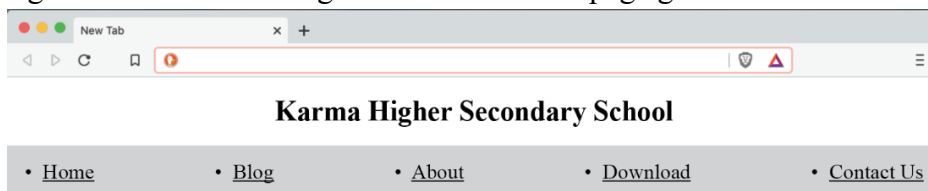
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**SECTION B (50 MARKS)**  
**ATTEMPT ANY FIVE QUESTIONS**

**Question 4**

- a) Design the header and navigation bar of the webpage given below.

**[3]**



- b) Debug and rewrite the script to output “Computer Studies” keeping the number of statements the same.

**[3]**


```
<script>
 name = Computer Studies;
 for()
 {
 document.write()
 }
</script>
```

- c) Write a JavaScript function to perform the following tasks. [4]
- i. Get a number between 0 and 10 from the user.
  - ii. Generate a single digit random number between 0 and 10.
  - iii. If the user's number matches the randomly generated number, congratulate the user otherwise ask the user to try again.

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### Question 5

- a) Design the part of a webpage given below. [3]

Name <input type="text"/>	
I play: <input type="checkbox"/> Basketball <input type="checkbox"/> Football	

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- b) Debug and rewrite the codes given below to output “2 4 6 8” without changing the number of statements. [3]

```
<script>
 var i=0;
 while(10){
 if(i/2 !=0){
 //document.write(i+" ");
 }=1;
 i
 }
</script>
```

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- c) Write a function to calculate simple interest based on principal, rate and time in year entered by the user. [4]

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### Question 6

- a) Explain the processes involved till the website is accessible via the world wide web.

[3]


- b) Trace each iteration of the while loop given below.

[3]

```
<script>
 var x = 0;
 while(x < 5)
 {
 document.write(x);
 x = x + 1;
 }
</script>
```

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- c) Create a webform for a school to enter student's name, class and section. When a user clicks on display button on the webform, it should display the information entered by the user for verification in a popup window. **[4]**

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### Question 7

- a) Design a login form to enter username and password with submit and reset buttons.

[2]

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- b) Krishna wants to add some interactivity to an image on her webpage. When the cursor is moved over the image, a text should be displayed below it and cleared when it is moved out.

[4]

Write codes to:

- insert an image of height 100px to the webpage and
- add interactivity to the image as described above. Define functions for the interactivity.

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- c) Study the code snippet given below to find the largest of three given numbers. Debug and rewrite the script to output “The greatest of three numbers is 10” keeping the number of statements the same. [4]

```
<script>
var num1 = 5;
var num1 = 10;
var num1 = 2;
var greater;
var greatest;
function greatest3(){
 if (num < num2)
 greater == num1;
 else
 greater == num2;
 else if(greater < num3)
 greatest ==greater;
 else
 greatest == num3
 greatest;
}
document.write("The greatest of three number is "greatest());
</script>
```

**Question 8**

a) Design the table layout given below.

[3]


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- b) Study the code snippet given below to calculate take home salary of an employee.

[4]

```
<script>
 var name ="Ugyen Wangchuk";
 var Basic_pay = 40000;
 var Professional_allowance = 15000;
 var housing_allowance = 20000;

 function Gross_pay(){
 var gross_pay = Basic_pay + Professional_allowance + housi
ng_allowance;
 Gross_pay;
 }
 function tax_deduction(){
 var gpay = Gross_pay();
 var tax = (10 * gpay) / 100;
 var gpay;
 }
 function netPay{
 var take_home_salary = Gross_pay - tax_deduction();
 return netPay;
 }
 document.write("Your take home salary is : Nu. "+netPay)
</script>
```

Debug and rewrite the script to output “Your take home salary is Nu. 67500”.

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- c) Write a JavaScript program to get marks of three subjects from a user and send the marks to a function to calculate the average mark. [3]

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**Question 9**

- a) State **FOUR** good webform design practices to improve user experiences and minimize errors in the data submitted. [2]

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- b) Study the code snippet given below to count number of vowels in a word. Identify the errors and rewrite the script to output “There are 7 vowels appearing in the word AUTHENTICATION” without changing the number of statements. [4]

```
<script>
 var name = "AUTHENTICATION";
 var i = 1;
 var vowel = 1;
 while(i < name)
 {var alphabet =charAt(i);
 if(alphabet == 'a' && alphabet == 'e' &&
alphabet == 'i' &&alphabet == 'o' &&
alphabet == 'u')
 {
 vowel = vowel;
 }
 i++;
 }
 document.write("There are "+vowel" vowels appearing in "na
me)
</script>
```

- c) Write a program using JavaScript to achieve the following tasks. Use JavaScript Math objects wherever necessary. **[4]**
- i. Declare and initializes three integer variables.
  - ii. Find the minimum and maximum of the three numbers.
  - iii. Find the product of maximum and minimum numbers.
  - iv. Find the square root of the product.
  - v. Round off square root to the nearest integer.
  - vi. Display the answer.
  - vii. Follow good programming practices.

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### Question 10

- a) Complete the following table. First one is done for you.

[3]

Operations	Returns
3 + 4	7
6 < 7	
3<4 && 4>6	
2>1    3>2	
4 == 4	
6 != 10	
3**2	

- b) Represent the HTML codes given below in the form of DOM tree.

[3]

```

<html>
 <head>
 <title>Home Page</title>
 </head>
 <body>
 <p>Home</p>
 <p>

 Trongsa
 Thimphu
 Haa

 </p>

 </body>
</html>

```

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- c) Write a program with the following features: [4]
- i. Get two numbers from user.
  - ii. Define functions for addition and multiplication.
  - iii. Ask the user to select addition or multiplication.
  - iv. Calculate and display the answer to the user.

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