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Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 2, 2018				

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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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 hardware-assisted virtualization support by the processor. When do you recommend installing Windows Server Core and what is the benefit of having server core in the network?
(Marks: 2.5)
- (b) Define the two major active directory services 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) What is the importance of APIPA and Alternate IP configuration? Explain with an example when do you need to configure a static IP and what is the mechanism of allocating static IP by DHCP server?
(Marks: 2.5)

Question 3

- (a) Given the Class B address with slash notation 166.12.0.0 / 19.
- Write down the possible subnet addresses.
 - What is the maximum number of hosts you can allocate with the given address?
(Marks: 2.5)
- (b) Explain briefly how the windows client computer can be identified using two different DNS suffixes.
(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 benefit of recording a NetBIOS name and its IP address in the Lmhosts file? How will you be able to access the Lmhosts file in a network?

(Marks: 2.5)

(b) Define briefly the process involved in address lease renewal between the DHCP client and the DHCP server and what happens when the client is unable to connect the DHCP server?

(Marks: 2.5)

Question 6

(a) Explain the two mechanisms used to remove stale resource records of DNS zone.

(Marks: 2.5)

(b) Define any one of the name resolution methods included in NetBIOS. Write down the commands of the following:

- View the ipv4 routing table.
- View the DNS client cache.
- Clear the local DNS cache.

(Marks: 2.5)

Question 7

(a) Explain in detail how the security for a security association (SA) is provided by the IPsec protocols.

(Marks: 2.5)

(b) Explain in detail the process of configuring zone replication for Active Directory Integrated Zones.

(Marks: 2.5)

Question 8

- (a) When do you need to setup a DHCP delay configuration? How the MAC filtering in DHCP works with Allow and Deny policy?

(Marks: 2.5)

- (b) Explain how you can use one single Public IP to give internet access to a private network of 50 computers.

(Marks: 2.5)

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

This section should be answered in the Answer Booklet provided.

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.

- $(1110110)_2 = ()_{10} = ()_{16} = ()_8$

(Marks: 3)

Write down the simplified version of the following IPv6 address.

- 21cd:0053:0000:0000:03ad:003f:af37:8d62

(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 number of subnets such that each subnet will have maximum 14 usable hosts IP. Given the network address:

- Network address: 188.192.102.0 / 24

(a) Write down the first five subnet network address with slash notation along with the first host IP, last host IP and broadcast address for each subnet.

(Marks: 10.0)

(b) You are asked again to have another 2 sub-subnets in subnet 3. What will be the new address for the computers in subnet 3?

(Marks: 6.0)

(c) You are required to install a DNS server and a printer in subnet 01. Write down the address and the subnet mask for DNS server and the printer.

(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