PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Midterm Examination Semester I :   Academic Year : 2003

Date : 31 July 2003   Time : 9.00 – 12.00   Room : A201

Subject : 240 – 575 Special Topics in Information Network Engineering II

        (Differentiated Services in the Internet)

Instruction:

- Make sure that there are 5 problems (100 points) in your exam paper.

- This exam is closed book and you have 3 hours to complete your exam.

- All of your answers can be written either in Thai or English.

- Dictionary and Calculator are allowed.

- No palm pilots or other hand held computers are allowed.

Problem 1 (24 points)

1.1 Put the following headers in the correct order in the frame provided. *(4 points)*

    TCP, FTP, Ethernet and IP

				Application

1.2 According to the concept of "protocol layering", assume you have a large network which implements reliability at the data link layer. Is it necessary to have reliability at the transport layers as well? Answer yes or no, and give a reason to support your answer. *(10 points)*

1.3 Describe the end-to-end principle used in the Internet philosophy *(10 points)*

Problem 2 (25 points)

2.1 What is the main problem when emulating GPS (General Processor Sharing) with (unweighted) round-robin? *(5 points)*

2.2 **What problem does Fair Queueing address?** *(10 points)*

2.3 Description of the Weighted Fair Queueing (WFQ) algorithm. *(10 points)*

Problem 3 (26 points)

3.1 What does the word "Early" in the acronym RED of an active router refer to? Also, explain how this kind of router can achieve this goal? *(6 points)*

3.2 Why is the assumption of a transport protocol such as TCP important for RED to achieve its desired result? *(10 points)*

3.3 Suppose that two flows share the same queue. Flow 'A' is given a higher drop preference than flow 'B', as indicated in the figure below. Can we claim that flow 'A' is protected from flow 'B'? Why or why not? *(10 points)*
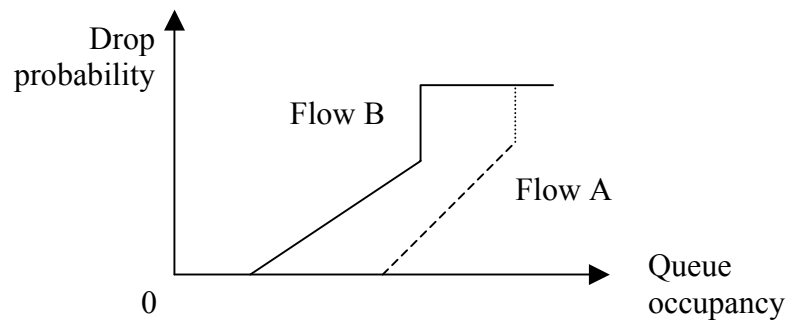
Problem 4 (15 points)

4.1 What are the differences between traffic shaper and traffic policer? *(5 points)*

4.2 Describe a (r, b) curve of token bucket descriptors for a source, and how does it help in selecting a traffic descriptor? *(10 points)*

Problem 5 (10 points)

5.1 How do two services of Integrated Services Internet (i.e. Guaranteed service and Controlled Load service) differ in principle? *(5 points)*

5.2 Describe RSVP operation and modes of filtering. *(5 points)*

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