# COIT20229 Networking with TCP/IP (Term1, 2015)

# Assessment item 1—Written Assessment

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| --- | --- | --- |
| **Due date:** | 11:30pm AEST, Friday, Week 10 | **ASSESSMENT** |
| **Weighting:** | 40% | **1** |

### Objectives

This assessment item relates to the course learning outcomes 1 to 5 as stated on page 7 of the course profile.

#### Instructions

Please write your answers to all questionsin the ‘Template for Your Answers’ Section of this document and upload only that template.**Please show all your working and steps**. Please ensure that you write your answers **in your own words** to avoid possible plagiarism and copyright violation. You can understand the Plagiarism Procedures by following the corresponding link in the CQUniversity Policies section of the Course Profile. You also need to upload the .pcap file for Question 4.

**Question 1 (3.5 marks)**

Router X running RIP has the following routing table:

|  |  |  |
| --- | --- | --- |
| Destination | Cost | Next Router |
| Net1 | 5 | A |
| Net2 | 3 | B |
| Net3 | 4 | C |
| Net4 | 2 | D |

1. Assuming no other route update message has been received, show the updated routing table after router X has received the RIP message shown below from router C after 200s:

(Net1, 2), (Net2, 2), (Net3, 2), (Net4, 1). (0.5 marks for each correct row entry)

1. Router X does not receive any update for another 90s. How many periodic, expiration and garbage collection timersare now running in router X? (0.5 marks for each correct answer)

**Question 2 (2 marks)**

An organisation has been granted a block of addresses starting with the address 172.154.60.0/22.

1. Create 3 subnets for this organisation with the first subblock of 250 addresses, the second subblock of 60 addresses and the third subblock of 10 addresses. (0.5 marks for each correct answer)
2. How many addresses are left? (0.5 marks)

**Question 3 (3.5 marks)**

Consider the following TCP header dump:

04210019 000007D0 00000641 50020800 00000000

1. What is the source port number? (0.5 mark)
2. What is the destination port number? (0.5 marks)
3. What is the sequence number? (0.5 mark)
4. What is the acknowledgement number? (0.5 marks)
5. What is the length of the header? (0.5 marks)
6. What is the type of the segment? (0.5 marks)
7. What is the window size? (0.5 marks)

**Question 4 (5 marks)**

Using Wireshark tool capture the packets at the same time that you download Lecture 1 from the COIT20229 Course Webpage. Before you undertake this task, you should have Wireshark installed in your home computer/notebook and connected to the Internet. It is recommended that you undertake the packet capture exercises using Wireshark that are scheduled for Weeks 8-9 before you attempt this question. You may not be able to complete this task in any CQUniversity lab.

1. Submit the captured pcap file. You should filter the file so that only TCP traffic is included. (1 mark)
2. What is the server IP address? (0.5 marks)
3. What is the application layer protocol involved? (0.5 marks)
4. What is the client port number for data download? (0.5 marks)
5. What is the server port number for data download? (0.5 marks)
6. How many data bytes have been downloaded? (0.5 marks)
7. What is the size of the downloaded Lecture 1 file? (0.5marks)
8. Discuss the difference in your answers to parts f) and g). You need to consider the packet formats in your discussion. (1mark)

**Question 5 (15 marks)**

Investigate the **emergingwireless broadband** services available in Australia and compile a brief report of around 1400 words. Your references may come from websites, white papers, government documents or published conference or journal papers. Your report should include brief descriptions of underlying technologies and protocols, bandwidth and QoS issues, recommended usages and the geographical areas covered as well as any other relevant information on such networks. Please ensure that you understand the term wireless broadband first before you undertake your literature research.

Your report should include only the body (about 1200 words), conclusion (about 200 words) and the reference list (Do not include the executive summary, table of contents and introduction). Use the sub-headings given in the template and include in-text references in the body of the report. Use Harvard style of referencing for the list of references and in-text references.

Marks allocation:

Body:

1. Underlying technologies and protocols. (3 marks)
2. Bandwidth and QoS. (3 marks)
3. Usages. (3 marks)
4. Geographical areas covered. (1.5 marks)
5. Any other relevant information. (1.5 marks)

Conclusion:

A well written coherent conclusion (2 marks)

References:

Adhered to Harvard reference style (1 mark)

**Question 6 (5 marks)**

Given the following IPv6 addresses in hexadecimal colon notation, answer the following questions. Where applicable provide your answers in fully expanded hexadecimal colon notation.

1. What is the full (expanded) address of the abbreviated IPv6 address FDEC::CF:0:FFFF? (1 mark)
2. What is the type of block of the abbreviated IPv6 address

2001:A100:FC1::A4B8:AE12:3217:FCBA? (2 marks)

1. What is the type of address of the abbreviated IPv6 address 0::FFFF:194.42.12.7? (2 marks)

**Question 7 (6 marks)**

Answer the following questionsin relation to Wi-Fi Direct technology. Your answers should include in-text references and a reference list.

1. Briefly describe its purpose? (1 mark)
2. What is its transmission distance from radio to radio? (1 mark)
3. Which standard coversthis technology? (1 mark)
4. What is the security method used? (1 mark)
5. Discuss if the creation of a Wi-Fi Direct multi-hop network is possible or not (use approximately 200 words). (2 marks)

**TEMPLATE FOR YOUR ANSWERS**

**COIT20229Networking with TCP/IP - Assessment Item1 (Term 1, 2015)**

**Fist Name: Last Name:**

**SID:**

**Write your answers in the spaces provided.**

|  |  |  |  |
| --- | --- | --- | --- |
| Question Number | | Mark  allocated | Mark earned |
| **Question 1: (3.5 marks)** | |  |  |
| a) | |  |  |  | | --- | --- | --- | | Destination | Cost | Next Router | | Net1 |  |  | | Net2 |  |  | | Net3 |  |  | | Net4 |  |  | | 2 |  |
| b) |  | 1.5 |  |
| **Question 2: (2 marks)** | |  |  |
| a) |  | 1.5 |  |
| b) |  | 0.5 |  |
| **Question 3: (3.5 mark)** | |  |  |
| a) |  | 0.5 |  |
| b) |  | 0.5 |  |
| c) |  | 0.5 |  |
| d) |  | 0.5 |  |
| e) |  | 0.5 |  |
| f) |  | 0.5 |  |
| g) |  | 0.5 |  |
| **Question 4: (5 marks)** | |  |  |
| a) |  | 1 |  |
| b) |  | 0.5 |  |
| c) |  | 0.5 |  |
| d) |  | 0.5 |  |
| e) |  | 0.5 |  |
| f) |  | 0.5 |  |
| g) |  | 0.5 |  |
| h) |  | 1 |  |
| **Question 5: (15 marks)** | |  |  |
| a) | **Underlying technologies and protocols** | 3 |  |
| b) | **Bandwidth and QoS** | 3 |  |
| c) | **Usages** | 3 |  |
| d) | **Geographical areas covered** | 1.5 |  |
| e) | **Any other relevant information** | 1.5 |  |
| f) | **Conclusion** | 2 |  |
| g) | **References** | 1 |  |
| **Question 6: (5 marks)** | |  |  |
| a) |  | 1 |  |
| b) |  | 2 |  |
| c) |  | 2 |  |
| **Question 7: (6 marks)** | |  |  |
| a) |  | 1 |  |
| b) |  | 1 |  |
| c) |  | 1 |  |
| d) |  | 1 |  |
| e) |  | 2 |  |
| **Late submission penalty** | |  |  |
| **Plagiarism penalty** | |  |  |
| **Total** | | 40 |  |