ITS323 – Quiz 1 Answers

Name: _____

ID: _____   Mark: _____ (out of 10)

Question 1 [7 marks]

In this question you must fill in the space by choosing a word/phrase from the following list. There may be more than one correct answer. 1 mark per correct answer.

application	data link	hardware	ISP	LAN	logical	network
physical	port	protocol	standard	transport	WAN	

Operating System (OS)

Network Interface Card (NIC)

National Internet Exchange (NIX)

International Internet Gateway (IIG)

a) The **application** layer in the TCP/IP protocol stack includes HTTP for web browsing.

b) In the Internet protocol architecture, the **physical** layer includes the task of converting transmitted signals into bits.

c) The **transport** layer includes the task of reliably delivery of data between application processes.

d) 80 is the default **port | transport** address used by web servers.

e) 123.72.201.4 is an example of a **network | logical** address.

f) The **network | transport** layer is normally implemented in the operating system.

g) A **LAN** is normally used for communications with a building or campus, but not across a city.

h) The **network** layer includes protocols for determine a path across the Internet.

i) **Port | transport** addresses are used to identify application processes in a computer.

j) A router must implement the **physical | data link | network** layer of the TCP/IP protocol stack.

k) steve@hotmail.com is an example of a **application** address.

l) The address 00:17:31:5a:e5:89 is an example of a **physical | hardware | data link** address.

m) The **physical | data link** layer is normally implemented in the NIC.

n) Campuses or cities are normally connected via a **WAN**.

o) In the TCP/IP protocol architecture the **application | transport** layer provides end-to-end (or host-to-host) services.

p) The Internet Protocol (IP) is part of the **network** layer.

q) **Physical | hardware** addresses are used to identify a computer on a link.

r) A communications **standard** defines a protocol agreed upon by an organisation or set of companies.

s) Thailand ISPs provide access to overseas ISPs via **International Internet Gateways**.

t) The transport layer is normally implemented in the **operating system**.

u) Firefox and Internet Explorer normally implement protocols from the **application** layer.

v) Email and instant messaging protocols are part of the **application** layer.

w) The **application | transport** layer is part of hosts, but not needed for routers in the Internet.

x) A **protocol** sets rules and message formats for communication.

y) **Network | logical** addresses are used to identify a computer interface within a network.

z) Thailand-based ISPs connect to each other via **National Internet Exchanges**.

aa) The physical layer is normally implemented in the **Network Interface Card**.

ab) SIIT Bangkadi and Rangsit campuses are connected together via a **WAN | ISP**.

Question 2 [3 marks]

Consider a simple 2-layer protocol architecture. The top layer adds a 20 Byte header to data from the user, while the bottom layer adds a 10 Byte header and 10 Byte trailer. No segmentation is used. If a user generates 160 Bytes of data to send via this protocol architecture, what is the efficiency of the user using the link?

Answer

160 Bytes of data plus 40 Bytes of overhead = 200 Bytes sent over the link. Only 160 of the 200 are user data, therefore 160/200 = 4/5 = 80% efficient.

Question 3 [3 marks]

Consider a simple 2-layer protocol architecture. The top layer adds a 20 Byte header to data from the user, while the bottom layer adds a 15 Byte header and 15 Byte trailer. No segmentation is used. If a user generates 150 Bytes of data to send via this protocol architecture, what is the throughput of the user's data if using a 400kb/s link?

Answer

150 Bytes of data plus 50 Bytes of overhead = 200 bytes sent over the link. Only 150 of the 200 are user data, therefore 75% efficient. Throughput of 300kb/s over a 400kb/s link.

Question 4 [3 marks]

Consider a simple 2-layer architecture. The top layer breaks data into segments containing no more than 100 Bytes of data, and adds a 10 Byte header to each segment. The bottom layer adds a 20 Byte header. How many bits are sent across the link if the user generates 1000 Bytes of data to be

sent to the destination?

Answer

The 1000 Bytes of user data is divided into 10 segments of 100 Bytes. Each segment has 30 Bytes of overhead, so there are 10 x 130 bytes to be sent. 1300 Bytes = 10,400 bits.

Question 5 [3 marks]

Consider a simple 2-layer architecture. The top layer adds a 20 Byte header to the data. The bottom layer breaks the received data into segments containing no more than 3000 Bytes of data, and adds a 10 Byte header to each segment. How many bytes are sent across the link if the user generates 10,000 Bytes of data to be sent to the destination?

Answer

The 10,000 Bytes of user data has 20 Bytes of header added. The 10,020 is divided into 3 segments of 3000 Bytes and 1 segment of 1020 Bytes. Then a 10 Byte header is added to give 3 x 3010 Bytes + 1 x 1030 Bytes = 10,060 Bytes.