

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Electrical & Computer Engineering



Study Programme	: Bachelor of Software Engineering Honors
Name of the Examination	: Final Examination
Course Code and Title	: ECI4164/EEI4364 Networking & Web Technology
Academic Year	: 2019/2020
Date	: 25 th July 2020
Time	: 0930-1230hrs
Duration	: 3 hours

1. Read all instructions carefully before answering the questions.
2. This question paper consists 2 part of **Five (5)** questions in **Five (5)** pages.
3. **Part A** is compulsory. **Part A** consist of **One (1)** question.
4. **Part B** consist of **Four (4)** questions. Answer any **Three (3)** questions from **Part B**.
5. **Part A** carry **40** marks. **Part B** carry **20** marks in each.
6. Answer for each question should commence from a new page.
7. This is a Closed Book Test (**CBT**).
8. Answers should be in clear handwriting.
9. Do not use red color pen.

Part A - Answer all parts in question 01

Q1.

Super Serve is a supermarket chain, having branches island wide. They have their head office in Colombo. And they have a few grades of outlets as follows.

Grade 01 - Groceries, Pharmaceutical and electronic items

Grade 02 - Groceries and Pharmaceuticals only

Grade 03 - Groceries only

They have grade 01 outlets in Kandy, Colombo and Galle only. Each grade 01 branch is managing several grade 02 branches, and each grade 02 is managing a few grade 03 branches. They are planning to have a network of their own by considering the followings.

- To centrally manage all outlets
 - To connect all the outlets, for the business to run smoothly by quickly delivering goods between their outlets as needed.
 - To get daily sales details
 - To manage employees and their attendance, overtime hours etc.
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- a. Draw a network diagram for this network
(15)
 - b. Explain the reasons for selecting specific hardware devices in the diagram above (switches, routers etc.)
(15)
 - c. Explain how you would use cabling in this network (consider cost and performance requirements)
(10)

Part B - Answer any three (3) questions from below (All questions carry equal marks)

Q1.

- a. Compare TCP and UDP, briefly explain using examples for each
(5)
- b. List advantages of using fiber optic cabling in networking
(5)
- c. Your router has the following IP address on Ethernet0: 192.24.91.1/28 list down 5 valid IP addresses on the LAN interface attached to the router
(5)
- d. If the subnet mask is 255.255.248.0 how many IP addresses are supported in this network
(5)

- d. If the subnet mask is 255.255.248.0 how many IP addresses are supported in this network

(5)

Q2.

- a. Write HTML of the following table,

(10)

Header 01	Header 2	Header 3	Header 4

- b. Briefly explain 3 advantages of web applications over desktop applications.

(6)

- c. Explain the difference between HTML and XML

(4)

Q3.

- a. Write a JavaScript function to take two integer arguments and return the result by dividing the first argument by the second, if the second argument is 0 then the function should return NAN

(8)

- b. Write JavaScript code for a person object, with attributes, *firstName*, *lastName*, *age*, *height*

(8)

- c. Write a loop in JavaScript to print integers 50 to 1

(4)

Q4.

- a. Consider the XML and write XPATH, path expressions to select below information.

(15)

- i. First element of the plant catalog
- ii. Last element of the plant catalog
- iii. First two elements of the plant catalog
- iv. Select all plants where price is greater than \$7

- v. Select all BOTANICAL elements where price is less than \$5

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<CATALOG>
```

```
  <PLANT>
```

```
    <COMMON>Bloodroot</COMMON>
```

```
    <BOTANICAL>Sanguinary canadensis</BOTANICAL>
```

```
    <ZONE>4</ZONE>
```

```
    <LIGHT>Mostly Shady</LIGHT>
```

```
    <PRICE>$2.44</PRICE>
```

```
    <AVAILABILITY>031599</AVAILABILITY>
```

```
  </PLANT>
```

```
  <PLANT>
```

```
    <COMMON>Columbine</COMMON>
```

```
    <BOTANICAL>Aquilegia canadensis</BOTANICAL>
```

```
    <ZONE>3</ZONE>
```

```
    <LIGHT>Mostly Shady</LIGHT>
```

```
    <PRICE>$9.37</PRICE>
```

```
    <AVAILABILITY>030699</AVAILABILITY>
```

```
  </PLANT>
```

```
  <PLANT>
```

```
    <COMMON>Marsh Marigold</COMMON>
```

```
    <BOTANICAL>Caltha palustris</BOTANICAL>
```

```
    <ZONE>4</ZONE>
```

```
    <LIGHT>Mostly Sunny</LIGHT>
```

```
    <PRICE>$3.81</PRICE>
```

```
    <AVAILABILITY>051799</AVAILABILITY>
```

</PLANT>

<PLANT>

<COMMON>Cowslip</COMMON>

<BOTANICAL>Caltha palustris</BOTANICAL>

<ZONE>4</ZONE>

<LIGHT>Mostly Shady</LIGHT>

<PRICE>\$9.90</PRICE>

<AVAILABILITY>030699</AVAILABILITY>

</PLANT>

<PLANT>

<COMMON>Dutchman's-Breeches</COMMON>

<BOTANICAL>Dicentra cucullaria</BOTANICAL>

<ZONE>3</ZONE>

<LIGHT>Mostly Shady</LIGHT>

<PRICE>\$4.44</PRICE>

<AVAILABILITY>012099</AVAILABILITY>

</PLANT>

</CATALOG>

- b. What is XML Schema, and how it is related to XML? (2)
- c. Explain the relationship between XML and XSLT (3)

