

UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session 1999/2000

September 1999

CSI504 - Computer Networks

Duration : [3 hours]

INSTRUCTION TO CANDIDATE:

- Please ensure that this examination paper contains **TEN** questions in **THREE** printed pages before you start the examination.
 - Answer **ALL** questions.
 - You can choose to answer either in Bahasa Malaysia or English.
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ENGLISH VERSION OF THE QUESTION PAPER

1. Give a brief description of the application and limitations of the following types of transmission media:

- (a) two-wire open lines.
- (b) twisted pair lines.
- (c) optical fiber.
- (d) microwaves.

(10 marks)

2. To communicate with each other two computers have to establish communication. One of the problem to be solved in a link layer prior to establishing communication between two computers is the contention which is expressed in the following questions: What happens if both of computers try to transmit at the same time? Does one computer always win? Is there some rules to determine the behavior of computers?

Describe the techniques used to solve the above-listed problems on:

- (a) an Ethernet link.
- (b) on Token Ring link.

(10 marks)

3. A computer has embedded serial digital outputs named COM ports.

In public telephone systems, trunks from homes to local switching stations are analog, whereas trunks between stations in towns, or between towns, employ digital transmission.

Explain how two home computers located in remote towns can communicate with each other over a public telephone network. Draw corresponding figure.

(10 marks)

4. In most networks, the data link layer handles transmission errors by requesting damaged frames to be retransmitted. Such method requires a receiver send acknowledgments back to a transmitter. Assume that the acknowledgments are never lost.

What links does not allow to apply the method? Discuss.

(10 marks)

5. Explain the meaning of the following terms relating to a network control protocol:

- (a) connectionless.
- (b) connection-oriented.

(10 marks)

6. List main types of network topology currently in widespread use for LANs.

With the aid of sketches, explain their major operation.

(10 marks)

7. MAN or WAN is a result of connecting LANs. To get LANs having different types, interconnected, bridges are used.

Produce a sketch of a typical bridge architecture, and, with the aid of an example, describe its principle of operation. With the aid of a sketch showing basic LAN types, discuss the issues involved in producing a bridged LAN.

(10 marks)

8. FTP allows to request for both a direct file transfer and a third party transfer. In the direct file transfer, a user A requests for transfer between A and B, in the third party transfer, a user A requests for transfer between B and C.

What logical connections, e.g., A-B, B-C, C-A, are necessary for these transfers? Explain your answer.

(10 marks)

9. Explain the meaning of the following terms relating to e-mail system:

(a) mailbox.

(b) native mail.

(c) mail header and keywords.

(10 marks)

10. Suppose that someone in the School of Computer Sciences at USM has prepared a web-page for common access and has put it in the directory

web/pub/for_all/page.html

What is the URL for this web-page likely to be?

(10 marks)