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Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 2, 2017				

HIT272 – Network Infrastructures	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes
INSTRUCTIONS TO CANDIDATES		
The examination has 3 sections		
Section A:	Multiple Choice Questions: Answer ALL 30 questions	
Suggested Time:	60 minutes Marks: 35	
Section B:	Short Answer Questions: Answer ALL 8 questions	
Suggested Time:	80 minutes Marks: 40	
Section C:	Mathematical Problems: Answer ALL 2 questions	
Suggested Time:	40 minutes Marks: 25	
<p>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.</p> <p>For Section B: Read ALL questions carefully. Questions must be answered in the Answer Booklet provided.</p> <p>For Section C: Read ALL questions carefully. Questions must be answered in the Exam paper provided.</p>		
EXAM CONDITIONS		
<u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.		
This is a CLOSED BOOK examination		
No calculators are permitted		
No handwritten notes are permitted		
No dictionaries are permitted		
ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED	
No additional printed material is permitted	1 x 20 Page Book 1 x Scrap Paper	

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DOUBLE-SIDED.**

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LEFT 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

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

Question 1

- (a) Explain the importance of Hyper-V in Windows Server 2008. Why it is important to take a snapshot before you make any major changes to your sever operating system?
(Marks: 2.5)
- (b) Define any of the two major roles supported by Windows Server 2008 R2.
(Marks: 2.5)

Question 2

- (a) Explain the technology that is designed to allow an IPv4-only LAN to communicate with an IPv6-only LAN. What is the limitation of the technology you explained?
(Marks: 2.5)
- (b) Below is an example of IPv6 address
• fe80::d84b:8939:7684:a5a4%7
Explain the importance of this address and explain why zone ID is needed to be a part of IPv6 address?
(Marks: 2.5)

Question 3

- (a) What is the protocol used to encrypt the data in the network? Explain briefly the three authentication methods used in that protocol?
(Marks: 2.5)
- (b) Explain how the removal of broadcast traffic in IPv6 network takes places in resolving the MAC addresses of the network adapters.
(Marks: 2.5)

Question 4

(a) The exact mechanism by which NetBIOS names are resolved to IP addresses depends on the NetBIOS node type that is configured for the computer. Explain those NetBIOS node types that exist to configure the computer.

(Marks: 2.5)

(b) How can you determine the current node status assigned to a Windows computer?

(Marks: 2.5)

Question 5

(a) What is the major difference between Tracert and Pathping command? Which protocol use IPv4 to resolve broadcast addresses into Media Access Control (MAC) address of NICs?

(Marks: 2.5)

(b) Define briefly the process involved in address lease renewal between the DHCP client and the DHCP server.

(Marks: 2.5)

Question 6

(a) When it is important to use forwarders in configuring name resolution in DNS server? When do you think to use conditional forwarding in resolving DNS queries?

(Marks: 2.5)

(b) Explain in detail the DNS hierarchy taking any FQDN as an example.

(Marks: 2.5)

Question 7

(a) A busy server can transfer hundreds of frames a second, making it difficult to isolate the specific frames you need to analyse. To narrow down the data, you can use a capture filter or a display filter. Explain the difference between the two filters. Explain briefly at least two standard filters you can use to narrow down the data.

(Marks: 2.5)

(b) When do you configure IPv6 host in stateless mode?

(Marks: 2.5)

Question 8

- (a) Describe the purpose of the firewall and explain with example the three firewall profiles available to provide system security.

(Marks: 2.5)

- (b) Describe how NAP works to protect your network and highlight the importance of the different NAP enforcement types you can use.

(Marks: 2.5)

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

Question 1

Convert the following binary number into the equivalent base numbers.

$$(100110)_2 = (\quad)_{10} = (\quad)_{16} = (\quad)_8$$

(Marks: 3)

Generate IPv6 Extended Unique Identifier (EUI) Interface ID using the following MAC address. Write down the address in the bracket given.

$$11-B4-CD-1F-FF-04 = [\quad]$$

(Marks: 2)

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 4 equal subnets. Given the network address and the number of subnets needed:

Number of subnets needed: 4

Network address: 212.186.110.0 / 24

Find:

- (a) Number of bits borrowed: _____
- (b) Total number of subnets available: _____
- (c) Total number of hosts/subnet: _____
- (d) Total number of usable hosts/ subnet: _____

(Marks: 4x1 =4)

(e) Write down the subnet address with slash notation.

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

(Marks: 6.0)

(f) You are asked again to have another two sub-subnets in subnet 4. What will be the new address for the computers in subnet 4?

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

(Marks: 6.0)

(g) You are required to install a DHCP server in subnet 01. What type of address you should assign to the DHCP server and why? If your server is required to lease the IP address for Subnet 1 computers only what will be the DHCP scope in this scenario.

(Marks: 4.0)

Name:

Student ID:

Answer Sheet for Section A

Q1	Q2	Q3	Q4	Q5
Q6	Q7	Q8	Q9	Q10
Q11	Q12	Q13	Q14	Q15
Q16	Q17	Q18	Q19	Q20
Q21	Q22	Q23	Q24	Q25
Q26	Q27	Q28	Q29	Q30