



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Academic Year 2016/2017 – Second Year Examination – Semester II – 2018

SCS 2108 – Programming IV

TWO (2) HOURS

To be completed by the candidate

Examination Index No:

Important Instructions to candidates:

1. The medium of instruction and questions is **English**.
2. If a page or a part of this question paper is not printed, please inform the supervisor immediately.
3. Note that questions appear on both sides of the paper. If a page is not printed, please inform the supervisor immediately.
4. Write your index number on each and every page of the answer paper.
5. This paper consist of two parts, **Part A (20 MCQs)** and **Part B (5 structured questions)** on 20 pages.
6. Answer **ALL** questions. Select and clearly mark the answers of MCQs on the **answer sheet** in **page 08**.
7. **One mark** will be awarded to **each correct MCQ answer** and a **penalty of negative 0.25** will be imposed on **each incorrect MCQ answer**.
8. Any electronic device capable of storing and retrieving text including electronic dictionaries and mobile phones are **not allowed**.
9. Calculators are **not allowed**.

For Examiner's use only

Question No	Marks
MCQ 1- 20	
1	
2	
3	
4	
5	
Total	

Part A

Part A has 20 MCQ (Multiple Choice Questions). Most appropriate answer should be marked on the answer sheet provided on **page 08**.

1. Consider the following code segment,

```
$a = 10;  
for ($b = 0; $b < 4; $b++){  
    $a+=$a;  
}
```

After completely executing the above code segment what are the values of variables '\$a' and '\$b'?

- a) \$a = 160, \$b = 3
- b) \$a = 160, \$b = 4
- c) \$a = 40, \$b = 3
- d) \$a = 40, \$b = 4
- e) \$a = 50, \$b = 4

2. Consider the following code segment,

```
$a = 10;  
function myFunc($value){  
    $a+=$value;  
    return $a;  
}  
$x = myFunc(20);
```

After completely executing the above code segment what is the value of variable '\$x'?

- a) \$x = 10
- b) \$x = 20
- c) \$x = 30
- d) \$x = 40
- e) \$x = 50

3. Consider the following PHP functions,

- I. `mysqli_fetch_all()`
- II. `mysqli_fetch_array()`
- III. `mysqli_fetch_assoc()`

Which of the above PHP functions can be used to fetch data from a SQL query?

- a) Only I is correct
- b) Only II is correct
- c) Only I and II are correct
- d) Only I and III are correct
- e) All I, II and III are correct

4. Consider the following code segment,

```
$a = 75; $b = 25;

function myFunc() {
    $a = 750; $b = 250;
    $GLOBALS['c'] = $GLOBALS['a'] + $GLOBALS['b'];
}
myFunc();
echo $c;
```

What is the value of variable '\$c' after executing the above code segment?

- a) 100
- b) 1000
- c) 0
- d) Undefined Variable
- e) 1100

Consider the following PHP code segment with the missing terms labeled as P and Q to answer 5 -6 questions.

```
$ucscStd = "SELECT Std_id, Std_name FROM UCSC_Std";
$result = $conn->query(P);

if ($result->num_rows > 0) {
    while($row = $result->fetch_assoc()) {
        echo "Student id: " . $row[Q]. "<br>";
    }
} else {
    echo "0 results";
}
```

5. What are the suitable terms for labeled P and Q blanks respectively?

- a) \$ucscStd, ID
- b) \$query, Std_name
- c) \$ucscStd, Std_id
- d) \$query, Std_id
- e) \$ucscStd, query

6. What is the purpose of using num_rows function in the above code segment?

- a) To identify the number of rows available in the UCSC_Std table
- b) To identify the number of Std_id available in the UCSC_Std table
- c) To identify the number of affected rows in the UCSC_Std table
- d) To identify the number of Std_name available in the UCSC_Std table
- e) To limit the number of print results of the query

Index No:

7. Consider the following statements,

- I. To enable **'auto connecting'** to the database in CI, one should add the word **'database'** to the **'library array'** in the **'autoload.php'** file
- II. To make a model **'autoload'** in CI, one should add that model name to the **'library array'** in the **'autoload.php'** file
- III. To make a model **'autoload'** in CI, one should add that model name to the **'autoload array'** in the **'autoload.php'** file

Which of the above statement(s) is/are **correct** with regard to **'auto loading'/'auto connecting'** in CI?

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

8. Consider the following statements,

- I. All Codeigniter class names should start with an uppercase letter and rest of the name should be in lowercase letters.
- II. There **cannot** be default controllers.
- III. View file **cannot** call other view files.

Which of the above statement(s) is/are **correct** with regard to Codeigniter framework?

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

9. Glyphicons in Bootstrap can be used as

- a) Icons
- b) Media objects
- c) Animations
- d) 3D graphics
- e) Text messages

Index No:

Consider the following bootstrap code segment to answer 10 – 12 questions

```
<div class = 'col col-md-6 col-sm-4' > </div>
```

10. How many columns will be displayed in a **medium** size display as per above code segment?

- a) 12
- b) 6
- c) 5
- d) 4
- e) 2

11. How many columns will be displayed in an **extra small** size display as per above code segment?

- a) 12
- b) 6
- c) 5
- d) 4
- e) 2

12. How many columns will be displayed in a **large** size display as per above code segment?

- a) 12
- b) 6
- c) 5
- d) 4
- e) 2

13. Consider the following statements,

- I. JavaScript is single-threaded
- II. JavaScript does not run on non-browser environments
- III. JavaScript supports asynchronous message passing

Which of the above statement(s) is/are **correct** regarding JavaScript?

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

Index No:

14. Consider the following code segment,

```
var a = 'University of Colombo';  
var b = 100;  
var c = 10;  
var d = a + b + c;  
var e = b + c + a;
```

What are the values of 'd' and 'e' variables respectively?

- a) Undefined Variable, 110University of Colombo
- b) University of Colombo10010, 110University of Colombo
- c) University of Colombo110, 110University of Colombo
- d) Undefined Variable , 110University of Colombo
- e) University of Colombo10010, 10010University of Colombo

15. Consider the following code segment,

```
var x = 'University of Colombo School of Computing';  
var i = 0;  
var j = 100;  
while (i < x.length){  
    j--; i++;  
}
```

What are the values of 'i' and 'j' variables respectively after executing the above code segment?

- a) 59, 41
- b) 50, 50
- c) 41, 41
- d) 59, 59
- e) 41, 59

16. Consider the following code segment,

```
var x = "1024"; var y = 1024; var z = 100;  
  
if (x == y){ z++; }  
else{ z--; }  
  
if (x===y){ z++; }  
else{ z--; }
```

What is the value of variable 'z' after executing the above code segment?

- a) 100
- b) 101
- c) 99
- d) 102
- e) 98

17. Consider the following JavaScript functions,

- I. isArray()
- II. typeof()
- III. ofArray()

Which of the above function(s) can be used to check whether a variable is an array or not?

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

18. Consider the following code segment,

```
var x = 'ABC';  
var y = new Number(123);  
var z = new String('123');
```

What are the data types of 'x', 'y' and 'z' variables respectively?

- a) String, Number, String
- b) String, Number, Number
- c) String, Object, Object
- d) Object, Number, String
- e) String, Object, String

19. Consider the following code segment,

```
var x = "    UCSC    ";  
var y = x.trim();  
var z = y.charAt(0);
```

What is the value of variable 'z' after completely executing the above code segment?

- a) 'UCSC'
- b) 'U'
- c) ' '
- d) ' U'
- e) 'ucsc'

Index No:

20. Consider the following code segment,

```
var x = 'University of Colombo'; var y = 'School of Computing';  
var z = x.concat(' ',y.toLowerCase());
```

What is the value of variable 'z' after completely executing the above code segment?

- a) 'University of Colombo'
- b) 'University of Colombo School of Computing'
- c) 'university of colombo school of computing'
- d) 'University of Colombo school of computing'
- e) 'school of computing'

ANSWER SHEET – MCQ QUESTIONS 1 TO 20

Circle the correct answer

1	a	b	c	d	e
2	a	b	c	d	e
3	a	b	c	d	e
4	a	b	c	d	e
5	a	b	c	d	e
6	a	b	c	d	e
7	a	b	c	d	e
8	a	b	c	d	e
9	a	b	c	d	e
10	a	b	c	d	e

11	a	b	c	d	e
12	a	b	c	d	e
13	a	b	c	d	e
14	a	b	c	d	e
15	a	b	c	d	e
16	a	b	c	d	e
17	a	b	c	d	e
18	a	b	c	d	e
19	a	b	c	d	e
20	a	b	c	d	e

**** End of PART A, Continue next page for PART B ****

PART B

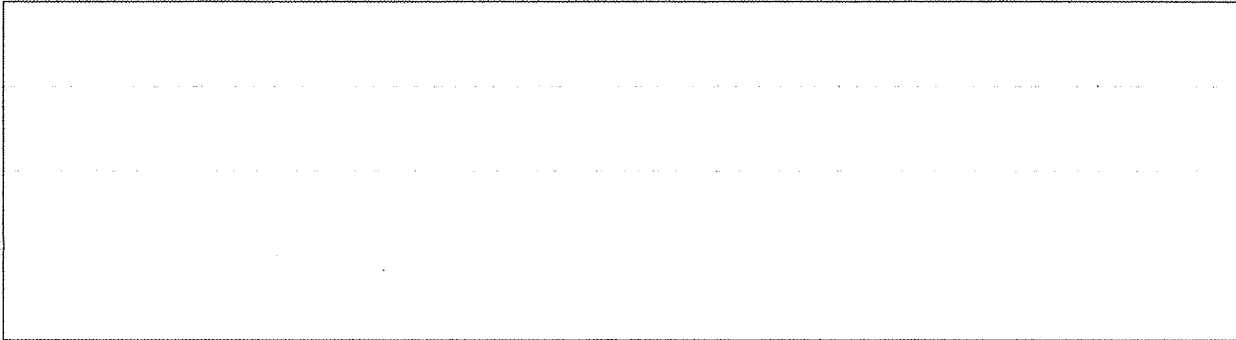
Index No:

Part B has five structured questions. Please write the answers in the space provided.

Question 01

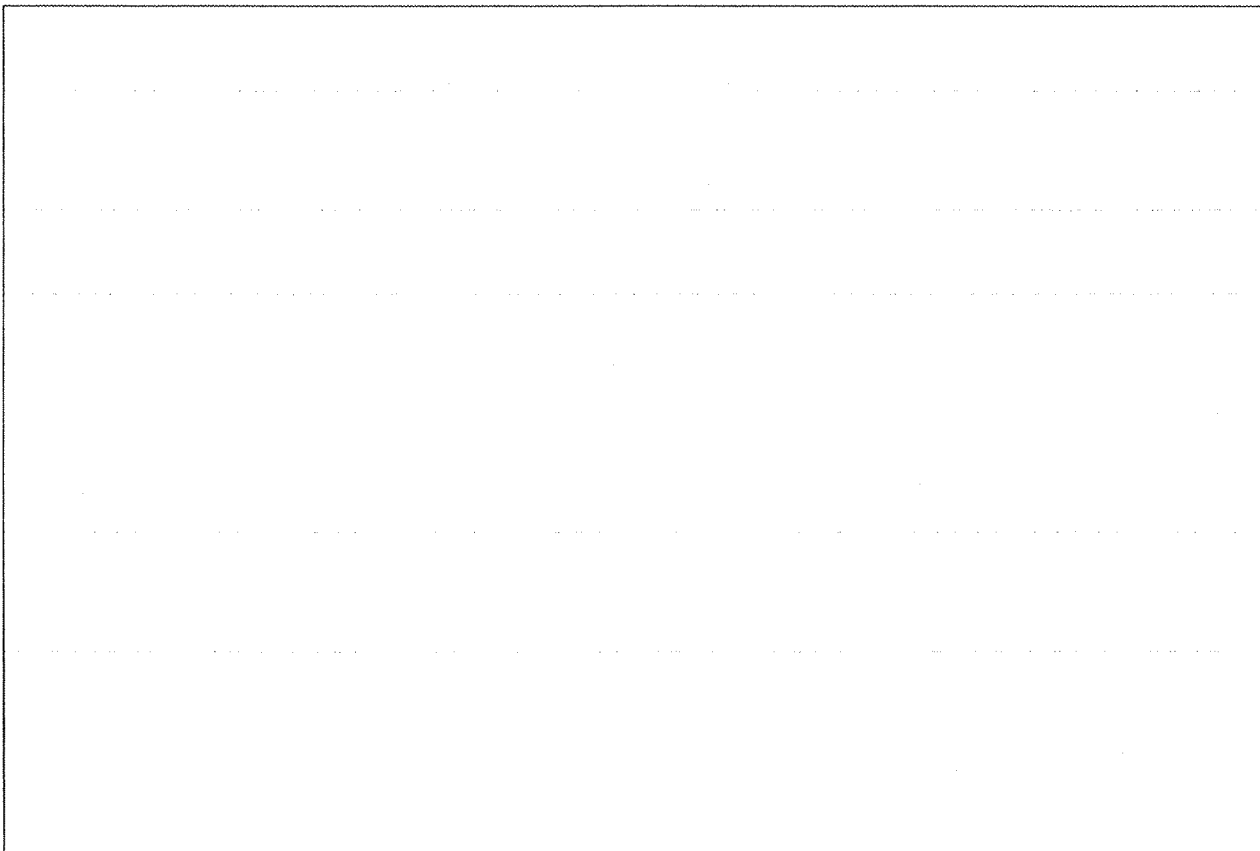
- a) Provide **three** examples for different types of content management systems.

[3 marks]



- b) Briefly explain the work flow of a content management system based web application. Your answer should include the roles involved and general process flow. Use an appropriate illustration in your answer.

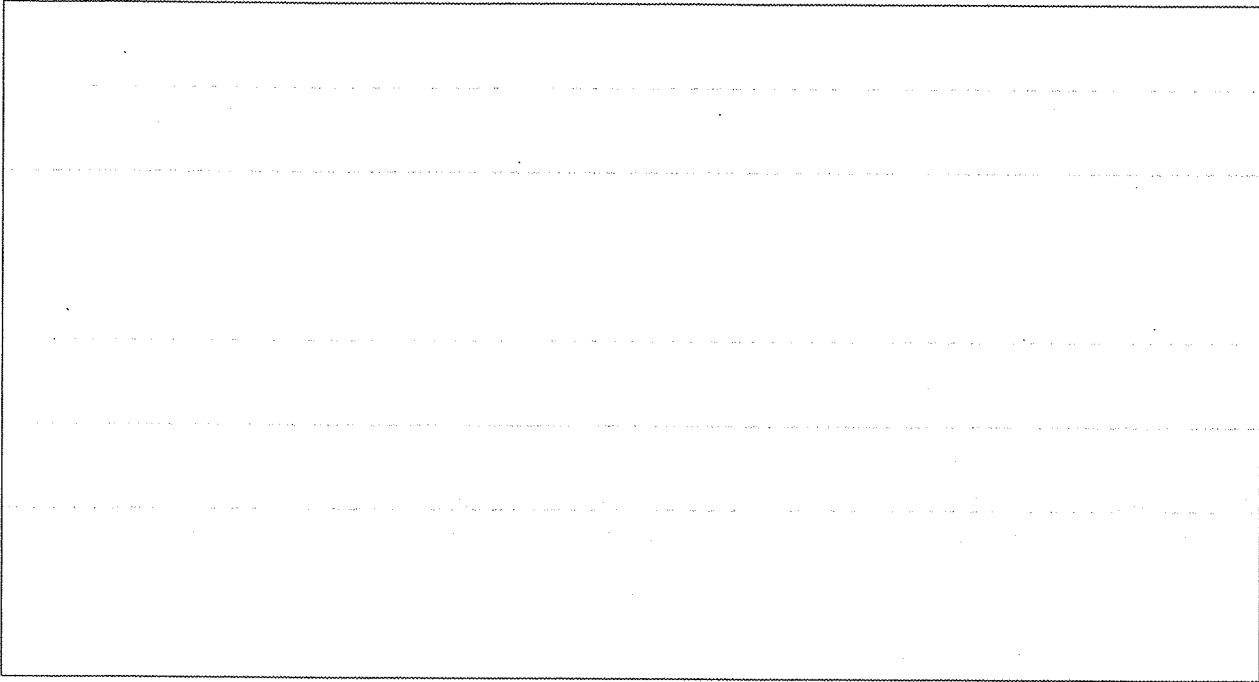
[5 marks]



Index No:

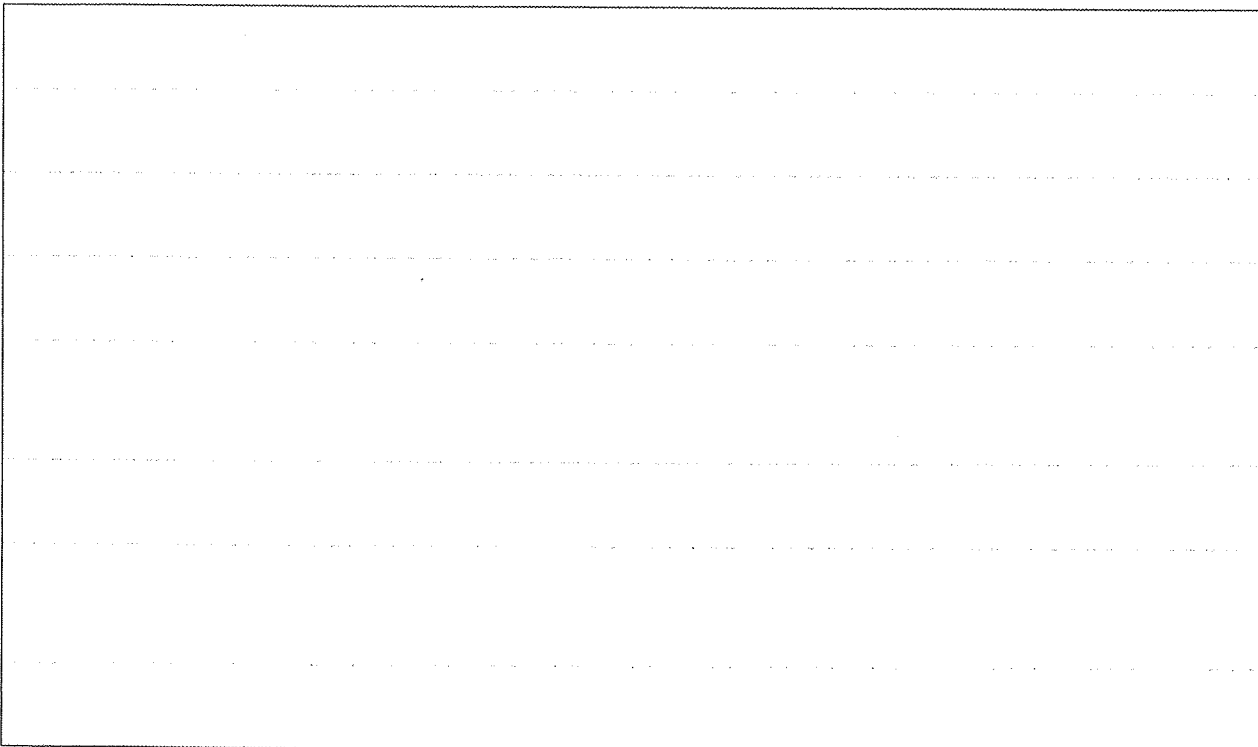
- c) Briefly explain how you would promote an e-business application using social media as an e-marketing tools. Your answer should include the social media platform proposed and its tools available for promotion campaign.

[6 marks]



- d) What is meant by *geo-fencing*? Briefly explain an example application that uses *geo-fencing*.

[6 marks]



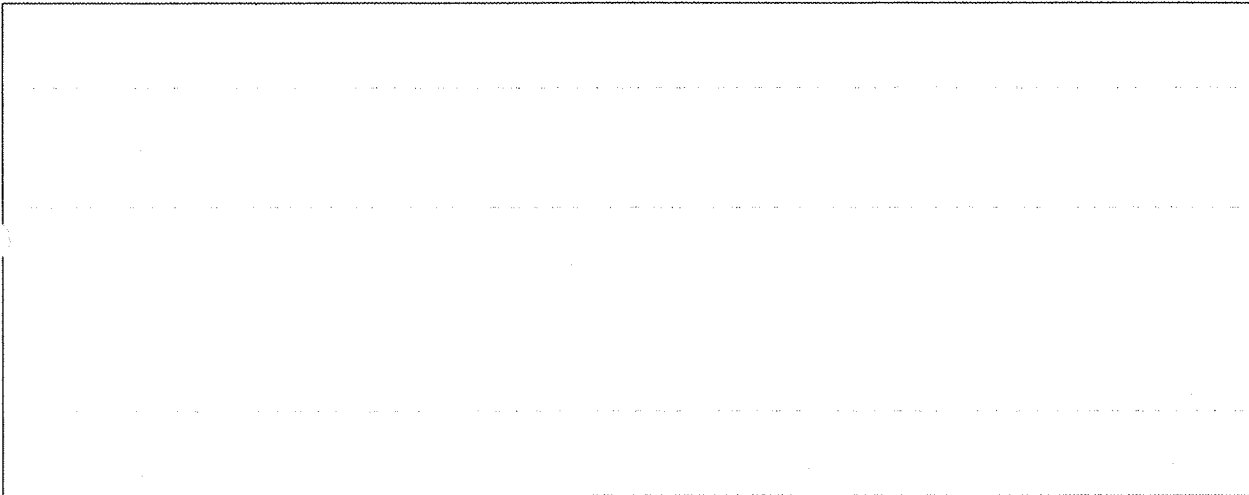
Index No:

Question 02

- a) Identify and write down the components of the following URL used in a Codeignitor based web Application.

<http://www.ucsc.cmb.ac.lk/blog/blogIntro/University/Of/Colombo>

[3 marks]



- b) Provide an example for PHP Alternative Syntax for each of the following.
- I. printing output
 - II. selection control structure *if-else*

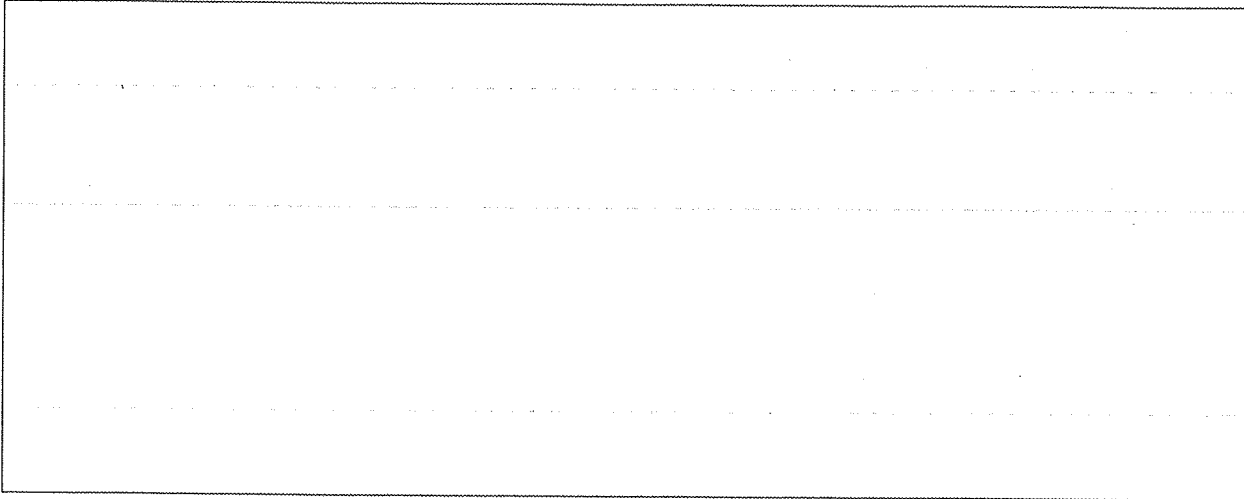
[6 marks]



Index No:

- c) What steps would you follow in configuring **autoload.php** and **database.php** in order to use *Active Record Design* pattern in CodeIgnitor?

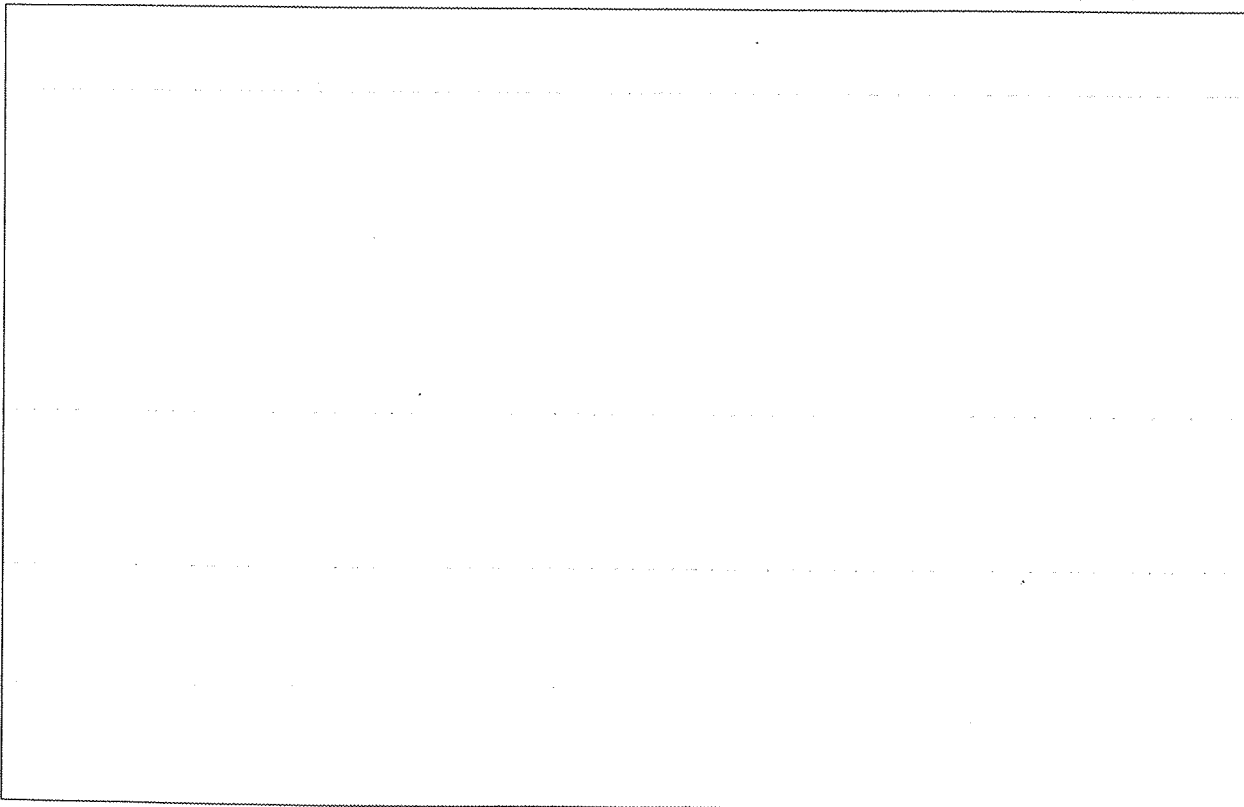
[4 marks]



- d) Write a CodeIgnitor Code segment for the following.

Read Accept NIC number as a URL parameter and retrieve data from a database and display the record containing the personal details such as Name, Address etc. of a person. Your answer should include the Controller, Model and the View components.

[7 marks]

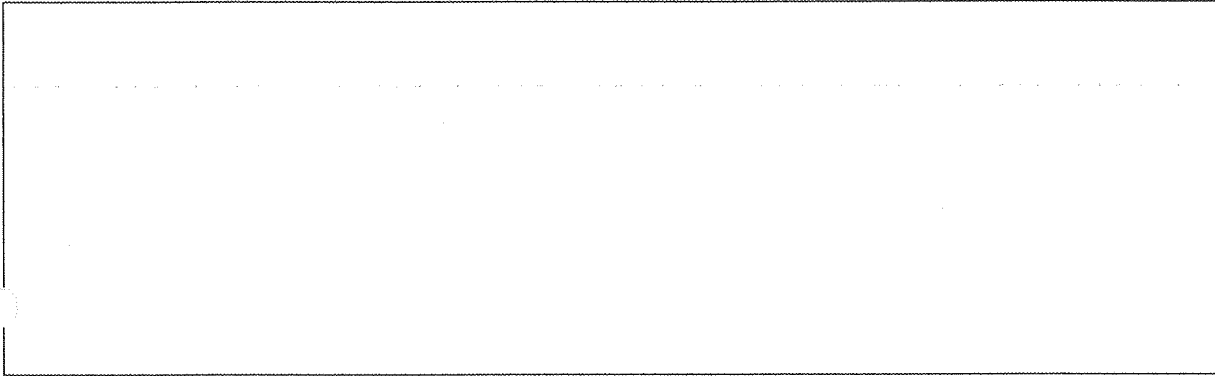


Index No:

Question 03

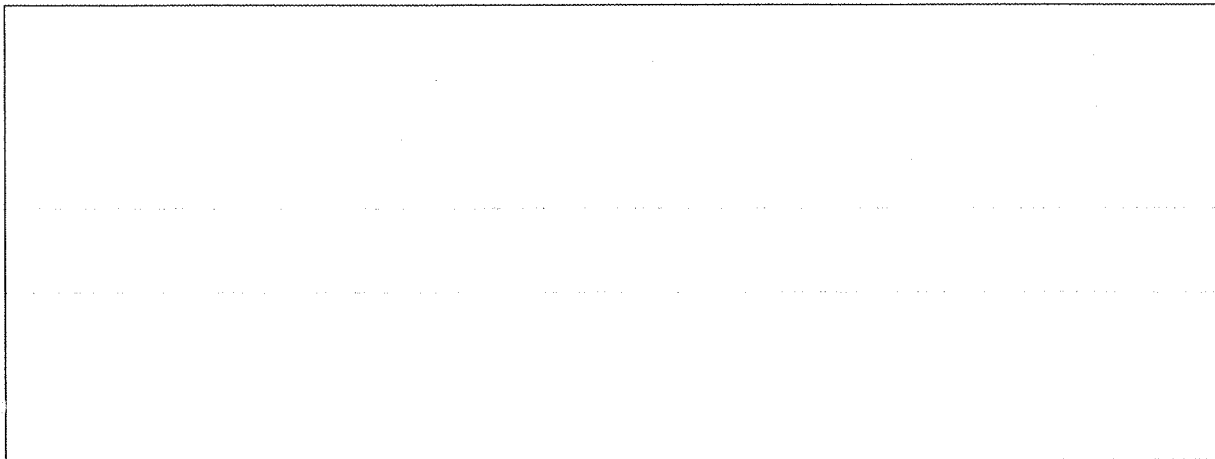
- a) Briefly explain why Agile methods such as Scrum are called *iterative and incremental* approaches.

[5 marks]



- b) List **five** of the principles of Agile Manifesto.

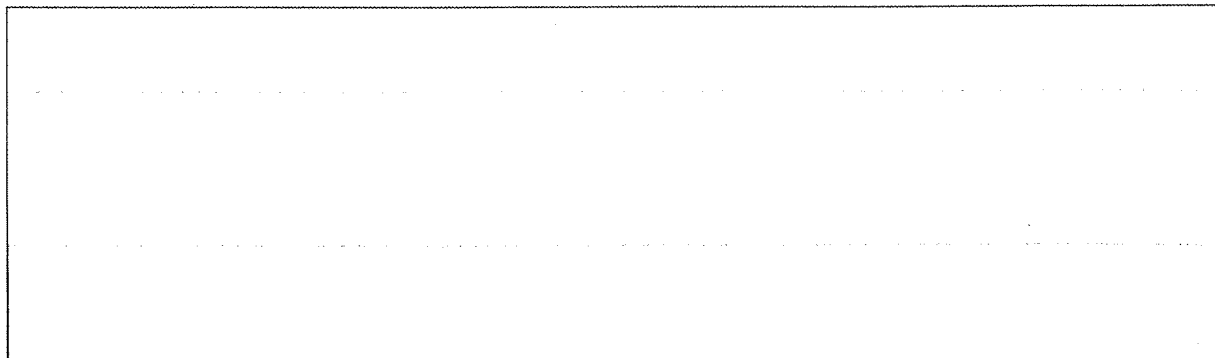
[5 marks]



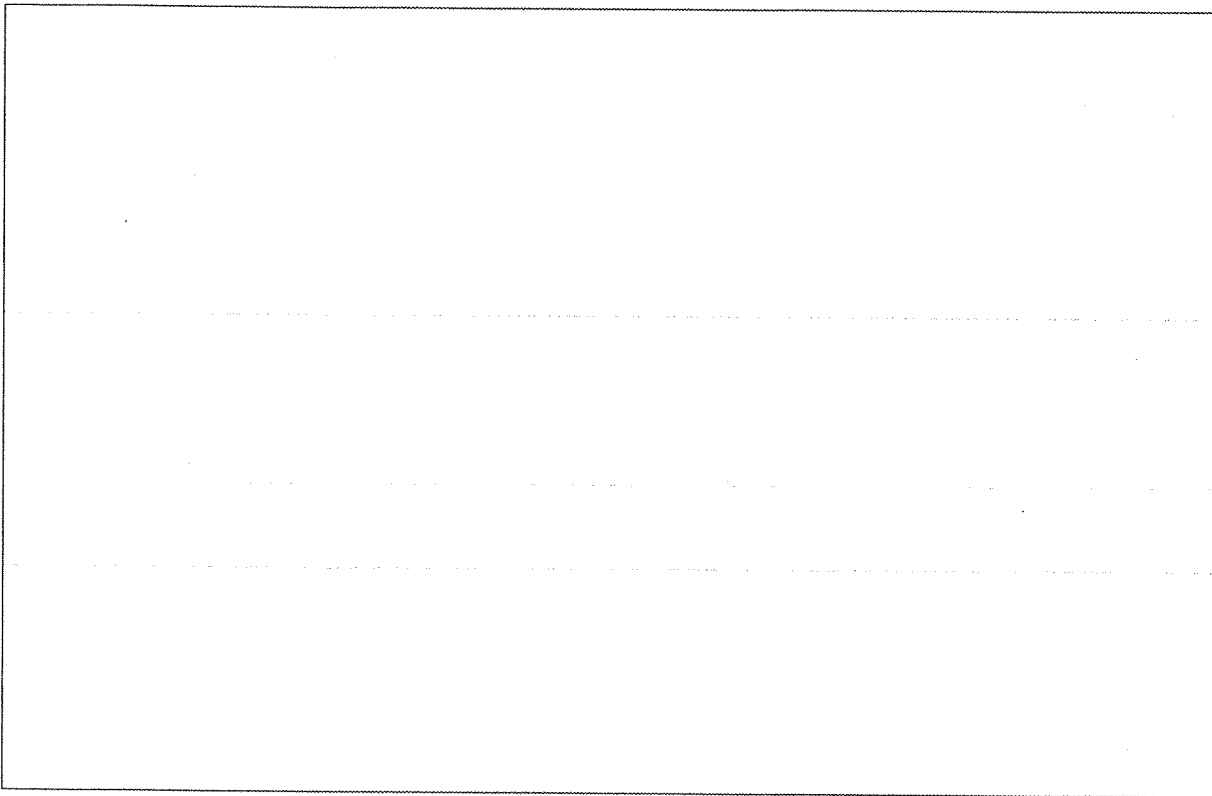
- c) Briefly explain the Scrum Lifecycle with a suitable diagram using the following terms.

Daily Scrum, Potentially Shippable Product Increment, Product Backlog, Sprint Backlog, Sprint Execution, Sprint Planning, Spring Retrospective, Sprint Review

[6 marks]

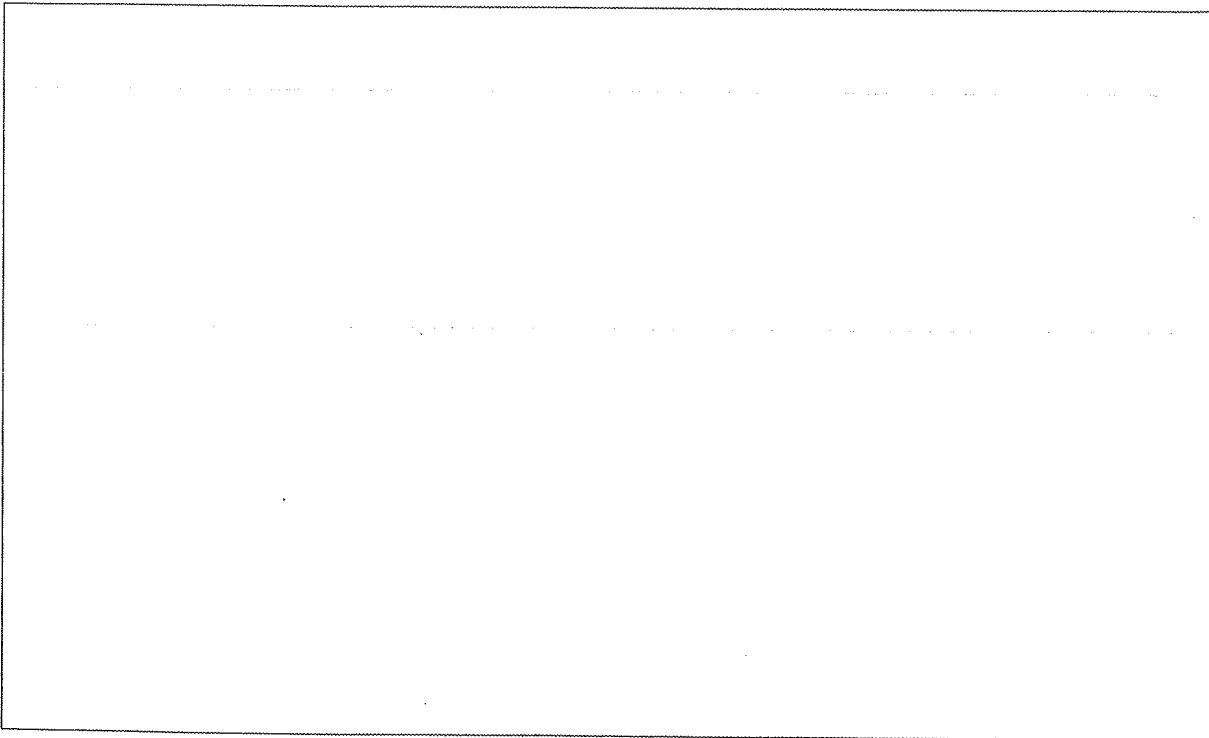


Index No:



- d) Briefly explain what is meant by a *Burn Down Chart* as used in Scrum. Use a suitable diagram to illustrate your answer.

[4 marks]



Index No:

Question 04

a) What is meant by *a responsive mobile first fluid grid system* as used in Bootstrap?

[4 marks]

b) Draw an Illustration and show how the following Bootstrap code segment will render on the browser.

[4 marks]

```
<div class="container-fluid">
  <h1>Hello World! </h1>
  <p>Resize the browser window to see the effect. </p>
  <div class="row">
    <div class="col-sm-4" >UCSC</div>
    <div class="col-sm-4" >35</div>
    <div class="col-sm-4" >Reid Avenue, Colombo 7</div>
  </div>
</div>
```

Index No:

- c) Draw an Illustration and show how the following Bootstrap code segment will render on the browser.

[3 marks]

```
<div class="container">
  <h2>BS Components example</h2>
  <ul class="pagination">
    <li><a href="#">1</a></li>
    <li><a href="#">2</a></li>
    <li><a href="#">3</a></li>
    <li><a href="#">4</a></li>
    <li><a href="#">5</a></li>
  </ul>
</div>
```

- d) Draw an Illustration and explain how the following Bootstrap code segment will render on the browser.

[3 marks]

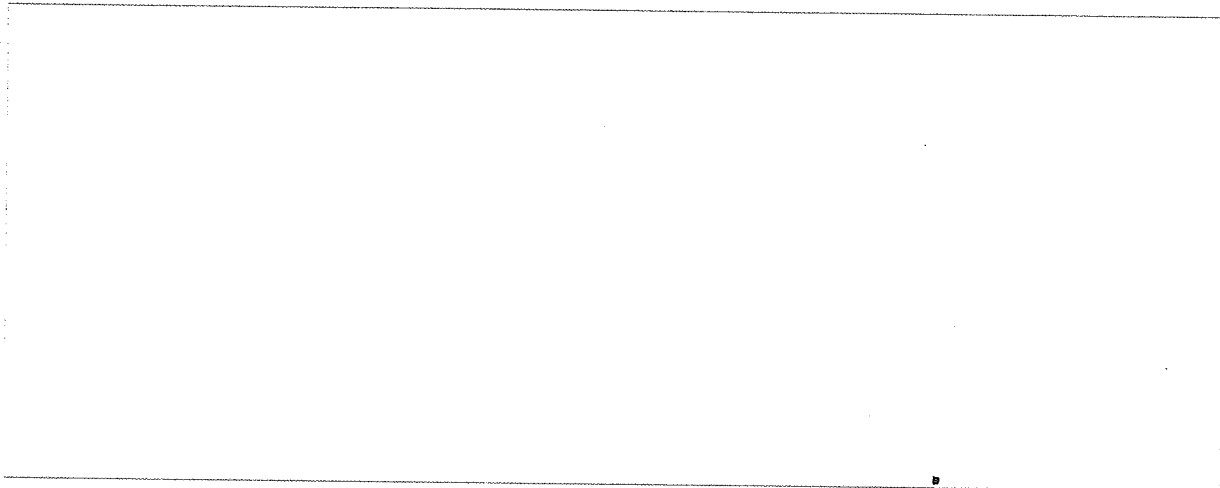
```
<div class="container">
  <div class="dropdown">
    <button class="btn btn-primary dropdown-toggle" type="button" data-
toggle="dropdown">BS Component Example
    <span class="caret"></span></button>
    <ul class="dropdown-menu">
      <li><a href="#">CodeIgnitor</a></li>
      <li><a href="#">Symfony</a></li>
      <li><a href="#">Laravel</a></li>
    </ul>
  </div>
</div>
```


Index No:

- e) Draw an Illustration and show how the following Bootstrap code segment will render on the browser.

[3 marks]

```
<div class="container">
  <ul class="nav nav-tabs">
    <li class="active"><a href="#">MVC Frameworks</a></li>
    <li><a href="#">Laravel</a></li>
    <li><a href="#">Symfony</a></li>
    <li><a href="#">Codignitor</a></li>
  </ul>
  <br>
  <p> PHP frameworks for developing MVC based applications. </p>
</div>
```

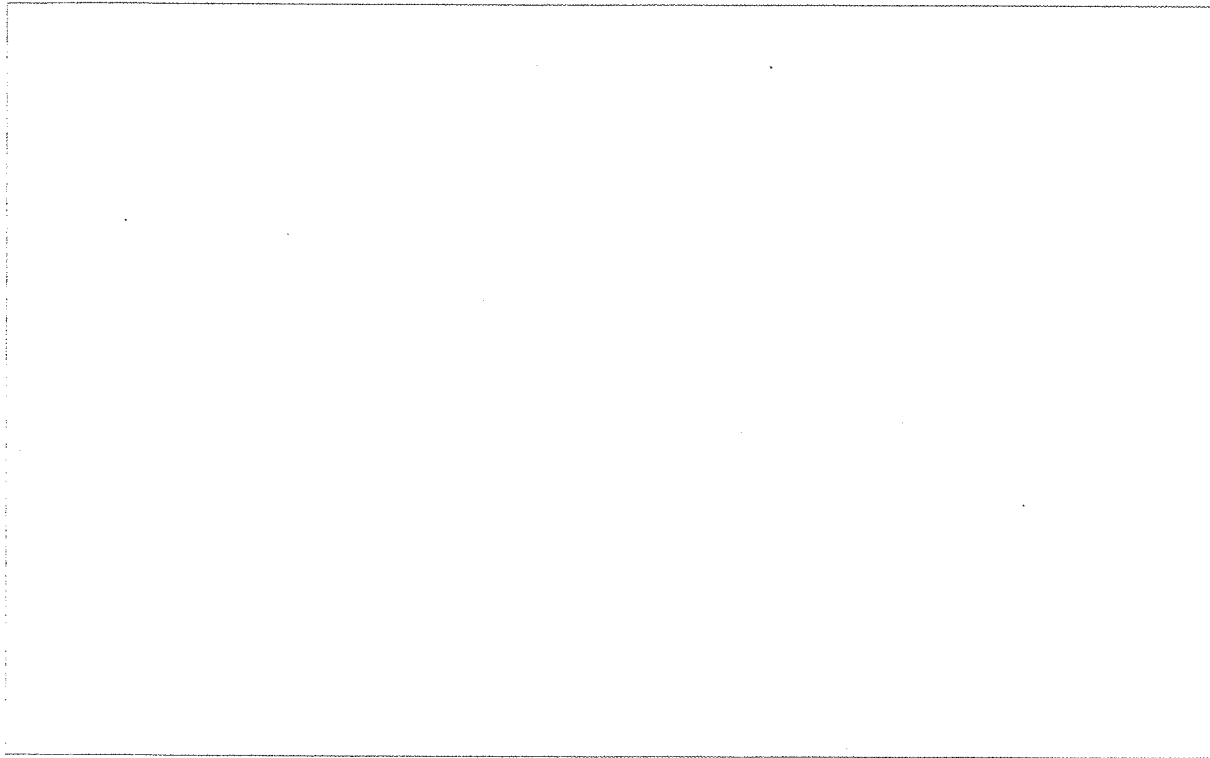


- f) Draw an Illustration and show how the following Bootstrap code segment will render on the browser.

[3 marks]

```
<div class="container">
  <h2>BS Example</h2>
  <form action="/action_page.php">
    <div class="form-group">
      <label for="username">User Name:</label>
      <input type="text" class="form-control" id="username"
        placeholder="Enter User Name" name="username">
    </div>
    <div class="form-group">
      <label for="pwd">Password:</label>
      <input type="password" class="form-control" id="pwd"
        placeholder="Enter password" name="pwd">
    </div>
    <div class="checkbox">
      <label><input type="checkbox" name="remember"> Remember me</label>
    </div>
    <button type="submit" class="btn btn-default">Submit</button>
  </form>
</div>
```

Index No:



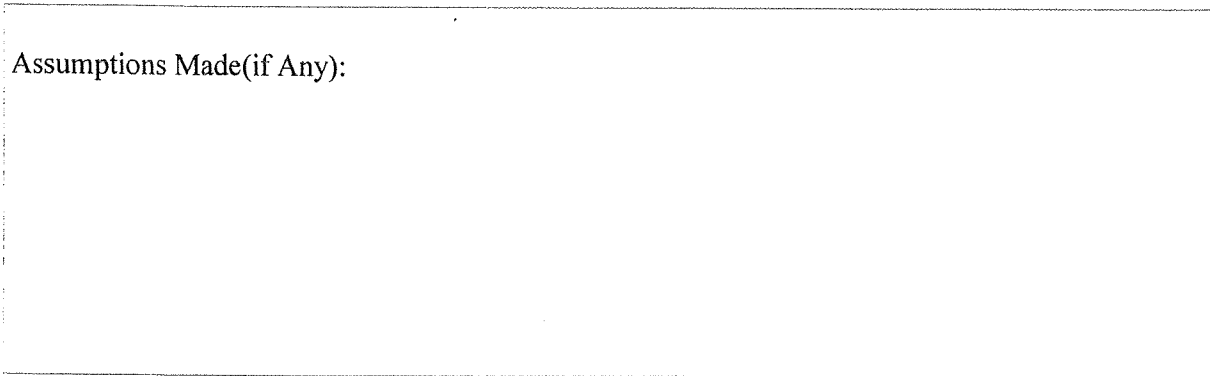
Question 05

a) Assume that you are required to list the products available in a Sales database. Write PHP code segments for the following. State any assumptions made.

- I. *Connect to host server which has Mysql installed [assume host as localhost, user name test, password test123]*
- II. *Display an appropriate error message on failure*
- III. *Select database [database name Sales]*
- IV. *Form SQL statement[Obtain Product Code, Description and Unit Price from Products table]*
- V. *Execute the SQL statement and return a record set*
- VI. *Extract data from record set and display as a tabulated view*
- VII. *Close database connection*

[11 marks]

Assumptions Made(if Any):



Index No:

PHP Code Segments:

I	
II	
III	
IV	
V	
VI	
VII	

Index No:

b) What would be output of the following code segments in I-III below?

I.

```
$array = array (2, 4, 6, 7, 11, 15,17, 19);
$tot = 0;
for ($a = 0; $a < 7; $a++) {
    if (($a % 2) == 0){
        echo $a;
        $tot += $array[$a];
    }
}
echo " ". $tot;
```

[3 marks]

II.

```
define("MyDiv",3,TRUE);
$var1 = 3.5;
$var2 = 9.3;
echo round($var1). " ";
echo ceil($var2). " ";
echo round($var1)+ceil($var2)% MYDIV;
```

[3 marks]

III.

```
$n1 = 5;
$n2 = 10;
echo ($n1--)+1*$n2;
echo " ";
echo (--$n2)*$n1;
echo " ";
echo $n1++ + $n2;
```

[3 marks]
