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University Examinations 2013/2014

FIRST YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE IN BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

BIT 2116– NETWORK DESIGN AND IMPLEMENTATION

DATE: APRIL 2013

TIME: 2HOURS

INSTRUCTIONS: Answer question one COMPULSORY and any other two questions

QUESTION ONE – 30 MARKS

(a) List and explain the main categories of network sizes and the devices and media used.

	(4 marks)			
(b) Discuss the similarities between the SDLC and the PDIOO design approaches.				
(c) Explain the two approaches used in the design of computer networks.				
(d) Distinguish between routing verses switching protocols.				
(e) Give the IEEE criteria used in defining a LAN.	(4 marks)			
(f) With the use of a diagram, explain the workings of the basic network topologies.	(4 marks)			
(g) With suitable examples explain the differences between a physical topology and a logical topology				
	(3 marks)			
(h) Outline the benefits and limitations of bottom-up network design as compared to the top-down				
network design.	(3 marks)			
QUESTION TWO -20 MARKS				
(a) Explain the usage of the following network management commands:				
i. ping	(2 marks)			

ii.nslookup(2 marks)iii.ipconfig/all(2 marks)

iv. ipconfig/release v. ipconfig/renew	(2 marks) (2 marks)			
(b) Briefly discuss the evolution of computer networking.				
(c) Illustrate and explain how the TCP/IP standard is implemented in a network.				
(d) Point out management concerns of an organization which intends to invest in a LAN.				
QUESTION THREE – 20MARKS				
(a) Give the definitions and uses of an ip-address.				
(b) Identify and explain the two main ip-addressing approaches.	(2 marks)			
(c) With the use of a table, explain the various classes of ip-addresses and how they differ	in terms of			
implementation.	(4 marks)			
(d) Explain the criteria used in identifying a particular ip-address class.				
(e) Distinguish between the following :				
i. Dumb terminals verses distributed systems	(2 marks)			
ii. Peer-to-peer verses client server networks	(2 marks)			
iii. The internet verses the world wide web	(2 marks)			
(f) Compare the OSI reference model to the TCP/IP model.	(4 marks)			
QUESTION FOUR – 20MARKS				
(a) List and explain Oppenheimer's considerations when analyzing technical goals and tra	deoffs during			
network design.	(4 marks)			
(b) Distinguish between network capacity verses throughput.	(2 marks)			
(c) Outline and illustrate the features of the following network designs:				
i. Flat design	(3 marks)			
ii. Hierarchical design	(3 marks)			
(d) Identity and explain the key network security strategies.	(4 marks)			
(e) Discuss the main areas of concern during network design and testing.	(4 marks)			

QUESTION FIVE – 20MARKS

(a)	Give t	hree classification of communication hardware and explain their usage.	(6 marks)			
(b)	(b) Expound on the following acronyms:					
	i.	10BASE –T	(2 marks)			
	ii.	10BASE-5	(2 marks)			
(c) Explain the following Transmission Methods:						
	i.	Parallel Transmission	(2 marks)			
	ii.	Centronics Interface	(2 marks)			
	iii.	Serial Transmission	(2 marks)			
(d) Give one disadvantage of using serial transmission.			(1 mark)			

(e) Given a transmission speed of 100kbps, how long would it take to download a 3MB data file from the internet? (3 marks)