



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Academic Year 2015/2016 – Second Year Examination – Semester II – 2017

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 question 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 page of the Question paper.
5. This paper consists of two parts, **Part A (20 MCQs)** and **Part B (5 structured questions)** on 17 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
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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. Which of the following is/are valid variable name(s) in PHP?

- i. \$11f
- ii. \$f11
- iii. \$_11f

- (a) i only
- (b) ii only
- (c) i and ii only
- (d) ii and iii only
- (e) All i, ii and iii

2. Which one of the following functions will convert a string to uppercase?

- (a) str_uppercase()
- (b) strtoupper()
- (c) strupercase()
- (d) strupercase()
- (e) uppercase()

3. If the maximum height of a person in cm is defined as `define("VALUE", 274.32)`. Identify the method to increase \$VALUE by 2 units?

- (a) \$VALUE+=2
- (b) \$VALUE = \$VALUE + 2
- (c) \$VALUE++
- (d) ++\$VALUE
- (e) Cannot increment \$VALUE

4. What would be the output of the following PHP code segment?

```
<?php  
    $state = array ("Kurunegala", "Kandy", "Colombo", "Galle");  
    echo (array_search ("Colombo", $state) );  
?>
```

- (a) True
- (b) False
- (c) 1
- (d) 2
- (e) 3

5. What would be the output of the following PHP code segment?

```
<?php  
    $color = array("Red", "Green", "Yellow", "Blue");  
    for ($x=0; $x < count($color); $x++){  
        if ($color[$x] == "Yellow") continue;  
        printf ($color[$x]);  
    }  
?>
```

- (a) Blue
- (b) RedGreen
- (c) RedGreenBlue
- (d) Yellow
- (e) YellowBlue

6. What would be the output of the following PHP code segment?

```
<?php  
    $age = array("Peter"=>"35", "Ben"=>"37", "Joe"=>"43");  
    echo "Peter is " . $age['Peter'] . " years old.";  
?>
```

- (a) Peter is
- (b) years old.
- (c) Peter is years old.
- (d) Peter is 35 years old.
- (e) 35

7. What would be the output of the following PHP code segment?

```
<?php  
function increment() {  
  
    static $Var1 = 1;  
    $Var2 = 0;  
    echo $Var1;  
    echo $Var2;  
  
    $Var1++;  
    $Var2++;  
}  
increment();  
increment();  
?>
```

- (a) 1020
- (b) 1010
- (c) 1011
- (d) 1021
- (e) PHP Error

8. What would be the output of the following PHP code segment?

```
<?php
function a()
{
    function b()
    {
        echo 'function b';
    }
    echo 'function a';
}

b();
a();
?>
```

- (a) function b
- (b) function bfunction b
- (c) function bfunction bfunction a
- (d) function afunction bfunction a
- (e) PHP Error

9. Which of the following statement(s) is/are the **true** about devOps?

- i) DevOps is a framework and job title that focuses on structured processes to organize flow between the Development and Operations teams.
- ii) DevOps is a movement or practice that emphasizes collaboration and communication of both software developers and other Information Technology (IT) professionals.
- iii) DevOps is about experiences, ideas, and culture.

- (a) i only
- (b) ii only
- (c) i and ii only
- (d) ii and iii only
- (e) All i, ii and iii

10. Which of the following is/are **true** about *CodeIgniter*?

- i) Base URL can be changed using *config* file
- ii) Default controller can be set using *routes* file
- iii) View file can call other view files.

- (a) i only
- (b) i and ii only
- (c) i and iii only
- (d) ii and iii only
- (e) All i, ii and iii

11. Assume that you have a model file in the following folder path.

application/model/login/userLogin.php

What is the correct line of code to call *userLogin.php* from a controller?

- (a) `$this -> load -> model('login_userLogin');`
- (b) `$this -> load -> model('login,userLogin');`
- (c) `$this -> load -> model('login/userLogin');`
- (d) `$this -> load -> model('userLogin');`
- (e) `$this -> model('userLogin');`

12. Which of the following line of code(s) can load a view?

- i). `$this->view('view_name')`
- ii). `$this->load('view_name')`
- iii). `$this->load->view('view_name')`

- (a) i only
- (b) ii only
- (c) iii only
- (d) i and ii only
- (e) All i, ii and iii

A controller class and a model class of *News.com* are given below. Questions 13 and 14 are based on these two code segments. Assume that record id *N019* of the news table in the database carries the tuple as *title => Olympic Games 2020 In Japan, category => Sports News*.

===== Model Class =====

```
<? php
Class news_model extends CI_Model {
    public function get_news ($id) {
        if ($id! = FALSE) {
            $query = $this->db->get_where ('news', array ('id' => $id));
            Return $query -> row_array ();
        }
        Else {
            return FALSE;
        }
    }
?>
```

===== Controller Class =====

```
<? php
Class news extends CI_Controller {
    public function show ($id) {
        $this->load->model ('news_model');
        $news = $this->news_model->get_news ($id);
        echo "$news ['title']". "$news ['category']";
    }
?>
```

13. What would be the outcome if we route using the following URL?

myNews.com/index.php/news/show

- (a) PHP Error
- (b) Run time Error
- (c) 404 page not found
- (d) Olympic Games 2020 In Japan Sports News
- (e) URL is not working

14. What would be the outcome if we route using the following URL?

myNews.com/index.php/news/show/N019

- (a) PHP Error
- (b) Run time Error
- (c) 404 page not found
- (d) Olympic Games 2020 In Japan Sports News
- (e) URL is not working

15. Which of the following is/are used to display code in bootstrap?

- i. <code>
- ii. <pre>
- iii. <body>

- (a) i only
- (b) ii only
- (c) iii only
- (d) i and ii only
- (e) All i, ii and iii

16. Which class is/are used to make a standard/default button in bootstrap?

- i. .btn-primary
- ii. .btn-default
- iii. .btn

- (a) i only
- (b) ii only
- (c) iii only
- (d) i and ii only
- (e) All i, ii and iii

17. Identify the **correct** statement(s) with regard to *Selenium Suit*?

- i. Selenium Integrated Development Environment (IDE) is a Firefox plugin that lets testers to record their actions as they follow the workflow that they need to test.
- ii. Selenium Selenium RC is the successor to WebDriver which sends commands directly to the browser and retrieves results.
- iii. Selenium Grid is a tool used to run parallel tests across different machines and different browsers simultaneously

- (a) i only
- (b) ii only
- (c) i and ii only
- (d) i and iii only
- (e) All i, ii and iii

18. Which of the following code segment can be used to create a standard navigation bar?

- (a) <nav class="default">
- (b) <nav class="navnavbar">
- (c) <nav class="navbar default-navbar">
- (d) <nav class="navbar navbar-default">
- (e) <nav class="navigationbarnavbar-default">

19. In *TestNG*, there is a specific annotation hierarchy, which specifies the order of execution. Following is an incomplete hierarchy with four labels as **A**, **B**, **C** and **D**.

```
@BeforeA  
 @BeforeB  
     @BeforeC  
         @BeforeD  
             @Test  
                 @AfterD  
                     @AfterC  
                         @AfterB  
                             @AfterA
```

Match the labels **A**, **B**, **C** and **D** with actual keywords in *TestNG*.

- (a) **A** => Class, **B** => Method, **C** => Suite, **D** => Test
- (b) **A** => Class, **B** => Test, **C** => Method, **D** => Suite
- (c) **A** => Suite, **B** => Class, **C** => Test, **D** => Method
- (d) **A** => Suite, **B** => Test, **C** => Class, **D** => Method
- (e) **A** => Test, **B** => Suite, **C** => Method, **D** => Class

20. The following is a sample test program written to understand how setting priorities of execution could influence the execution sequence of the test case.

```

    @Test (priority = 1)
    Public void test1(){
        System.out.println("Inside test1");
    }
    @Test
    Public void test2(){
        System.out.println("Inside test2");
    }
    @Test (priority = 2)
    Public void test3(){
        System.out.println("Inside test3");
    }

```

What would be the correct output of the given Test?

(a) Inside test1 Inside test2 Inside test3	(b) Inside test1 Inside test3 Inside test2	(c) Inside test2 Inside test1 Inside test3
(d) Inside test2 Inside test3 Inside test1	(e) Inside test2 Inside test1 Inside test3	

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

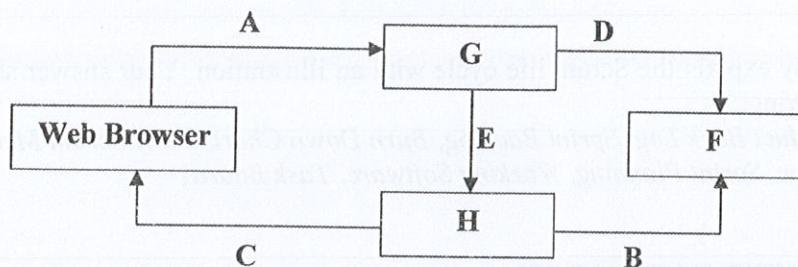
***** End of PART A; Continue next page for PART B *****

PART B

Part B has 5 structured questions. Please write the answers in the space given in the paper itself.

1.

- (a) Consider the following diagram which shows the communication between different components in a certain model-view-controller based application:



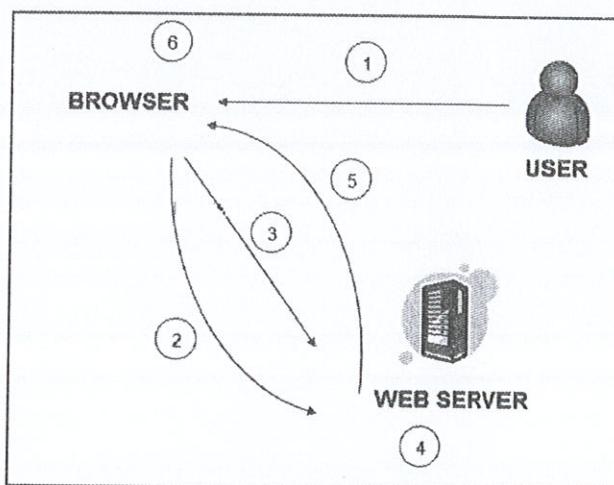
Select the correct labels from the following list that match with the labels A-H above. Your answer should include the label against letters A-H.

List of Items = {Controller, Get State, HTTP request, HTTP response, Model, Modify State, Select, View}

[4 marks]

A:	E:
B:	F:
C:	G:
D:	H:

- (b) Consider the following diagram, which shows the communication between the user, web browser, and web server.



Write down appropriate labels/processes for 1- 6 above.

[6 marks]

1:	4:
2:	5:
3:	6:

- (c) Briefly explain the Scrum life cycle with an illustration. Your answer should include the following:

{*Product Back Log, Sprint Backlog, Burn Down Chart, Daily Scrum Meeting, Sprint Review, Sprint Planning, Working Software, Task Board*}

[10 marks]

ANSWER IN THIS BOX

2. Write down appropriate PHP code segment to perform the following. State any assumptions made.
- A Connect to host server, which has Mysql installed. [assume host as *localhost*, user name *admin*, password *admin*]. Display error message on failure
 - B Select database [database name SecondYearStudents2017]
 - C Form SQL statement[select FirstName, LastName, Telephone from student table]
 - D Execute the SQL statement and return a record set
 - E Extract data from record set and display[use an associative array]
 - F Close database connection

[20 marks]

State assumptions:

PHP Code Segments:

A

B	<p>La storia dell'industria italiana di moda è stata per molto tempo dominata da grandi aziende che producevano per conto di altri e avevano una forte presenza all'estero. A partire dagli anni Novanta, però, si è assistito a un processo di trasformazione che ha portato alla nascita di nuove aziende, spesso con capitali internazionali, che hanno rinnovato la produzione e aperto nuovi mercati. Oggi l'industria tessile e della moda italiana è caratterizzata da una grande varietà di prodotti, dalla alta moda alla moda sportiva, dalla moda donna alla moda uomo, dalla moda bambino alla moda donna. I produttori italiani sono presenti in quasi tutti i paesi del mondo, con una particolare concentrazione nel mercato europeo.</p>
C	<p>Le aziende italiane di moda hanno sempre avuto una forte tradizione nella ricerca di qualità e innovazione, che le ha portate a diventare leader mondiali nel settore. La loro capacità di adattarsi alle mutazioni del mercato e di creare nuovi prodotti ha consentito loro di sopravvivere e prosperare anche in un periodo di forte concorrenza internazionale. Oggi l'industria tessile e della moda italiana è una delle più avanzate al mondo, con una gamma completa di prodotti che va dalla moda donna alla moda uomo, dalla moda sportiva alla moda bambino, dalla moda donna alla moda donna. I produttori italiani sono presenti in quasi tutti i paesi del mondo, con una particolare concentrazione nel mercato europeo.</p>
D	
E	
F	

3.

- (a) Write down a HTML form element to input *IndexNumber*, *FirstName*, *LastName*, *Telephone* with a submit button, State assumptions made.

[8 marks]

ANSWER IN THIS BOX

- (b) Write PHP server side script to write the values entered into the form to student data table in *SecondYearStudents2017* database.

[8 marks]

ANSWER IN THIS BOX

- (c) Briefly explain the difference between POST and GET methods.

[4 marks]

ANSWER IN THIS BOX

4.

- (a) Explain URL routing in *CodeIgniter* using the following example.

http:// www.example.com /index.php /blog /view /10

Identify each segment of the above URL and refer to them in your answer.

[6 marks]

ANSWER IN THIS BOX

- (b) What is the key difference between helpers and plugins in *CodeIgniter*? Use an appropriate code segment to illustrate your answer.

[6 marks]

ANSWER IN THIS BOX

- (c) Explain how you would configure *autoload.php* and *database.php* in order to use active record architectural pattern in *CodeIgniter*.

[8 marks]

ANSWER IN THIS BOX

Configuration of *autoload.php*:

Configuration of *database.php*:

5.

- (a) Explain the concept of **Fluid Grid** used in *Bootstrap*. Use an illustration in your answer.
[6 marks]

ANSWER IN THIS BOX

- (b) Briefly explain how would you develop an e-business portal for a client who currently sells mobile phones and their accessories at a physical brick-and-motor shop and he would like to be converted into a click-and-motor shop.

Your answer should include the method and tools that you would use to develop the application. State different software tools/extensions/plugins etc. that you would use. Follow the subheadings included in the answer box.

[14 marks]

ANSWER IN THIS BOX

Software tools/extensions/plugins etc. used and its purpose

Methodology used

***** End of the PART B, End of the Paper *****

