

UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session 1999/2000

September 1999

CTS501 • Data Communication

Duration : [2 hours]

INSTRUCTION TO CANDIDATE:

- Please ensure that this examination paper contains **SEVEN** questions in **THREE** printed pages before you start the examination.
 - Answer **ALL** questions.
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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.

(15 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.

(15 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.

(15 marks)

5. Discuss the principal function of data link control?

(15 marks)

6. Describe the unique characteristics of satellite communication. (15 marks)
7. You must interface two protocols. One protocol uses ASCII code, odd parity with 1s. The other protocol uses ASCII code, even parity with 0s.
- Is the error detection logic of these protocols acceptable for a compatible interface?
Explain why or why not. (15 marks)

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