

Name ID Section Seat No

Sirindhorn International Institute of Technology Thammasat University

Final Exam: Semester 1, 2013

Course Title: ITS323 Introduction to Data Communications

Instructor: Steven Gordon

Date/Time: Tuesday 15 October 2013; 9:00–12:00

Instructions:

- This examination paper has XX pages (including this page).
- Conditions of Examination: Closed book; No dictionary; Non-programmable calculator is allowed
- Students are not allowed to be out of the exam room during examination. Going to the restroom may result in score deduction.
- Turn off all communication devices (mobile phone etc.) and leave them at the front of the examination room.
- Write your name, student ID, section, and seat number clearly on the front page of the exam, and on any separate sheets (if they exist).
- The examination paper is not allowed to be taken out of the examination room. A violation may result in score deduction.
- Reference material included at the end of the exam may be used.

Question 1 [3 marks]

Multiple choice. Circle only one answer. 1 mark for a correct answer. 0 marks for an incorrect answer or no answer.

(a) Question text

- i. Answer option 1
- ii. Answer option 2
- iii. Answer option 3
- iv. Answer option 4
- v. Answer option 5
- vi. Answer option 6

(b) Question text

- i. Answer option 1
- ii. Answer option 2
- iii. Answer option 3
- iv. Answer option 4
- v. Answer option 5
- vi. Answer option 6

(c) Question text

- i. Answer option 1
- ii. Answer option 2
- iii. Answer option 3
- iv. Answer option 4
- v. Answer option 5
- vi. Answer option 6

Question 2 [12 marks]

Question description

(a) What is the value of ...? [1 mark]

(b) What is the value of ...? [2 marks]

Question 3 [11 marks]

Consider the network in Figure 1.

Figure 1: Network Topology

Assume flooding is to be used in the network to deliver a data packet from node H to node G.

- (a) What is the optimal value of ...? [3 marks]

Assume instead of flooding, adaptive routing ...

- (b) Draw the optimal ... [5 marks]

Question 4 [12 marks]

Assuming classless IP addressing is used, answer the following questions by writing your answers in the table. Unless otherwise stated, give all IP addresses in dotted decimal notation.

- (a) For a host with IP address 83.28.171.7/13: [3 marks]
- What is the network address?
 - What is the directed broadcast address?
- (b) For a host with IP address 21.103.46.1 and subnet mask 255.255.255.192: [4.5 marks]
- What is the network address?
 - What is the directed broadcast address?
 - What is the maximum number of IP devices that can attach to this subnet?
- (c) A host does not yet have an IP address configured, nor does it know its network address. [4.5 marks]
- Give an IP address that the host can send to in order to send to itself.
 - Give an IP address that the host can send to in order to deliver an IP datagram to all nodes on its subnet.
 - For the case of part (ii), give the source address of the IP datagram.

<i>Question</i>	<i>Answer</i>
(a) i.	
(a) ii.	
(b) i.	
(b) ii.	
(b) iii.	
(c) i.	
(c) ii.	
(c) iii.	

Reference Material

Selected well-known ports:

- FTP 20 and 21
- SSH 22
- Telnet 23
- SMTP 25
- DNS 53
- HTTP 80
- HTTPS 443

Selected Protocol numbers:

- 1 ICMP
- 6 TCP
- 17 UDP

Selected HTTP Status Codes:

- 200 Ok
- 304 Not Modified
- 401 Unauthorized
- 404 Not Found