

# COMMONWEALTH OF AUSTRALIA

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Family Name	
Given Names	
Student Number	
Teaching Period	Semester 2, 2016

<b>FINAL EXAMINATION</b>	<b>DURATION</b>				
<b>HIT272 – Network Infrastructures</b>	<table border="1"> <tr> <td>Reading Time:</td> <td><b>10</b> minutes</td> </tr> <tr> <td>Writing Time:</td> <td><b>180</b> minutes</td> </tr> </table>	Reading Time:	<b>10</b> minutes	Writing Time:	<b>180</b> minutes
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**INSTRUCTIONS TO CANDIDATES**

The examination has **3** sections

<b>Section A:</b> Suggested Time:	<b>Multiple Choice Questions:</b> Answer ALL 30 questions 60 minutes Marks: 35
<b>Section B:</b> Suggested Time:	<b>Short Answer Questions:</b> Answer ALL 8 questions 80 minutes Marks: 40
<b>Section C:</b> Suggested Time:	<b>Mathematical Problems:</b> Answer ALL 2 questions 40 minutes Marks: 25

For **Section A:** Read **ALL** questions carefully. Questions must be answered on the answer sheet provided in **this** examination paper and **must be handed** in with your answer sheet booklet.  
 For **Section B:** Read **ALL** questions carefully. Questions must be answered in the Answer Booklet provided.  
 For **Section C:** Read **ALL** questions carefully. Questions must be answered in the Answer Booklet provided.

**EXAM CONDITIONS**

**You may begin writing from the commencement of the examination session.** The reading time indicated above is provided as a guide only.

- This is a CLOSED BOOK examination
- Any non-programmable calculator is permitted
- No handwritten notes are permitted
- No dictionaries are permitted

<b>ADDITIONAL AUTHORISED MATERIALS</b>	<b>EXAMINATION MATERIALS TO BE SUPPLIED</b>
No additional printed material is permitted	1 x 20 Page Book 1 x Scrap Paper

**THIS EXAMINATION IS PRINTED  
DOUBLE-SIDED.**

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BLANK.**

**Section A**  
**Multiple Choice Questions**  
**Total No of Marks for this section: 35**

This section should be answered on the Answer Sheet provided. Please ensure that your name and student number have been written on the Answer sheet and place in the completed answer Booklet.

Marks for each question are indicated. Suggested Time allocation for Section A: 60 mins

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## Section B

### Short Answer Questions

**Total No of Marks for this section: 40**

This section should be answered in the Answer Booklet provided.

**Please Note:** All Questions carry **Equal** marks.

Suggested Time allocation for Section B: 80 mins

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#### Question 1

- (a) Explain any two of the major roles provided by Windows Server 2008 or later editions.  
(Marks: 1.5)
- (b) Discuss the importance of “ping” and “netsh” in configuring network connectivity.  
(Marks: 1.5)
- (c) Define any one of the name resolution methods included in NetBIOS.  
(Marks: 2.0)

#### Question 2

- (a) Name at least four methods that you can use to improve the security of wireless access points? Explain anyone of them.  
(Marks: 2.5)
- (b) Discuss any two of the IPv6 transition technology which allows IPv6 to be used across a routing infrastructure that supports only IPv4.  
(Marks: 2.5)

#### Question 3

- (a) What is the importance of configuring Active Directory-Integrated Zone in the DNS setting? When do you need to configure the secondary zone?  
(Marks: 2.0)
- (b) Choose any two of the DNS records and explain them with example. What is the difference between DHCP reservation and DHCP exclusion?  
(Marks: 3.0)

#### Question 4

- (a) Define the two most common DHCP options? (Marks: 2.5)
- (b) Define the two phases that we need in establishing the IPsec connection? (Marks: 2.5)

#### Question 5

- (a) Write down the commands of the following:
- View the IP and the MAC address of the machine.
  - View the ipv4 routing table.
  - Promote the servers as a Domain Controller.
  - View the DNS client cache.
  - Clear the DNS client cache.
- (Marks: 5.0)

#### Question 6

- (a) Given the Class B address with slash notation: 166.12.0.0 / 19. Write down the possible subnet addresses. (Marks: 2.5)
- (b) What are the two authentication mechanisms Windows Server 2008 supports for logging on to the server or domain and which one is more efficient? (Marks: 2.5)

#### Question 7

- (a) What is the importance of configuring anti-replay protection in IPsec? (Marks: 2.0)
- (b) IPsec by default operates in transport mode, which is used to provide end-to-end security between computers. However, when a particular VPN gateway is not compatible with L2TP/IPsec VPNs, you can use IPsec in tunnel mode instead. What happens to the entire IP packet when IPsec operates in tunnel mode? (Marks: 3.0)

#### Question 8

- (a) What is the reverse lookup zone for the network: 1234:5678:ABCD:FF21:/64? (Marks: 1.5)
- (b) How DHCP access is controlled through MAC filtering in Windows Server 2008 R2 environment? (Marks: 1.5)
- (c) Why do you need to create an Application Directory Partition for DNS? (Marks: 2.0)

**Section C**  
**Mathematical Problems**  
**Total No of Marks for this section: 25**

This section should be answered in the Exam Paper. Use the Answer Booklet provided to solve the mathematical problems.

Marks for each question are indicated. Suggested Time allocation for Section B: 40 mins

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**Question 1**

- (a) Convert the numbers and write down the equivalent base numbers in the bracket provided.

$$(652)_{10} = ( \quad )_{16} = ( \quad )_2$$

(Marks: 2.0)

- (b) Below is an IPv6 Extended Unique Identifier (EUI) Interface ID generated using the MAC ID. Write down the MAC address/ number in the bracket given.

$$11BC: FEFF: BE1C: C12B = [ \quad \quad \quad ]$$

(Marks: 3.0)

- (c) Show with calculation whether 10.0.0.149 a valid IPv4 address on the 10.0.0.0/25 subnet.

(Marks: 3.0)

## Question 2

You work in an international IT company which is named ABC. As a network administrator you need to chop the whole network into a number of subnets. Given the network address and the number of subnets needed:

Number of subnets needed: 19

Network address: 192.168.102.0 / 24

Find:

- (a) Number of bits borrowed: \_\_\_\_\_
- (b) Total number of subnets available: \_\_\_\_\_
- (c) Total number of usable hosts/subnet: \_\_\_\_\_
- (d) Write down the first five subnet address with slash notation.

Subnet	Network Address	First Host IP	Last Host IP	Broadcast address
0				
1				
2				
3				
4				

(Marks: 10.0)

- (e) A user in Subnet 0 wants to broadcast a message to all the users in Subnet 0. Which IP address the user should choose for broadcasting.

IP Address:

(Marks: 3.0)

- (f) A user in Subnet 1 was trying to ping a user in Subnet 2 and the ping reply comes with the message "Destination Host Unreachable". Explain in detail what action you should take in order to solve the problem.

(Marks: 4.0)

**Name:**

**Student ID:**

**Answer Sheet for Section A**

<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
<b>Q11</b>	<b>Q12</b>	<b>Q13</b>	<b>Q14</b>	<b>Q15</b>
<b>Q16</b>	<b>Q17</b>	<b>Q18</b>	<b>Q19</b>	<b>Q20</b>
<b>Q21</b>	<b>Q22</b>	<b>Q23</b>	<b>Q24</b>	<b>Q25</b>