

THE OPEN UNIVERSITY OF SRI LANKA

Department of Electrical and Computer Engineering
Final Examination 2013 /2014

**ECI 4164 – Networking and Web Technology****Closed Book Test****Time: 09:30-12:30 hrs.****Date 02.09.2014**

INSTRUCTIONS TO CANDIDATES

1. This question paper contains 3 questions in part A, and 3 questions in part B on 3pages.
2. Answer **TWO** questions from **PART A** including question 1 and another.
3. Answer any **TWO** questions from **PART B**.
4. Each question carries 25 marks.

Part A**Answer question 1 and one question from question 2 and question 3.****Question 1**

Assume you need to design a computer network for Insurance Company in Sri Lanka.

The company has its head office at Colombo and four main branches in Galle, Badulla, Jaffna and Batticaloa. It also has 25 sub branches. The four main branches are connected to the Oracle database server and the Insurance system server at the head office. Apart from the two servers, there are four laptops in the head office. Servers are connected to a network switch and four laptops are connected to another network switch.

Each main branch has 3 PCs, 1 network printer and 1 network scanner. All these equipment are connected to a network switch.

Head office is connected with four main branches via routers.

Answer the following questions, based on the above scenario.

- a) Draw a suitable network diagram for the above network (you do not need to draw the sub branches network).
(Marks 10)
- b) Briefly explain the purpose of placing switches and routers in branches and head office.
(Marks 10)
- c) Why is it required to install server operating systems (Windows 2008, Windows 2012, etc...) in server machines rather than installing desktop operating systems (eg: Windows XP, Windows 7, etc...)?
(Marks 05)

Question 2

Suppose you have to determine IP addresses and other necessary information for a given network. You have been given the following IP address in CIDR notation.

192.168.70.0/26

- a) Find the subnet mask for the given IP range. **(Marks 10)**
- b) Find number of IP addresses can be allocated for the given network. **(Marks 05)**
- c) Determine the number of hosts in the given IP range. **(Marks 05)**
- d) Determine the network class that the given IP range belongs to. **(Marks 05)**

You should clearly show and briefly explain the steps of calculation and how you determine the answers.

Question 3

- a) Briefly explain the OSI layered model with functions and protocols related to each layer. **(Marks 10)**
- b) Briefly explain the network topologies. **(Marks 10)**
- c) How do you categorise a network according to the distance? Briefly explain with examples. **(Marks 05)**

Part B

Answer any two questions.

Question 4

- a) Explain how browsers display web pages. **(Marks 05)**
- b) Describe the following acronyms and write a brief description of each. **(Marks 10)**
 - a. DNS
 - b. TCP/IP
 - c. DTD
 - d. SMTP
 - e. HTTPS
- c) Briefly explain and give an example for Inline CSS, Embedded CSS and External CSS. **(Marks 10)**

Question 5

- a) Write four JavaScript statements that each adds 1 to variable x, which contains a number.
(Marks 05)
- b) Assume you have been assigned to write a PHP program to determine a student's grade in the final year examination.

There are four subject marks to be input to a form (Subject1, Subject2, subject3 and Subject4). When you press the button called "Grade" after input of marks for the subjects a message needs to pop up.

Average > 75 = "You got a merit pass"
 60 < Average < 75 = "You got a credit pass"
 40 < Average < 60 = "Pass"
 40 > Average = "Fail"

(Marks 20)**Question 6**

- a) Briefly explain XML Parser
(Marks 05)
- b) Briefly explain Web services
(Marks 05)
- c) Write a XML file to represent following student records.

SID	SName	SAge
0001	Akila	20
0002	Namal	18
0003	Kanishka	23
0004	Viraj	22
0005	Amal	28

(Marks 15)

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