



UCSC

University of Colombo, Sri Lanka

University of Colombo School of Computing



**DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY
(EXTERNAL)**

Academic Year 2025— 1st Year Examination — Semester 2

IT2406 — Web Application Development I

Multiple Choice Question Paper
(2 Hours)

Important Instructions

- The duration of the paper is **2 Hours**.
- The medium of instructions and questions is English.
- This paper has **40 MCQ questions** on **12 pages**. Answer **all** questions.
- Each question will have **5 (five)** choices with **ONE OR MORE** correct answers.
- This paper consists of 100 marks and all the questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from -1 (All the incorrect choices are marked & no correct choices are marked) to +1 (All the correct choices are marked & no incorrect choices are marked). However, **the minimum mark per question would be zero**.
- Answers should be marked on the **special answer sheet** provided.
- Note that questions appear on both sides of the paper. If a page or part of a page is not printed, please inform the supervisor/invigilator immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**
- Any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones, is not allowed.
- Calculators are **not** allowed.
- *All Rights Reserved*. This question paper can NOT be used without proper permission from the University of Colombo School of Computing.

1) Which of the following HTML code segments correctly reference or link to an HTML file?

- | | |
|--|--|
| (a) <code></code> | (b) <code><link href=home.html></code> |
| (c) <code><area href=home.html></code> | (d) <code><iframe href=home.html></code> |
| (e) <code><frame src=home.html></code> | |

2) Select the HTML code segment(s) that can be used to create hyperlinks, displays another HTML document, display images, or embed audio/video content in a web page.

- | | |
|---|--|
| (a) <code></code> | (b) <code><frame name=top src=a.html></code> |
| (c) <code><embed width=50 src=a.wav></code> | (d) <code><embed src=a.avi width=300></code> |
| (e) <code><source href=a.wav type=audio/mp3></code> | |

3) Which of the following HTML code segments correctly creates a hyperlink to another file or web page?

- | |
|---|
| (a) <code> Home</code> |
| (b) <code> Home</code> |
| (c) <code>Application</code> |
| (d) <code>Application</code> |
| (e) <code>Annual Report</code> |

4) What would be the output of the following HTML code?

`<bdo dir="ltr">I love you.</bdo>`

- | | | |
|-----------------|-----------------|-----------------|
| (a) .Uoy Love I | (b) .You Love I | (c) I love you. |
| (d) I LOVE YOU | (e) .uoy evol | |

5) Select the correct code line(s) that produce the following output.
Expected Output:

The ~~20th~~20th of this month is "Nimal's" *birthday*.

- | |
|--|
| (a) The <code><strike>20<sup>th</sup></strike>20<sub>th</sub></code> of this month is <code><q>Nimal's</q> <i>birthday</i></code> . |
| (b) The <code><strike>20<sub>th</sub></strike>20<sup>th</sup></code> of this month is <code>"Nimal's" <i>birthday</i></code> . |
| (c) The <code><strike>20<sub>th</sub></strike>20<sub>th</sub></code> of this month is <code><q>Nimal's</q> <i>birthday</i></code> . |
| (d) The <code><strike>20<sub>th</sub></strike>20<sup>th</sup></code> of this month is <code><q>Nimal's</q> <i>birthday</i></code> . |
| (e) The <code><strike>20<sup>th</sup></strike>20<sub>th</sub></code> of this month is <code>"Nimal's" <i>birthday</i></code> . |

- 6) The following is an HTML code snippet with blanks labeled “1 to 7” and the expected output.

HTML Code:

```
<ol>      <li>A:</li>      <li>B:</li>      [-1-]      <li>B:A</li>      [-2-]
<li>B:A:A</li>      <li>B:A:B</li>[-3-]      <li>B:A:B:A</li>
<li>B:A:B:B</li> [-4-] <li>C:C</li> [-5-] <li>B:B</li> [-6-]
<li>C</li> [-7-]
```

Expected Output:

```
1. A:
2. B:
    i. B:A
        • B:A:A
        • B:A:B
            f. B:A:B:A
            g. B:A:B:B
        • C:C
    ii. B:B
3. C
```

The correct order of tokens for filling the above blanks is

- (a) `<ol type=i>;</ol> ; <ul type=disc>;<ol type=a start=6>; </ul>; </ol>;</ol>`
 (b) `<ol type=i>;<ol type=a start=6>; </ol> ;<ul type=disc>; </ol> </ul>;</ol>`
 (c) `<ol type=i>;<ul type=disc>;<ol type=a start=6>;</ol> </ol>; </ol>;</ul>`
 (d) `<ol type=i>;<ul type=disc>;<ol type=a start=6>;</ol> </ul>; </ol>;</ol>`
 (e) `<ol type=i>;<ol type=a start=6>; <ul type=disc>;</ol> </ul>; </ol>;</ol>`

- 7) What would be the output of the following HTML code?

```
<table border ="1"> <tr> <td rowspan="3">1</td> <td>2</td>
<td>3</td> <td colspan="2" rowspan="3">4</td><td>5</td> </tr>
<tr><td colspan="2">6</td> <td>7</td> </tr>
<tr><td>8</td> <td>9</td> <td>10</td></tr>
<tr><td colspan="3" rowspan="3">11</td> <td rowspan="2">12</td>
<td>13</td><td>14</td></tr>
<tr><td colspan="2">14</td></tr>
```

(a)

(b)

(c)

(d)

(e)

- 8) Consider the following folder structure given below. Which of the following HTML code snippet(s) correctly specify the relative path to link the “a.css” stylesheet to the “index.html” page?

Folder Structure:

C:A/B/C/D/E/F/G/index.html

C:D/H/I/a.css

- | | |
|--|--|
| (a) <link href=“../E/F/G/H/I/a.css ” /> | (b) <link href=“E/F/G/../../a.css ” /> |
| (c) <link href=“../../H/I/a.css ” /> | (d) <link href=“../D/H/I/a.css” /> |
| (e) <link href=“A/B/C/D/E/F/G/H/I/a.css ” /> | |

Which of the following parts of the HTML codes are syntactically correct in questions **09 to 11**?

- 9) I. <head><title>Index Page</title></head>
<body> <abbr title="University of Colombo">UOC</abbr> </body>
- II. <head><style type="text/css" href=a.css></head> <body>
<p style="color:#ccf4;font-size:12px;font-type:arial"></body>
- III.<blockquote cite="http://www.abc.org/index.html"> <p>You are free
to use this template. <p> </blockquote>

- | | | |
|--------------------|-----------------------|---------------------|
| (a) I Only | (b) II Only | (c) II and III Only |
| (d) I and III Only | (e) All I, II and III | |

- 10) I. <body>A
B <h1>A</h1> <p>--</p>
<h1> B</h1> <p>--</p> </body>
- II. <body> Part A
 Part A </body>
- III.

- | | | |
|--------------------|-----------------------|---------------------|
| (a) I Only | (b) I and II Only | (c) II and III Only |
| (d) I and III Only | (e) All I, II and III | |

- 11) I. <head> <frameset rows="159,*" border="0"> <frame name="top"
src="top.html" marginwidth="0"scrolling="no"> </frameset>
</head>
- II. <body><frame column="159","*" border="0"> <frameset
name="top" src="top.html" marginwidth="0"
marginheight="0"frameborder="0"></frameset> </body>
- II. <head><frameset cols="159,*" border="0"><frame name="top"
src="top.html" marginwidth="0"scrolling="no"> </frameset>
</head>

- | | | |
|--------------------|-----------------------|---------------------|
| (a) I Only | (b) I and II Only | (c) II and III Only |
| (d) I and III Only | (e) All I, II and III | |

12) Which of the following parts of the HTML and CSS codes are syntactically correct?

- (a) `<p style="font-size=8px" ; "color=#cef">Colombo</p>`
- (b) `<p style="font-size=8px; color=#cef"> Colombo </p>`
- (c) `<p style:font-size="8px" color="#cef"> Colombo </p>`
- (d) `<p style=font-size:"8px"; color:"#cef"> Colombo </p>`
- (e) `<p style="font-size:8px; color:#cef"> Colombo </p>`

13) Which of the following HTML and CSS code segments are syntactically correct with respect to the use of element selectors?

- (a) `<head> <style type="text/css"> <p>{color:#cddfee; font-size:15px} </p> </style> </head>`
- (b) `<head> <style type="css/text"> p{color:#cddfee; font-size:15px} </style> </head>`
- (c) `<head> <style type="text/css"> p{"color:#cddfee; font-size:15px"} </style> </head>`
- (d) `<head> <style type="css/text"> <p>{color:#cddfee; font-size:15px} </style> </p> </head>`
- (e) `<head> <style type="text/css"> p{color:#cddfee; font-size:15px} </style> </head>`

14) Select the output produced by the following CSS grouped selector.

```
<html><head> <title>Grouped selector</title>
<style> h1,h2,h3,h4,p{width:fit-content;border: solid;}
</style> </head>
<body> <h1> UCSC </h1> <h2> UCSC </h2> <h3> UCSC </h3>
        <h4> UCSC</h4> <p> UCSC </p> </body> </html>
```

UCSC

UCSC

UCSC

UCSC

UCSC

(a)

UCSC

UCSC

UCSC

UCSC

UCSC

(b)

UCSC

UCSC

UCSC

UCSC

UCSC

(c)

UCSC

UCSC

UCSC

UCSC

UCSC

(d)

UCSC

UCSC

UCSC

UCSC

UCSC

(e)

15) What would be the output of the following HTML and CSS code?

```
<html> <head> <title></title><style>
    h3 i{width:fit-content; border: double;}
</style></head><body>
<h3>University of <i>Colombo</i></h3> </body> </html>
```

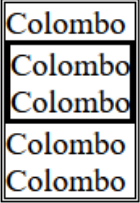
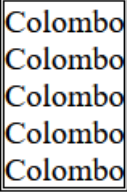
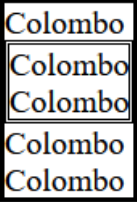
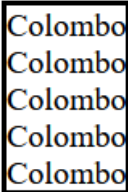
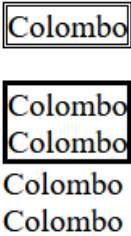
- | | | | |
|-----|------------------------------|-----|------------------------------|
| (a) | University of Colombo | (b) | University of Colombo |
| (c) | University of Colombo | (d) | University of Colombo |
| (e) | University of Colombo | | |

16) Which of the following statements correctly links an external CSS file to a web page?

- (a) <link href="stylesheet" type="text/css" rel="a.css">
 (b) <a link rel="stylesheet" type="text/css" src="a.css">
 (c) <link rel="stylesheet" type="text/css" href="a.css">
 (d) <a link rel="stylesheet" type="csstext" href="a.css">
 (e) <a link href="a.css" rel="stylesheet" type="text/css">

17) What would be the output of the following HTML and CSS code?

```
<html><head>
<style>
    .p1{width:fit-content; border: double;}
    #p1{width:fit-content; border: solid;}
</style></head><body>
    <p class=p1>Colombo <br><div id=p1>Colombo<br>
    Colombo </div>Colombo<br>Colombo<br> </p>
</body></html>
```

- | | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| (a) | (b) | (c) | (d) | (e) |

18) What would be the output of the following HTML and CSS code ?

```
<head><style>
    div > p {border: medium solid;width:15%;}
```

```
</style></head><body>
  <div><p>Colombo</p><span> <p>Kandy</p> </span> <p>Galle</p>
  <p>Nugegoda.</p><p>Rathnapura</p></div></body></html>
```

Colombo	Colombo	Colombo	Colombo	Colombo
Kandy	Kandy	Kandy	Kandy	Kandy
Galle	Galle	Galle	Galle	Galle .
Nugegoda.	Nugegoda.	Nugegoda.	Nugegoda.	Nugegoda.
Rathnapura	Rathnapura	Rathnapura	Rathnapura	Rathnapura
(a)	(b)	(c)	(d)	(e)

- 19) By referring to the following code, select which of the HTML and CSS wildcard selector code segments, (a) to (e), shown in the answer box is syntactically correct.

```
<html><head> <style>
  [class*="col"] {width:fit-content;border-style: solid;color:
  black;}
</style></head><body>
```

- (a) <div class="h2-colombo">UCSC</div>
 (b) <div class="cal-div">UCSC</div>
 (c) <div class="h1-abcol">UCSC</div>
 (d) <p class="p1-abcolon">UCSC</p>
 (e) <div class="p2-aclo">UCSC</div>

```
</body></html>
```

- 20) Consider the following HTML and CSS code. Which of the following CSS style rules (I–III) are syntactically correct?

```
<html> <head> <style type="text/css">
```

```
I. a:link{color:red; font-size:large}
```

```
II. a:visited{color:blue; font-size:small}
```

```
III. a:active{color:green; font-size:x-large}
```

```
</style> </head> <body> <a href="goya.html">Back to top</a>
```

```
</body></html>
```

- (a) I Only (b) II Only (c) III Only
 (d) I and III Only (e) All I, II and III

- 21) Consider the following JavaScript code. Which of the following statement (s) is/are correct in questions?
- ```
var x = 10;
var y = "10";
document.write(x == y);
document.write("
");
document.write(x === y);
```
- |                                                        |                                            |
|--------------------------------------------------------|--------------------------------------------|
| (a) <code>x == y</code> evaluates to true              | (b) <code>x === y</code> evaluates to true |
| (c) <code>x === y</code> evaluates to false            | (d) <code>==</code> compares values only   |
| (e) <code>===</code> compares both value and data type |                                            |
- 22) What would be the output of the following HTML and JavaScript code?
- ```
var x = 1;
while(x < 10)
{document.write(x + " ");
x = x + 3; }
```
- | | |
|--|--|
| (a) The values 1, 4 and 7 are displayed | (b) The value 10 is displayed |
| (c) The loop executes 3 times | (d) The loop terminates when <code>x</code> becomes 10 |
| (e) The condition <code>x < 10</code> becomes false when <code>x</code> equals 10 | |
- 23) State whether the following statement(s) is/ are **correct** regarding JavaScript operators.
- ```
var count = 0;
for(var i = 1; i <= 3; i++){
 for(var j = 1; j <= 2; j++){
 count++;} }
document.write(count);
```
- |                                           |                                               |
|-------------------------------------------|-----------------------------------------------|
| (a) The outer loop executes 3 times.      | (b) The inner loop executes 6 times in total. |
| (c) The value of <code>count</code> is 5. | (d) The value of <code>count</code> is 6.     |
| (e) The output displayed is 6.            |                                               |
- 24) State whether the following statements are correct regarding JavaScript operators.
- ```
var numbers = [2, 5, 8, 11, 14];
var count = 0;
for(var i = 0; i < numbers.length; i++){
  if(numbers[i] > 5 && numbers[i] < 14){
    count++;}}
```
- | | |
|---|--|
| (a) Values 8 and 11 satisfy the condition. | (b) Values 5 and 14 satisfy the condition. |
| (c) The final value of <code>count</code> is 2. | (d) The loop executes 5 times. |
| (e) The logical AND operator is used. | |

25) What would be the output of the following HTML and JavaScript code?

```
var data = [10, 20, 30, 40];  
var total = 0;  
for(var i = data.length - 1; i >= 0; i--){  
    total = total + data[i];  
}
```

- | | |
|--------------------------------------|--|
| (a) The loop executes 4 times. | (b) The array is processed in reverse order. |
| (c) The final value of total is 100. | (d) The first value processed is 40. |
| (e) The last value processed is 10. | |

26) Why is a Document Type Definition (DTD) used in XML documents?

- | |
|---|
| (a) A single DTD ensures a common format for each XML document that references it |
| (b) DTD is used to convert XML documents into HTML pages for web display |
| (c) An application can use a standard DTD to verify that received data is valid |
| (d) DTD is mainly used to store XML data in relational databases |
| (e) DTD automatically compresses XML data to improve transmission speed |

27) Which of the following lists the correct parts of a step in an XPath location path?

- | | |
|---------------------------------|---------------------------------|
| (a) Path, Query, Result | (b) Root, Element, Attribute |
| (c) Tag name, Class name, ID | (d) Loop, Condition, Expression |
| (e) Axis, Node Test, Predicates | |

28) What does the XPath expression `foo/bar` select?

- | |
|--|
| (a) Selects element "bar" that is a descendent of element "foo" |
| (b) Selects the attribute "bar" of element "foo" |
| (c) Selects all elements named "foo" and "bar" at the same hierarchy level |
| (d) Selects child element "bar" of element "foo" |
| (e) Selects element "foo" that contains child "bar" |

29) Which of the following statement(s) is/are correct about XSL templates?

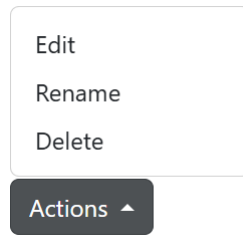
- | |
|--|
| (a) Templates define transformation rules that select nodes from an input XML document using XPath expressions |
| (b) Templates are used only to store XML data without any transformation or output generation |
| (c) Templates can specify output in formats such as text, XML, or HTML |
| (d) Named templates allow templates to be called using a specific name |
| (e) Template modes prevent the use of multiple templates in the same stylesheet |

- 30) Which of the following statement(s) is/are correct about Bootstrap Content Delivery Network (CDN)?
- Integrate the bootstrap files through URLs without a need to locally maintain the files
 - Only CSS content can be linked through CDN
 - Bootstrap CDN files will be loaded from cache without repeatedly downloading them from the source online
- | | | |
|-------------------|--------------------|--------------|
| (a) I Only | (b) II Only | (c) III Only |
| (d) I and II Only | (e) I and III Only | |
- 31) Consider the following Bootstrap code snippet. Which of the following statement(s) is/are correct with respect to the behavior of this layout?
- ```

<div class="container-fluid">
 <div class="row">
 <div class="col-md-6">A</div>
 <div class="col-md-6">B</div>
 </div>
</div>

```
- |                                                                                          |
|------------------------------------------------------------------------------------------|
| (a) The layout stretches to use the full width of the browser window on all screen sizes |
| (b) The <code>.container-fluid</code> makes the layout centered with fixed width margins |
| (c) The two columns will have equal width on medium screens and above                    |
| (d) The columns will automatically stack vertically on all screen sizes                  |
| (e) The columns A and B will each take full width of the row on medium screens           |
- 32) Which of the following statement(s) is/are correct about the Bootstrap grid system?
- The total column widths in a Bootstrap grid row should add up to 12.
  - The grid system works without the need for a container, as rows automatically handle layout alignment.
  - Bootstrap grid is a fixed layout system that uses pixel-based columns which do not change with screen size.
- |                   |                    |              |
|-------------------|--------------------|--------------|
| (a) I Only        | (b) II Only        | (c) III Only |
| (d) I and II Only | (e) I and III Only |              |
- 33) Which of the following code snippets are valid Bootstrap 3 alert implementations?
- |                                                                                          |
|------------------------------------------------------------------------------------------|
| (a) <code>&lt;div class="alert alert-info" role="alert"&gt; Alert &lt;/div&gt;</code>    |
| (b) <code>&lt;div class="alert-error"&gt; Alert &lt;/div&gt;</code>                      |
| (c) <code>&lt;div class="alert alert-danger" role="alert"&gt; Alert &lt;/div&gt;</code>  |
| (d) <code>&lt;div class="alert alert-success" role="alert"&gt; Alert &lt;/div&gt;</code> |
| (e) <code>&lt;div class="alert alert-critical"&gt; Alert &lt;/div&gt;</code>             |

- 34) Which of the following statement(s) is/are correct regarding the menu shown in the image using Bootstrap and HTML?



- (a) The `.dropdown-toggle` class is used to create the toggle button for the dropdown.
- (b) The `.dropdown-menu` class defines a container that can be used for both dropdown and dropup menus depending on placement.
- (c) The `.dropup` class is applied to the `.dropdown-menu` element to change the opening direction to upward.
- (d) The `.dropdown-item` class is used to define the parent container that wraps all items inside a Bootstrap dropdown menu.
- (e) Menu items are defined using `.nav-link` inside a menu container

- 35) Which of the following form input code snippet(s) represent(s) valid Bootstrap form controls?

- (a) `<input type="text" class="form-control" placeholder="Name">`
- (b) `<input type="checkbox" class="form-check-checkbox"> Accept Terms`
- (c) `<input type="fileupload" class="form-control">`
- (d) `<input type="radio" class="form-check-control"> Option A`
- (e) `<input type="email" class="form-control-input">`

- 36) What is the purpose of a connect module in the MEAN stack?

- (a) To manage database connections and execute queries for web applications
- (b) To render HTML templates by converting server-side data into static pages
- (c) To intercept HTTP requests using modular middleware functions
- (d) To process HTTP requests by bypassing middleware and executing logic directly in the server core
- (e) To execute JavaScript code in the browser using event-driven callbacks

- 37) Which of the following statement(s) is/are correct about Angular applications?
- I. Angular is a platform and framework used for building single-page client applications using HTML and TypeScript.
  - II. The basic building blocks of an Angular application include Components, Views, and Services.
  - III. Views in Angular are responsible for managing application state and backend communication logic
- |                   |                    |              |
|-------------------|--------------------|--------------|
| (a) I Only        | (b) II Only        | (c) III Only |
| (d) I and II Only | (e) I and III Only |              |
- 38) Which Bootstrap 3 class combination should be applied to a form element to create a right-aligned navbar form?
- |                                |                              |
|--------------------------------|------------------------------|
| (a) navbar-nav navbar-right    | (b) navbar-right form-inline |
| (c) navbar-form navbar-right   | (d) form-inline navbar-right |
| (e) navbar-header navbar-right |                              |
- 39) Which of the following correctly fills the blank labeled[P] to define name and age fields in the Mongoose schema below?
- ```
var StudentSchema = new Schema({ [P] });
```
- | | |
|-----------------------------------|----------------------------------|
| (a) name: String, age: Integer | (b) name: String, age: Number |
| (c) name: String, age: Numeric | (d) [name: String, age: Integer] |
| (e) name: String(), age: Number() | |
- 40) Which of the following correctly configures a sessionSecret property in a Node.js application?
- | |
|--|
| (a) module.exports = {session: 'your_secret_key'}; |
| (b) module.exports = sessionSecret = 'your_secret_key'; |
| (c) module.exports = {secret: 'your_secret_key'}; |
| (d) exports.sessionSecret = 'your_secret_key'; |
| (e) module.exports = {sessionSecret: 'your_secret_key'}; |
