

Student Name: \_\_\_\_\_ Student ID: \_\_\_\_\_

PRINCE OF SONGKLA UNIVERSITY  
FACULTY OF ENGINEERING

**Midterm Examination: Semester 2**

**Academic Year: 2010-2011**

**Date: December 24, 2010 (2553)**

**Time: 09.00-11.00 (2 hrs)**

**Subject Number: 241-464**

**Room: A401**

**Subject Title: Multimedia Networking**

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Name: \_\_\_\_\_ Student Number: \_\_\_\_\_

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**Exam Duration: 2 hours**

**Part I**

**This part of the paper has 7 pages (including this page).**

- Answer questions from Part I in the spaces provided in the examination paper.
- Clearly write your student number in the space provided at the top of each page.
- Write your name and student number in the spaces provided on this cover page.
- There are 90 marks total for this exam, 100 marks are from part I, the remaining 100 marks from part II. This will contribute 50% of the course total.

**Authorised Materials:**

- Anything the student can carry (except communication devices.)

**Instructions to Students for Part I:**

- Attempt all 6 questions in this part.
- Anything illegible is incorrect.
- Answer briefly where possible, essays are **not** required. There is no need to use all of the space provided for each answer!
- The marks allocated for each question are shown next to that question.
- *Answer questions in English.* Good English is **not** required.

*For marker's use only.*

1	2	3	4	5	6	Total

**PART I**

**Question 1.**

*(10 marks)*

For each of the following parts of this question, select the most appropriate answer from those given. *(Write the answers in the boxes provided)*

- i) TCP is not used for real-time traffic because:
  - A) TCP header adds too much overhead
  - B) TCP refuses to lose (discard) packets
  - C) TCP window size restricts transfer rate
  - D) Waiting for connection establishment takes too long
  
- ii) To decrease jitter in a network, the best strategy is likely to be:
  - A) increase network bandwidth
  - B) decrease network bandwidth
  - C) increase queue size in routers
  - D) decrease queue size in routers
  
- iii) Which of the following will **NOT** assist in achieving the minimum possible delay for packets that require speedy delivery?
  - A) provide the maximum possible bandwidth (link speed)
  - B) use a priority queueing scheme
  - C) classify packets and set Traffic Class
  - D) implement a less costly routing algorithm
  
- iv) A packet arrives at a router when the queue it should be added to is full. The router **must** then
  - A) make space by discarding something
  - B) discard all packets and begin again
  - C) find a different path through the network
  - D) discard the packet that just arrived
  
- v) A Playout (jitter) Buffer will **NOT**:
  - A) reorder packets into the correct order
  - B) decrease available bandwidth
  - C) add delay to the arrival time at the application
  - D) smooth packet bursts



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**Question 3.**

*(15 marks)*

Policing of packet flows at entry points to a network (ingress points) is essential to properly implementing any Quality of Service mechanism.

Do you believe this is **True** or **False** ?

*(Write T or F in the box provided)*

Why?

*That is: why do you believe that the statement at the beginning of the question is true, or false?*

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**Question 4.**

*(25 marks)*

An application needs to send 80,000 bits/second (10,000 bytes/second). It could achieve that by sending 100 packets per second, each containing 100 bytes of data. Or it could achieve that by sending 500 packets per second, each containing 20 bytes of data. Or, it could send 10 packets a second, with 1000 bytes in each packet.

A) Explain the advantages and disadvantages of each choice.

[15 marks]

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B) If the maximum acceptable delay between sender and recipient is 120 milliseconds, and the speed of light and transmission delays for the path between two nodes total 20 milliseconds, which packet size (of the three possibilities offered, that is 100, 20, or 1000 bytes) would be the best choice, **and why?**

[10 marks]

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**Question 6.**

*(5 marks)*

Which of the following are **NOT** useful to assist with packet classification?

*(There might be more than one answer)*

- A) The IPv4 header **Protocol** field
- B) The packet length
- C) The source IP (v4 or v6) address
- D) The IPv4 packet identifier
- E) The UDP destination port number
- F) The IPv6 flow label

*(Write the answers in the boxes provided)*

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*Note that not all boxes require an answer, include the letters next to the answers that are correct, whether there are 1, 2, 3, or more, correct answers.*

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## PART II

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There are 5 questions in Part II.

Explain the following technical terms clearly, more marks will be given if you demonstrate some examples.

1. What is the voice packetisation? How does it work? (4 marks)

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2. From the figure below, please explain process number 1 to 5 (e.g. how it works, what it affects in term of performance, and quality).

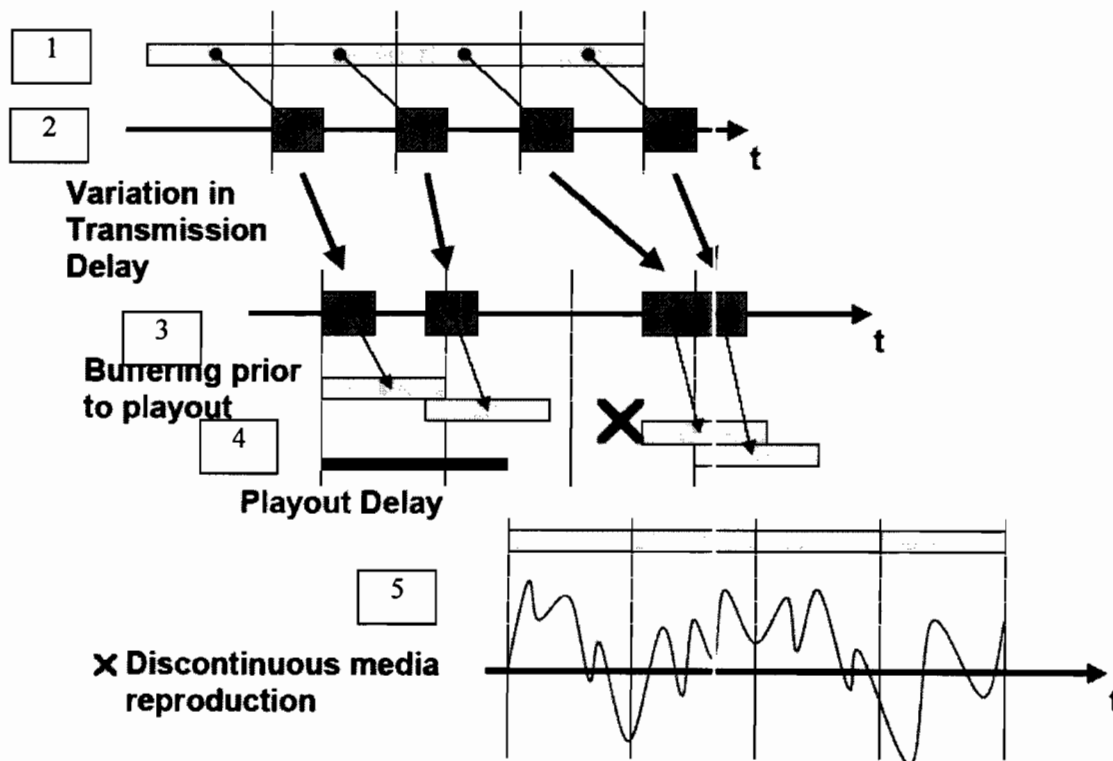


Figure 1 for question 1.2







