



**UNIVERSITY OF COLOMBO, SRI LANKA**

**FACULTY OF TECHNOLOGY**

**LEVEL I EXAMINATION IN TECHNOLOGY - SEMESTER II - 2021**

**IC 1203 – Web Application Development**

**Two (02) hours**

Answer **all the questions** in PART A and answer **only one question** in PART B

No. of pages: 06

**Important Instructions to Candidates**

- If a page or part of this question paper is not printed, please inform the supervisor immediately
- Enter your index number on all pages of the answer script
- Electronic devices capable of storing and retrieving text, including electronic dictionaries and mobile phones are not allowed.

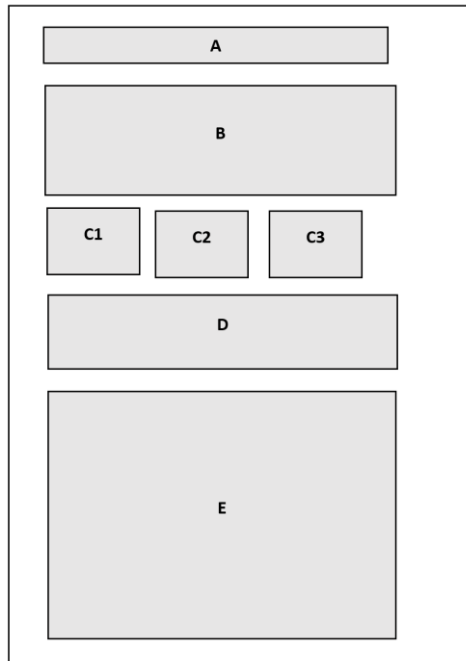
**Index No: .....**

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## PART A

**Answer all the questions in PART A.**

- 1) a) The following webpage is designed to display a recipe in a food website. A, B, C1, C2, C3, D and E are the components of the webpage.



- i. You are asked to write suitable HTML codes to construct the following components. (5 marks)
- A – The title of the recipe “Sugar Crispies”. Prefer to have the largest heading.
  - B – Embed a video with height and breath of 300px and 500px, having the URL <https://www.youtube.com/watch?v=2XPw>
  - C1, C2, C3 – Images of specific stages of the recipe. The height and breath of an image is 100px and 150px respectively.
- ii. The section D in the webpage should include the following details. (7 marks)

**Prep Time** :15 mins

**Cook Time** :15 mins

**Total Time** :1 hrs

**Servings** :8

[View the Nutrition Facts](#)

[Note: The nutritional facts could be viewed at the nutrition.html which opens in a new tab]

Write a suitable HTML code to construct section D.

- iii. The section E displays the entire recipe in the following format. (8 marks)  
Write a suitable HTML code to get this result.

**Ingredients:**

- o 3 eggs, beaten
- o 1 cup flour
- o 1 cup sugar

**Method:**

1. Step 1

Describe step 1

2. Step 2

Describe step 2

- iv. Do you think a prototype is needed before developing this webpage? (5 marks)  
Justify your answer.

- 2) a) i. A programmer is asked to develop the form below to calculate the final payment a worker receives after the tax cut. There are a number of job categories where the tax rates differ to each other.

Calculate the Final Wage

Job Category:

Hourly Wage:

Hours Worked:

- i. If you are the programmer assigned to develop this program, write a (5 marks)  
code to design this user interface using HTML.
- ii. Describe how events are handled in Javascript. Write a Javascript (7 marks)  
function to the button “Calculate Final Wage” to find the final wage  
after the tax cut.
- iii. How would you prevent the user from entering invalid inputs to the (6 marks)  
“hourly wage” and “hours worked” form elements? Provide two  
invalid inputs and explain how you would handle it using suitable a  
code.

- iv. If the user needs to view the tax rate charged for a selected job category, write a code to display this requirement as shown below. (3 marks)

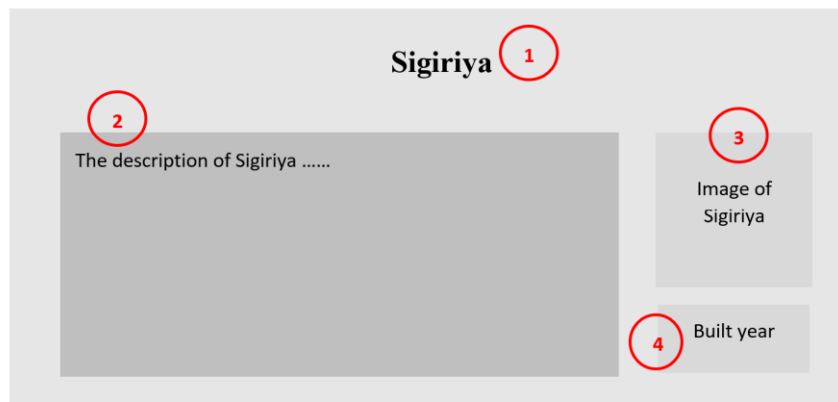
Job Category:  (The tax rate is 0.04)

- v. You are requested to add a button to the above user interface to clear the user inputs and display the initial form. Write a suitable Javascript function to achieve this requirement. (4 marks)
- 3) a) Do you think validating form elements in the client-side is a good option compared to server-side validation? Justify your answer. (5 marks)
- b) An online goods ordering website, has several pages to navigate through, from choosing goods to the checkout stage. How would you store the required details temporarily throughout the process? (6 marks)
- c) i. Write a PHP program to calculate the average mark of each student in a class, given the subjects and marks. You are asked to display the student's name and the average mark obtained in a webpage. Note that, there can be absentees at certain exams denoted by "ab" and you are provided with all the necessary details as inputs to your program. (10 marks)
- ii. Write a PHP code to find the number of students having an average mark more than 50. (4 marks)

## PART B

Answer one (01) of the two questions in PART B.

- 4) The following webpage displays facts on Sigiriya. The main sections of the webpage are numbered from 1- 4.



- i. Write appropriate CSS styles to achieve the above result in the file (13 marks) “styles.css”.

The background color of the page is #cceeef and the page width is 800px.

- 1 – Title is at the center, bold, size 16px
- 2 – Background has a color of #e6f7ff, size of text 12px
- 3 – Image height and width 100px
- 4 – A text of size 10px with an italic effect, displayed at the center

- ii. Explain how you would apply the styles formulated above to the relevant HTML elements. (3 marks)
- iii. Component 3 should be re-designed as follows. Write the new CSS styles (4 marks) you would apply. The thickness of a line is 5px.



- iv. Describe how inline and internal CSS styles work when applied on a HTML element. (5 marks)

- 5) a) The following is a description on glaciers published in a news article.

**G**laciers are massive bodies of slowly moving ice. Glaciers form on land, and they are made up of fallen snow that gets compressed into ice over many centuries. They move slowly downward from the pull of gravity. Most of the world’s glaciers exist in the polar regions, in areas like **Greenland, the Canadian Arctic, and Antarctica**. Glaciers also can be found closer to the Equator in some mountain regions. The Andes Mountain range in South America contains some of the world’s largest tropical glaciers. ~~About 2 percent of all the water on Earth is frozen in glaciers.~~

- i. Write a suitable code to obtain the special effects highlighted in the above text using HTML and CSS. (5 marks)

Note: It is not required to replicate the entire text in the paragraph.

- ii. Write a code to add a link at the bottom of the description to navigate to the page “more.php”. Send the text “glaciers” through the link to the next page. (4 marks)
- iii. Display the text passed in (ii) in “more.php” as follows. (6 marks)

**I read about glaciers.**

Apply the following effects to the text.

Text size:20px, bold, blue

- b) i. Write a Javascript function to find whether two straight lines are perpendicular. The equation of a straight line is denoted by  $y = mx + c$ , where  $m$  is the gradient and  $c$  is the intercept. Two straight lines are perpendicular, if their gradients result in  $-1$  when multiplied. (5 marks)
- ii. Using the function above, can you find whether  $a_1y = b_1x + c_1$  and  $a_2y = b_2x + c_2$  are perpendicular if the inputs are provided as  $b_1$  and  $b_2$ ? Explain your answer by using your code above or by modifying it. (5 marks)