

The University of Auckland

Department of Computer Science

COMPSCI 314 S1 C : Assignment 1.

Due : Thursday 11 March 2004, 4 pm.

- This assignment will contribute $\frac{5}{30}$ of the coursework mark and 5% of the overall course mark .
- The assignment must be submitted on paper to the assignment submission box at the Student Resource Centre in the Basement of the Maths/Physics building

These questions are mostly based on Chapter 1 of Shay, (or Chap 2 for Q 8) which you must read; few of the topics will have been mentioned in lectures before the assignment deadline, although most will be covered eventually.

Most of the questions are taken from the Review Questions and Exercises, on pages 51 to 54, but some are extended from what is in Shay.

Q 1 Shay Rv1 What is the difference between contention and collision? **[2 marks]**

~~**Q 2 Shay Rv16** Distinguish between upward and downward multiplexing.~~ **deleted**

Q 3 Shay Ex6 In Figure 1.20, list all the routes through which node C can communicate with node D, *giving the cost of each route*. (Assume a route does not pass through a node more than once.) **[4 marks]**

Q 4 Describe how parity is generated and used **[4 marks]**

Q 5 Shay Ex9 Explain when a single parity bit *will detect errors* and when it *will not detect errors*. **[4 marks]**

Q 6 Shay Ex7 Consider the following frames

011010111110001	x
101101000101101	x
101010100001000	x

Suppose x is the parity bit for each frame.

What must x be to establish even parity?

Odd parity? (6 values in total.)

[3 marks]

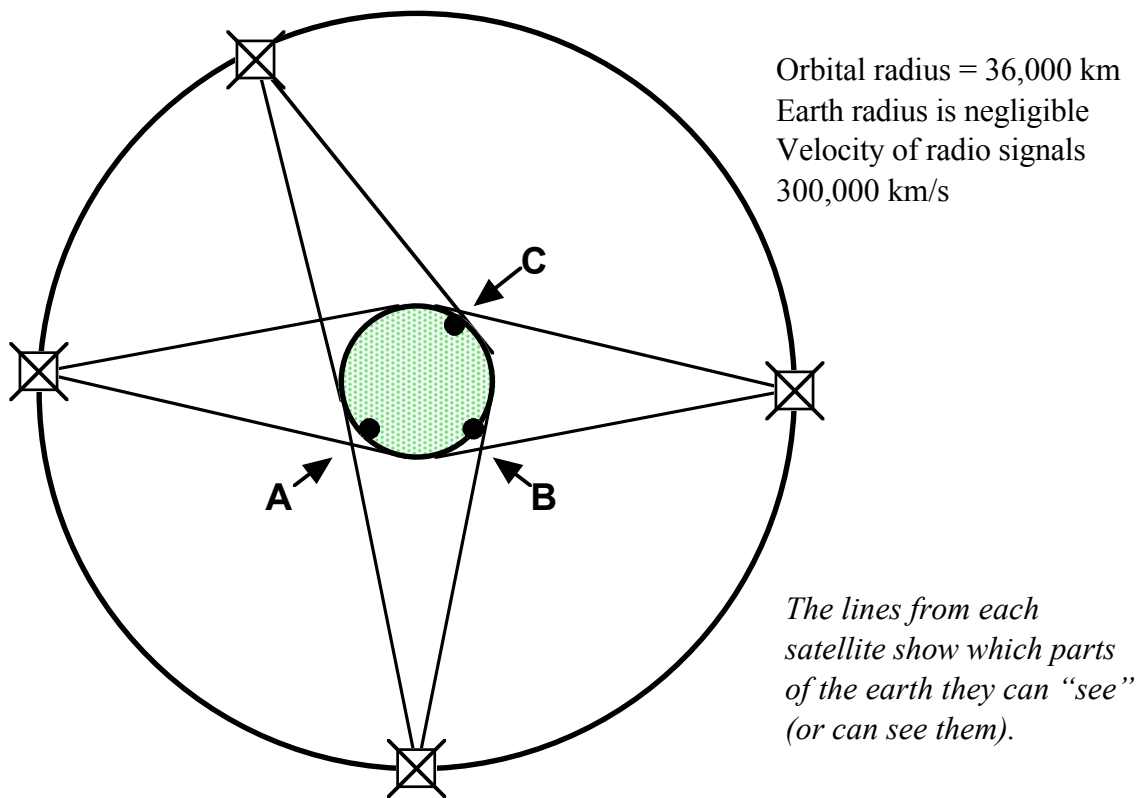
Q 7 Shay Ex14 How many direct connections would there be in a fully connected topology (or network) containing n nodes? **[2 marks]**

Q 8 *For this question, read about geosynchronous communication satellites in Chapter 2.*

(a) Why is a satellite called “geosynchronous”, and what are the special advantages for communications of such satellites ? **[2 marks]**

(b) For geosynchronous satellites as in the diagram over the page, if A sends a message to B, what is the least time that station A would have to wait for a reply from station B, and similarly sending to and getting a reply from station C? (*Assume that A can communicate with C through B.*) **[4 marks]**

Total = 25 marks



Here is "Figure 1.20 Route Costs" from Shay 2nd Edition
 (It is Figure 1.19 in the 3rd edition).

