PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination: Semester 2   **Academic Year:** 2010-2011

Date: February 23, 2011 (2554)   **Time:** 09:00 – 12:00

Subject Number: 241-642   **Room:** S817

Subject Title: Multicast Protocol & Applications

Name: _____   Student Number: _____

Exam Duration: 3 hours

This paper has 6 pages (including this page).

- Write the answers 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 60 marks total for this exam.

Authorised Materials:

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

Instructions to Students:

- Attempt all 5 questions .
- 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	Total

Question 1.   *(25 marks)*

Give the sequence of events that might occur if an organisation decides to make available some audio and video event as a multicast transmission over the internet.

You can assume that a multicast capable IP network exists, and is correctly operating, and reaches the entire intended audience of the event.

Explain what needs to be done to establish the multicast session, and how each of the necessary steps may be accomplished.

Include all major steps from the initial decision to broadcast the event using multicast over the internet, until the event has concluded.

In the explanations, you need mention only one recipient, it can be assumed that any others perform similar acts in any ways.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Question 2.   *(12 marks)*

A)   Scalable Reliable Multicast (**SRM**) uses an unusual approach to error
      recovery (repair) compared to other reliable multicast protocols.

      Explain how SRM recovers from lost packets.

                                                        [8 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

B)   Indicate any problems that this approach causes.

                                                        [4 marks]

_____

_____

_____

_____

Question 3.   *(10 marks)*

    A)   Explain why the existence of a standard multicast address allocation method is desirable, and what the consequences would be without one.

                         [4 marks]

_____

_____

_____

_____

    B)   Why is this a difficult problem in general?

                         [2 marks]

_____

_____

_____

    C)   Explain the suggested IPv6 multicast address allocation mechanism, including in your answer an explanation why it is simple, and reliable.

          Consider the issues created by a large network (the whole Internet) when answering this question, and contrast IPv6 with IPv4 address allocation mechanisms.

                         [4 marks]

_____

_____

_____

_____

_____

_____

Question 4.   *(5 marks)*

It might be said that:

Multicast saves bandwidth on some network links, at the cost of consuming bandwidth on other links.

Do you agree? *(Write **Y** or **N** in the box provided)*

Explain your answer.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Question 5.   *(8 marks)*

Some protocols use multicast to avoid needing to send packets to multiple recipients many times, or otherwise arrange redistribution points. These protocols often work without difficulty using unicast when only two parties are involved.

Other protocols fail to function usefully if multicast is not available.

Give examples of such protocols, and explain why multicast is a requirement.

_____

_____

_____

_____

_____

_____

_____

_____

PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination: Semester 2

Date: February 23, 2011 (2554)

Subject Number: 241-642

Subject Title: Multicast Protocol & Applications

Academic Year: 2010-2011

Time: 09:00 – 12:00

Room: S817

Name: _____   Student Number: _____

Exam Duration: 3 hours

This paper has 6 pages (including this page).

- Write the answers 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 60 marks total for this exam.

Authorised Materials:

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

Instructions to Students:

- Attempt all 5 questions .
- 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	Total

Question 1.   *(25 marks)*

Give the sequence of events that might occur if an organisation decides to make available some audio and video event as a multicast transmission over the internet.

You can assume that a multicast capable IP network exists, and is correctly operating, and reaches the entire intended audience of the event.

Explain what needs to be done to establish the multicast session, and how each of the necessary steps may be accomplished.

Include all major steps from the initial decision to broadcast the event using multicast over the internet, until the event has concluded.

In the explanations, you need mention only one recipient, it can be assumed that any others perform similar acts in any ways.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Question 2.   *(12 marks)*

A)   Scalable Reliable Multicast (**SRM**) uses an unusual approach to error recovery (repair) compared to other reliable multicast protocols.

Explain how SRM recovers from lost packets.

[8 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

B)   Indicate any problems that this approach causes.

[4 marks]

_____

_____

_____

_____

Question 3. *(10 marks)*

A) Explain why the existence of a standard multicast address allocation method is desirable, and what the consequences would be without one.

[4 marks]

_____

_____

_____

_____

B) Why is this a difficult problem in general?

[2 marks]

_____

_____

_____

C) Explain the suggested IPv6 multicast address allocation mechanism, including in your answer an explanation why it is simple, and reliable.

Consider the issues created by a large network (the whole Internet) when answering this question, and contrast IPv6 with IPv4 address allocation mechanisms.

[4 marks]

_____

_____

_____

_____

_____

_____

Student Number:_____

Question 4.   *(5 marks)*

It might be said that:

Multicast saves bandwidth on some network links, at the cost of consuming bandwidth on other links.

Do you agree? *(Write* **Y** *or* **N** *in the box provided)*   ☐

Explain your answer.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Question 5. *(8 marks)*

Some protocols use multicast to avoid needing to send packets to multiple recipients many times, or otherwise arrange redistribution points. These protocols often work without difficulty using unicast when only two parties are involved.

Other protocols fail to function usefully if multicast is not available.

Give examples of such protocols, and explain why multicast is a requirement.

_____

_____

_____

_____

_____

_____

_____