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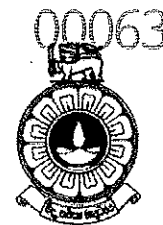# Faculty of Engineering Technology
Department of Electrical and Computer Engineering

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Study Programme	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	**: EEI4364/ECI4164 Networking and Web Technology**
Academic Year	: 2017/18
Date	: 31st January 2019
Time	: 0930-1230hrs
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.

2. This question paper consists of **Six (6)** questions in **Four (4)** pages.

3. Answer **the compulsory** questions given in **Section A** and any **Two (2)** questions from **Section B**. All questions carry equal marks.

4. Answer for each question should commence from a new page.

5. This is a Closed Book Test (CBT).

6. Answers should be in clear hand writing.

7. Do not use Red colour pen.

Section A - Answer all the questions in this section

Q1. [30 Marks]

Assume that you are asked to design a network for an international school chain. The school has several branches in the country. Each school three(3) departments, *Administrations*, *Learning and Development,* and *Health and Sports*.

All the class rooms and the library are under the department of *Learning and Development*. In each class, there is a device that can read a barcode and mark the attendance of students. These records are stored locally in the school. There is a printer and a computer in the library.

Gymnasium room and the Pool go under *Health and Sports* department, and Sports complex and Pool have several surveillance cameras that function all day.

Students are enrolled to the school in the *Administrations* department and there are 10 computers and 2 shared printers. There are two devices used by the staff to mark their daily attendance.

a) Draw a network diagram with the required hardware devices for this network.

[12 Marks]

b) Explain the reasons for selecting specific hardware devices in the diagram above.

[12 Marks]

c) Explain the type of cabling you would use in this network.　　　　　[06 Marks]

Q2. [20 Marks]

a) What is a peer-to-peer network? Draw a simple network diagram and explain.

[02 Marks]

b) List advantages and disadvantages of peer-to-peer networks.

[03 Marks]

c) Your router has the following IP address :
Ethernet0: 172.16.2.1/25
List down 5 valid IP addresses on the LAN interface attached to the router.　　　[05 Marks]

d) What is the subnet mask of the address 10.16.3.65/5?　　　　　[05 Marks]

e) What is the maximum number of IP addresses supported in the network with subnet mask 255.255.255.192　　　　　[05 Marks]

Section B - Answer any **two (2)** questions from this section.

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Q3. [25 Marks]

a) What is the organization that publish web standards ?   [02 Marks]

b) What is an XML schema, and how it is related to XML ?   [05 Marks]

c) Write XML code to represent the following device records.   [12 Marks]

DeviceID	DeviceName	Manufacturer	Condition
002151	Engine mount	Honda	Brand new
002569	Brake pads	Toyota	Brand new
001423	Injector	Boss	Reconditioned

d) What is the relationship between XML and XPath? What type of a data structure is generated from XPath and XML?   [06 Marks]

Q4. [25 Marks]

a) What are DOM and DOM nodes?   [05 Marks]

b) What is the data structure that DOM breaks an HTML page into?   [03 Marks]

c) State one method in DOM and explain how it works.   [10 Marks]

d) Can you use DOM to change style of HTML elements? Explain.   [07 Marks]

Q5. [25 Marks]

a) Write a JavaScript function that takes three numbers as arguments and return the largest value of three.

e.g.

   a. largestNum(5, 6, 2) should return 6
   b. largestNum(1, 9, 8) should return 9   [10 Marks]

b) What is the difference between $=$, $==$ and $===$ in JavaScript?   [06 Marks]

c) Write a JavaScript code for an object called *vehicle*, with attributes color set to Red, make set to Ford, model set to Mustang, year set to 2016   [09 Marks]

Q6. [25 Marks]

a) Briefly state the difference between GET and POST methods. State how to decide which method to use   [08 Marks]

b) Assume that there is an indexed array in your program with a list of vehicle makers, write a loop using PHP to echo those names.   [07 Marks]

c) Write down a PHP code to echo the grade of a subject, based on the score
   Score > =75 is an A
   75 > Score >= 65 is an B
   65 > score >= 50 is an C
   50 > score >= 40 is a D   [10 Marks]