



DUBLIN INSTITUTE OF TECHNOLOGY

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# **BSc (Honours) Degree in Computer Science**

**Year 2**

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**WINTER EXAMINATIONS 2014/2015**

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**WEB DEVELOPMENT 2[CMPU2022]**

Ms Cindy Liu

Dr D. Lillis

Mr K. Foley

Wednesday 17<sup>th</sup> December

9.30 a.m. – 11.30 a.m.

Time Allowed: 2 hours

***Answer Question 1 and any two of the three remaining questions***

Question (1) is worth 40 marks  
Questions (2), (3) and (4) are worth 30 marks each.

## Question 1

- (a) A development team is selecting an appropriate web server to support their suite of web applications. List *six* selection criteria that they should consider in their selection. In your answer, name *three* market-leading web servers that they may use in their selection.

(10 marks)

- (b) Describe the differences between client-side and server-side technologies for web applications. In your answer, explain whether each of the following supports processing at the client-side or server-side or both:

- i. VBScript
- ii. Cold Fusion
- iii. Java Applets
- iv. Wireless Mark-up Language (WML)

(10 marks)

- (c) What is the output of the following?

```
<?php
$a = 20;

function myfunction($b) {
    $a = 30;

    global $a, $c;
    return $c = ($b + $a);
}

print myfunction(40) + $c;

?>
```

Possible answer(s):

- i. 120
- ii. Syntax error
- iii. 60
- iv. 70

(4 marks)

(d) There is a student table in MySQL database, in which there are four columns: StudentNo, StudentName, Address, AverageResult). There are approximated 100 rows in this table.

Write code for PHP Page login program, that provides the following functionality:

- Login page contains two input fields: *StudentName*, *Password*.
- Login page contains a submit button so that when clicked, it checks if the values of *StudentName* and *Password* are matching records of the table (StudentName, StudentNo). And then displays Welcome (value of *StudentName*), your average result is (value of AverageResult) or otherwise displays "That student does not exist in our database. [Click Here to Register](#)".
- Includes appropriate error processing.

(16 marks)

## Question 2

- (a) List the **seven** stages of the “Web Life Cycle Model” and provide a brief discussion on each of them.

(12 marks)

- (b) Is it possible to pass data from PHP to JavaScript?

- i. No, because PHP is server-side, and JavaScript is client-side.
- ii. No, because PHP is a loosely typed language.
- iii. Yes, because JavaScript executes before PHP.
- iv. Yes, because PHP can generate valid JavaScript.

(4 marks)

- (c) What is the output of the following code?

```
function plums(&$plums = 17)
{
    $plums .= 1;
}
$pineapples = 5;
plums($pineapples);
echo $pine n5apples++;
```

Possible answer(s):

- i. 16
- ii. 51
- i. 6
- ii. 5

(4 marks)

(d) Write a well-formed XML document that represents the data shown in Figure 1.

(10 marks)

Employee Information					
Surname	First Name	Hire Date	ProjectID	Product	Price
Kelly	Grace	Oct. 15 2014	111	Printer	\$111.00
Kelly	Grace	Oct. 15 2014	222	Laptop	\$989.00
Grant	Cary	Oct. 20 2014	333	Desktop	\$995.00
Grant	Cary	Oct. 20 2014	444	Scanner	\$200.00
Gable	Clark	Oct. 25 2014	555	Keyboard	\$49.00
Gable	Clark	Oct. 25 2014	666	Mouse	\$25.00

**Figure 1**

### Question 3

- (a) A web developer is developing a search page that displays the results of a search engine query for a user. The developer wants to display a maximum of ten search results per page. The expected number of users for the website will be large. Explain the advantages and disadvantages of the following two approaches for processing the search results across multiple web pages:

- i. Return *all* the search results in a single query, displaying back ten at a time on a web page.
- ii. Return the first ten results in a query and re-run the query if more results requested.

(10 marks)

- (b) Consider the following script:

```
<?php
try {
    $dbh = new PDO("sqlite::memory:");
} catch(PDOException $e) {
    print $e->getMessage();
}

$dbh->query("CREATE TABLE foo(id INT)");
$stmt = $dbh->prepare("INSERT INTO foo VALUES(:value)");
$value = null;
$data = array(1,2,3,4,5);
$stmt->bindParam(":value", $value);

/* ????? */
try {
    foreach($data as $value) {
        /* ????? */
    }
} catch(PDOException $e) {
    /* ??????? */
}

/* ????? */
?>
```

What lines of code need to go into the four missing places above in order for this script to function properly and insert the data into the database safely?

- i. \$dbh -> beginTransaction();
- ii. \$dbh -> commit();
- iii. \$stmt -> execute();
- iv. \$dbh -> rollback();
- v. \$dbh -> query(\$stmt);

(8 marks)

- (c) A *Product* table contains four columns: *ProductID*, *Name*, *Description* and *Price*. Write code for a PHP Page that selects all the rows from the Product table with Price more than 20.00 and displays the rows as a table on a HTML page.

(12 marks)



## Question 4

(a) Define and describe the Web Multi-Tier Application Architecture.

(10 marks)

(b) In PHP, what is the correct way to add 1 to the \$count variable?

- i. `count++;`
- ii. `$count++;`
- iii. `++count`
- iv. `$count +=1`

(4 marks)

(c) Create a form like Figure 2, and write PHP code to insert the “First Name, Second Name and comment” collected from the form into the order table.

(16 marks)

Figure 2

**Please fill this survey form**

First Name:  MI:  Last Name:

City:  State:  Zip code:

Choose a sport:

Basketball: ☒ Football: ☐ Hockey: ☐

Choose a year:

Freshman: ☒ Sophomore: ☐ Junior: ☐ Senior: ☐

Choose your favorite fast food:

Chips

Pizza

Nachos

Please let us know  
your comments