

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATICS AND INNOVATION SYSTEMS UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE COMPUTER SECURITY 2ND YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR KISUMU LEARNING CENTRE

COURSE CODE: IIT 3217 COURSE TITLE: NETWORK DESIGN & IMPLEMENTATION EXAM VENUE: STREAM: (BSc. Computer Security) DATE: 17/04/14 EXAM SESSION: 9.00 – 11.00 AM TIME: 2.00 HOURS

Instructions:

- 1. Answer question 1 (Compulsory) and ANY other 2 questions
- 2. Candidates are advised not to write on the question paper.
- **3.** Candidates must hand in their answer booklets to the invigilator while in the examination room.

QUESTION ONE (30 Marks)- Compulsory

a)	Explain network security. What are the types of security features used in client security.			
	types of network?	[7 Marks]		
b)	Briefly explain the three criterions necessary for an effective and efficient netw	fective and efficient network.		
		[6 Marks]		
c)	Explain why CSMA/CA is used for wireless network.	[3 Marks]		
d)	State and explain the different types of errors	[5 Marks]		
e)	y explain your understanding and the importance of subnetting of a network			
		[4 Marks]		
f)	You have configured a scope with an address range of 192.168.0.11 through			
	192.168.0.254. However, your DNS server on the same subnet has already been assigned			
	a static address of 192.168.0.200. With the least administrative effort, how can	you allow		
	or compatibility between the DNS server's address and DHCP service on the sub-			
		[5 Marks]		

QUESTION TWO (20 Marks)

a)	State the difference between CIDR and the traditional IP addressing.	Why is CIDR
	regarded as important?	[6 Marks]
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b) An organization is granted the block 192.168.2.0/24. The administrator wants to create subnets. [8 Marks]

[6 Marks]

- i) Find the subnet mask.
- ii) Find the number of addresses in each subnets.
- iii) Find the first and last addresses in subnet 1.
- iv) Find the first and last addresses in subnet 32
- c) Explain the token and the leaky bucket algorithms

QUESTION THREE (20 Marks)

- a) Explain the hidden station and exposed station problem of wireless. What is the solution to this problem? [5 Marks]
- b) Explain the different criterions used to evaluate transmission medium [6 Marks]
- c) A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is x³ + 1. Show the actual bit string transmitted. Suppose the third bit from the left is inverted during transmission. Show that this error is detected at the receivers end.
 [9 Marks]

QUESTION FOUR (20 Marks)

a) JOOUST., has a branch office connected to corporate headquarters with a slow WAN link. The company wants to minimize the amount of traffic generated by the local DNS server on this link and minimize DNS administration in the branch office. How would

you configure the DNS server to meet these requirements? Justify why the answer you have chosen is correct and why each of the remaining choices are incorrect. [7 Marks]

i). Disable round-robin and netmask ordering.

ii). Reduce the refresh interval in the SOA resource record for the primary zone.

iii). Do not configure any forward or reverse zones, but configure the server to use a forwarder.

iv). Configure the forward lookup zone with a WINS lookup record, and decrease the cache time-out value.

b) You are the system administrator for JOOUST. The University has grown rapidly over the past year, and currently JOOUST is using only a single DNS zone. Recently, the Procurement department has made several requests for DNS changes that were delayed. Users would like the ability to make their own DNS updates. What should you do to try to address this problem? [4 Marks]

c) You set up Performance Logs and Alerts to send a message to ComputerB to notify an operator when the Mnetwork bandwidth utilization on ComputerA reaches a certain level. However, ComputerB never receives the message sent from ComputerA. What must you do to enable messages to be sent by ComputerA and received by ComputerB? [4 Marks]

d) How is performance improved in CSMA/CD protocol compared to CSMA/CA protocol? [5 marks]

QUESTION FIVE (20 Marks)

a)	An 8-bit byte with binary value 10101111 is to be encoded using an even-pari	ty
	Hamming code. What is the binary value after encoding?	[7 Marks]
b)	Explain simple parity check code and checksum with example	[4 Marks]
c)	Explain briefly how firewalls protect network	[6 Marks]
d)	Explain why CSMA/CA is used for wireless network.	[3 Marks]