

## Practice Test

### General Certificate of Education (Adv. Level) Examination 2024

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Information & Communication Technology II

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E

II

Duration: Three hours  
Additional reading time: 10 mins.

#### Important:

- ✓ This question paper comprises of two parts, **Part A** and **Part B**. The allocated for both parts is two hours.
- ✓ Use of calculators is not allowed.

#### PART A – Structured Essay

- ✓ Answer **all** the questions on this paper itself.
- ✓ Write your answers in the space provided for each question. Note that the space provided is sufficient for your answers and that extensive answers are not expected.

#### PART B – Essay

- ✓ This part contains six questions, of which, **four** are to be answered. Use the papers supplied for this purpose.
- ✓ At the end of the time allotted for this paper, tie the two parts together so that Part A is on top of Part B before handing them over to the Supervisor.
- ✓ You are permitted to remove only Part B of the question paper from the Examination Hall.

#### For Examiner's Use Only

Part	Question No. s	Marks
A	1	
	2	
	3	
	4	
B	1	
	2	
	3	
	4	
	5	
	6	
	7	
	<b>Total</b>	

**Part A – Structured Essay**  
*Answer all questions on this paper itself.*

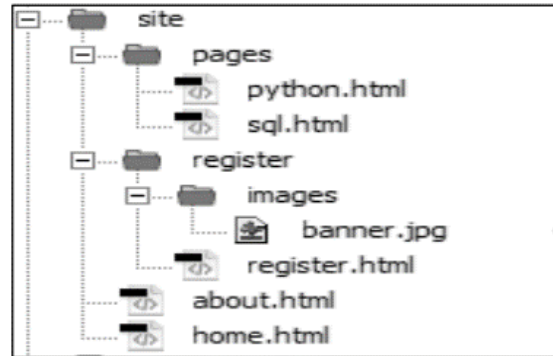
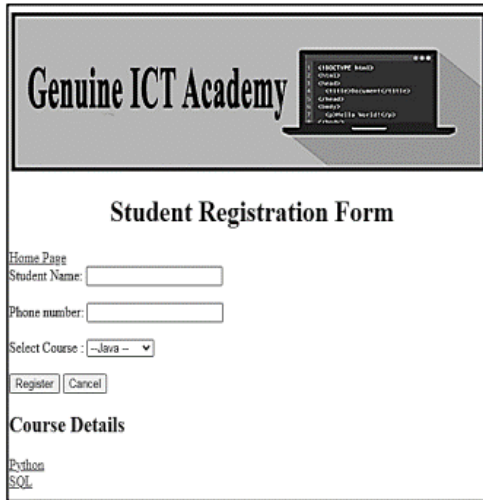
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1. (a) Write the output rendered by the web browser for the given HTML code segment. Show the output in the space provided below.

```
<h1 align="center">ICT syllabus</h1>
<h1>Practical Lessons </h1>
<ol start="7">
  <li>python </li>
  <ol type="A">
    <li>loops </li>
    <ol type="I">
      <li>for Loop</li>
      <li>while Loop</li>
    </ol>
    <li>if </li>
    <ol>
      <li>basic if</li>
      <ul>
        <li>if</li>
        <li>if with else</li>
      </ul>
      <li>multiple if</li>
      <li>nested if</li>
    </ol>
    <li>SQL</li>
  </ol>
  <li>HTML</li>
  <li> Arduino </li>
</ol>
```

A large rectangular area enclosed by a dashed line, intended for the student to write the rendered output of the HTML code.

(b) Consider the following web page. The page displayed is called register.html and the folder structure of the files or pages relevant to the website is shown in figure (A). Each hyperlink displayed on the web page namely Python, SQL and Home must redirect the user to the relevant web pages python.html, sql.html and home.html respectively.



(A)

The incomplete HTML code to render the above web page is given below. Fill in the blanks.

```
<html> <body>

<h1 align="center"> Student Registration Form </h1>
<a href="....."> Home Page </a> <br>
<form name= "stu_reg" action= "register.php" method="post">
    Student Name:   <input type="....." name="f_name"/>
<p>Phone number: <input type="....." name="p_no"/> </p>
<p>Select Course :<..... name="course" >
    <..... value="c1"> --Java --</.....>
    <..... value="c2"> --Python --</.....>
    <..... value="c3"> --SQL --</.....>
</.....>
</p>
<p>
    <input type="submit" .....="....." />
    <input type="reset" .....="....." />
</p>
</form>
<h2> Course Details </h2>
<p>  <a href="....."> Python </a> <br>
    <a href="....."> SQL </a>
</p>
</body></html>
```

(c)

- (i) The default colour of a hyperlink is blue. Write the CSS declaration to specify the hyperlink colour as blue when hovering the mouse pointer over the hyperlink.

.....  
.....

- (ii) Write the CSS declaration to change the colour of the heading Student Registration Form to #00FFAA.

.....  
.....

(d)

- (i) Complete the given PHP code.

```
<?php
//connect to database
$con=mysqli_connect("localhost", "root", "", "school");

//check connection
if ($con->connect_error){
die("Database connection failed: " . $con->connect_error);
}
//SQL Query
$sql = "select * from customers";

//get result
$result = mysqli_query(....., .....);

//print output
while ($row = mysqli_fetch_array(.....))
{
print( . ..... ['name'] . " " . .....['age']. " " . .
..... ['address']. "<br>");
}
mysqli_close($con);
?>
```

- (ii) If the above code is executed after completion, what would be the expected output?

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.....

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2. In any Sri Lankan state university, it is mandatory for students and lecturers to maintain 80% attendance. But, due to various reasons, most students do not attend lectures. It was found that friends of absent students sign on behalf of them to mark their attendance. Therefore, it takes a considerable amount of time to verify the signatures in the attendance sheet. The university has identified that students who fail to attend the lectures, do fail in their examinations which leads to students not completing their degrees. The university management has decided to design a system to mark attendance of students.

In order to implement this system, the university has planned to display a QR code in each lecture hall where the student would scan the code to enter the system. This would help mark attendance of students and also help the management retrieve necessary student information from the Student Management system. The students cannot log in to this system remotely but can only log in to this system via the local area network. This makes the system cost effective but it also helps to maintain the integrity of the attendance system. This system is set to be established for a specific time period for lectures pertaining to one particular subject. The management also decided that once the system initiates, marking attendance on a physical sheet will be completely stopped. Although this system is proposed, it was found that it may take a toll on the students who do not have a smartphone.

(a)

(i) Write a functional requirement of the above system.

.....  
.....

(ii) Write two non-functional requirements of the above system.

.....  
.....  
.....  
.....

(iii) When developing a system it is important to check its feasibility in terms of technical, economical and operational feasibility. Based on the scenario given above specify the feasibility studies conducted and not conducted, giving an example for each.

• Feasibility conducted: .....

Example: .....

• Feasibility not conducted: .....

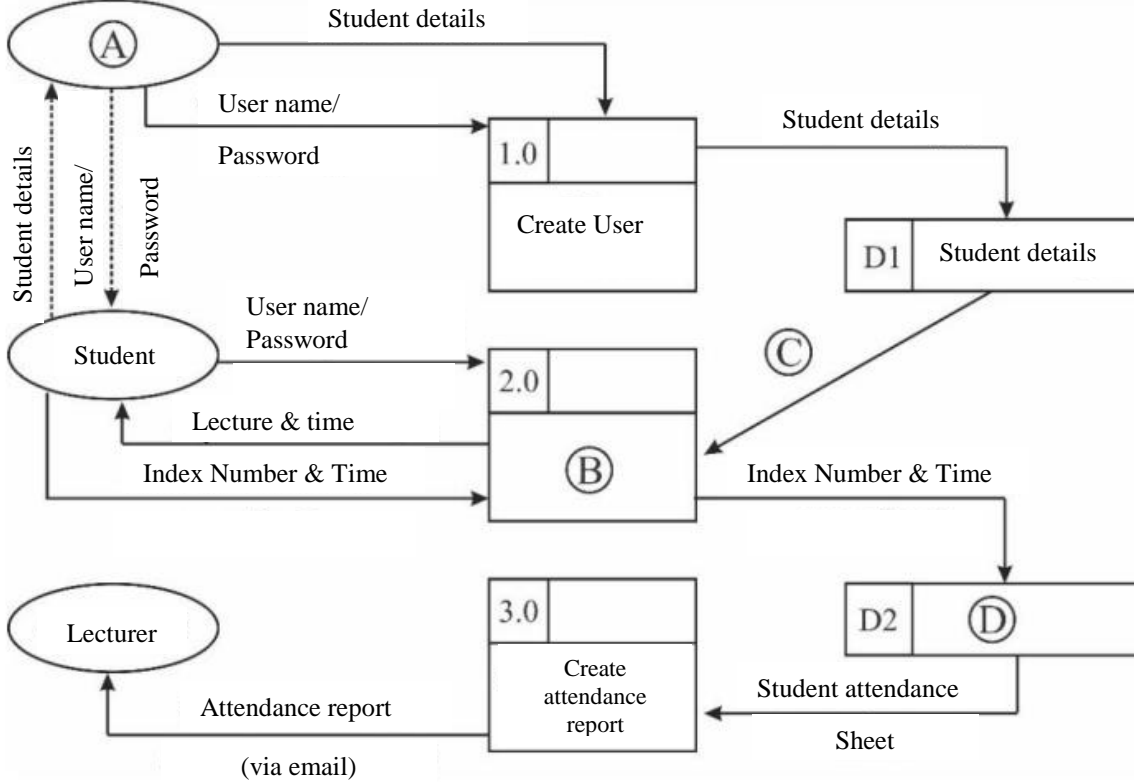
Example: .....

(iv) What deployment method(s) will be used to implement the above system?

.....

.....

(b) (i) The Data flow diagram pertaining to a student attending a lecture is given below. Identify and write the appropriate terms to complete the diagram using the list given below.



[List: Admin, Student attendance, Create user, Student details, User name/ password, Index number & time, Authenticating student details, Account log in]

A - ..... B - .....

C - ..... D - .....

(ii) Draw a Context diagram for the above system.

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(c)

(i) Specify a similarity and a dissimilarity between Spiral and Agile development models.

(ii) Prototyping can be used in both spiral and agile models. Do you agree? Justify your answer.

3. (a) In order to get enrolled to the Information Systems degree program conducted by the University of Colombo School of Computing (UCSC), a student has to obtain marks more than 60 from the aptitude test.

The test has 50 questions and each question carries 02 marks. If a student does not know the answer to a question he/she can leave the question without answering. But if a student answers a question incorrectly, each incorrect answer receives -1 marks.

Draw a flowchart to output the total marks received by a student and the status (selected or not selected) when the attempted questions and no. of correct answers are entered in to the system

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(b) Write a Python code for the above flowchart.

(c) What would be the output of the given python code if 20, 16, 8, 12, -5 is entered as inputs?

What is the purpose of this python code?

```
L = []
n=int(input())
while(n>0):
    L.append(n)
    n=int(input())
m = min(L)
F = False
while(m>=1 and not F):
    for k in L:
        if k%m == 0:
            F = True
        else:
            F = False
        if not F:break
    m-=1
print(m+1)
```

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(d) The incomplete code to rearrange (descending order) values of a given list using bubble sort technique is given below. Complete it.

```
def bubbleSort(lst):  
    for i in lst:  
        i = 0  
        while ..... :  
            if(.....):  
                ....., ..... = ....., .....  
            i+=1  
    return lst
```

4. (a) Select the most suitable term from the list given below.

[List: E-marketplace, Virtual store, Information broker, Virtual community, Content provider]

- (i) ..... is a business website. Customers can inquire, order and purchase products via this platform.
- (ii) ..... are individuals or entities that share ideas, experiences and experimental information via the internet.

(b) The major issue behind the evolution of ICT is **Digital divide**. Write two causes for digital divide and two ways to establish **Digital bridge**.

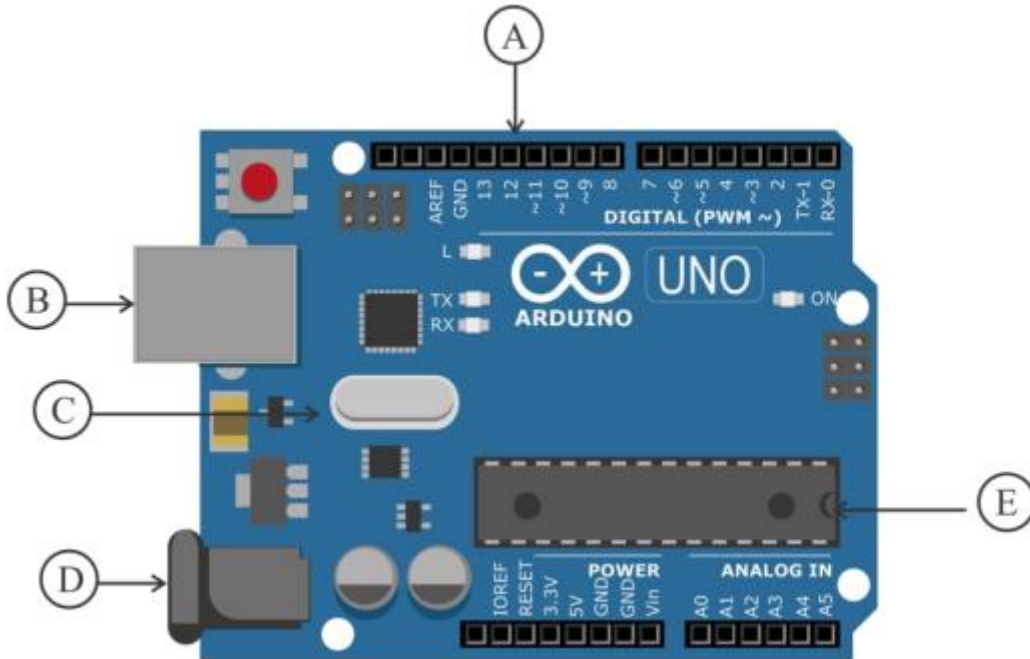
.....  
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(c) **Green Computing** concept was introduced to minimize and control e-waste. Specify how e-waste is properly managed via this concept.

.....  
.....  
.....

(d) Identify the parts of the given Arduino board from the list provided.

[List: Micro controller, Digital pins, USB connect, Power Port, Crystal oscillator, Analog pins, Voltage regulator, Reset switch, USB interface chip]



- A - .....
- B - .....
- C - .....
- D - .....
- E - .....

(e) The distance between two computers connected via the internet is 1500km. The speed of data transmission is  $3 \times 10^5$  km/s. To check the connectivity between the two devices, ping command is used. What would be the round trip time in milliseconds, obtained via the ping command?