

Programme Code: TU856  
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**TECHNOLOGICAL UNIVERSITY DUBLIN**  
**CITY CAMPUS - GRANGEGORMAN**

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

**Year 2**

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**SEMESTER 1**  
**EXAMINATIONS 2023/24**

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**Web Development 2**

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Two Hours

*Please answer Question 1 and any two of the three remaining*

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

## Question 1

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

(10 marks)

- (b) Define and describe the Multi-Tier Application Architecture, using an example to demonstrate how the Multi-Tier Application Architecture applied in your web development program.

(10 marks)

- (c) What will be the output of the following PHP code?

```
<?php
function multi($num)
{
    if ($num == 3)
        echo "I Wonder";
    if ($num == 7)
        echo "Which One";
    if ($num == 8)
        echo "Is The";
    if ($num == 19)
        echo "Correct Answer";
}
$scan = stripos("I love php, I love php too!","PHP");
multi($scan);
?>
```

- i. Correct Answer
- ii. Is The
- iii. Which One
- iv. I Wonder

(4 marks)

(d) AerAirways uses the following two database tables to record the flights it offers and the airports it uses:

Flight		
flightNum	goingFrom	goingTo
ea101	DUB	STN
ea102	DUB	EDI
ea103	DUB	GLA
ea104	DUB	CDG
ea105	STN	CDG
ea106	STN	BER
...		

Airport	
airport	country
DUB	Ireland
STN	England
EDI	Scotland
CDG	France
BER	Germany
...	

Suppose destinations.html contains this form:

```
<form action="destinations.php" method="get">
  <input type="text" name="going_from" />
  <input type="submit" />
</form>
```

The user enters the code of the airport from which s/he likes to travel. Write destinations.php which receives the user's input, queries the database, and outputs a well-formed HTML unordered list of countries to which there is at least one direct flight from the user's chosen airport, including nested lists of flight numbers to that country. For example, using the database shown above, if the user enters "DUB", the user's browser will display something like the following:

- England
  - ea101
- France
  - ea104
- Scotland
  - ea102
  - ea103

A stylesheet is not required. Validation of user data is not required

(16 marks)

## Question 2

(a) What are the differences between XML and JSON?

(6 marks)

(b) What will be the value of \$a and \$b after the function call in the following PHP program?

```
<?php
function doSomething( &$arg ) {
    $return = $arg;
    $arg += 1;
    return $return;
}
$a = 3;
$b = doSomething( $a );
?>
```

- i. Both are 4
- ii. Both are 3
- iii. a is 3 and b is 4
- iv. a is 4 and b is 3

(4 marks)

(c) What will be the output of the following PHP code?

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

- i. I am b
- ii. I am bI am a
- iii. Error
- iv. I am a Error

(4 marks)

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

(16 marks)

Car Service Invoice			
<b>Customer Name</b> David Doyle			
<b>Address</b> 7 Woodford road, Cabra, Dublin			
Description	Quantity	Unit price	Amount
Changing Oil	1	500	€500.00
Labor 5 hours at €75 per hour	5	75	€375.00
<b>Total</b>		€875.00	

**Figure 1**

### Question 3

- (a) A development team is selecting an appropriate web server to support their suite of web applications. List six criteria that they should consider in their selection.

(6 marks)

- (b) Which of the following PHP statement/statements will store 111 in variable num?

- a) `int $num = 111;`
- b) `int num = 111;`
- c) `$num = 111;`
- d) `111 = $num;`

- i. Only a)
- ii. Only c)
- iii. a), b), c) and d)
- iv. both a) and c)

(4 marks)

- (c) What will be the value of the variable \$input in the following PHP program?

```
<?php
$input = "Swapna<td>Lawrence</td>you are really<i>pretty</i>!";
$input = strip_tags($input, "<i></i>");
echo $input;
?>
```

- i. Swapna Lawrence you are really<i>pretty</i>!
- ii. Swapna Lawrence you are really pretty!
- iii. Swapna <td>Lawrence</td> you are really<i>pretty</i>!
- iv. Swapna <td>Lawrence</td> you are really pretty!

(4 marks)

- (d) A *Recruit* table contains four columns: *StudentID*, *DepartmentID*, *StudentName* and *CAOPoints*. Write code for a PHP Page that selects all the rows from the *Recruit* table with CAO Points more than 450 and displays the rows as a table on a HTML page. (16 marks)

## Question 4

(a) A web designer is developing a web application and is attempting to determine whether to use *client* or *server* based validation or *both* in the following web pages:

- User registration page that will capture user details for entry to a database
- Search screen, allowing users to enter search parameters that will query a database

Recommend a type of validation that should be used by the designer in *each* of the two pages, providing reasons for your recommendation.

(6 marks)

(b) What is the output of the following code?

```
<?php
$x = 5;
$y = 10;
function fun()
{
    $y = $GLOBALS['x'] + $GLOBALS['y'];
}
fun();
echo $y;
?>
```

- i. 5
- ii. 10
- i. 15
- ii. Error

(4 marks)

(c) Which one of the following functions will convert a string to all uppercase?

- i. strtoupper()
- ii. uppercase()
- iii. str\_uppercase()
- iv. struppercase()

(4 marks)



- (d) Create a form similar to that shown in Figure 2 and write PHP code to insert the “First Name, Last Name and Special delivery instructions” collected from the form into an order table.

(16 marks)

### A bike order form

What type of bike do you want to purchase?

☒ Street bike ☐ Mountain bike ☐ dirt bike

What accessories do you need? ☐ Gloves ☒ Helmet ☐ Camel water bag

Where do you go biking?

Shipping information

First Name  Last Name  Address  City  State  Zip code

Special delivery instructions

Payment information

Credit card number  Expires

Figure 2