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University Examinations 2012/2013

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

BBT 2204: NETWORK SYSTEMS ADMINISTRATION

DATE: AUGUST 2013

TIME: 2 HOURS

INSTRUCTIONS: *Answer question one and any other two questions*

QUESTION ONE – 30 MARKS

- a. Explain network size and the best IP addressing methods to apply to the following networking scenarios:
 - i. Connectivity between two laptops. (2 Marks)
 - ii. 15 desktops sharing a printer (2 Marks)
 - iii. 100 tablets accessing internet in a hotspot. (2 Marks)
- b. Define the following terms as applied in networking:
 - i. A node (2 Marks)
 - ii. A workstation (2 Marks)
 - iii. A dumb terminal (2 Marks)
 - iv. A hub (2 Marks)
- c. Discuss and illustrate Priscilla Oppenheimer's steps for designing a network. (4 Marks)
- d. Calculate the number of sessions expected at each of the following installations:
 - i. Ninety client machines accessing three database servers via SQL statements. (3 Marks)
 - ii. Ninety client machines accessing three database servers via six application servers. (3 Marks)
- e. Give a recommendation of the best solution from the above networks and explain the reason why. (2 Marks)
- f. Distinguish between parallel versus serial data transmission. (4 Marks)

QUESTION TWO – 20 MARKS

- a. Describe the three ways to modulate a digital signal on an analogue carrier signal. (3 Marks)
- b. Explain the encoding techniques used to encode digital data into digital signals. (4 Marks)
- c. With the use of a diagram, discuss the protocols at each level within the OSI reference model. (4 Marks)
- d. List and give examples of the three main technologies used in wireless physical media. (3 Marks)
- e. Discuss the systems administration concerns involved in wireless networks. (4 Marks)
- f. Distinguish between modulation versus transmission. (2 Marks)

QUESTION THREE – 20 MARKS

- a. Explain the three ways by which packets can be routed. (3 Marks)
- b. Define the term multiplexing and give example usage. (2 Marks)
- c. Specifically, there are two important rules for polite human conversation; list them. (2 Marks)
- d. Identify and explain the two main categories within the data link layer. (2 Marks)
- e. Describe the following:
- f. Give a brief history of the Aloha Protocol. (3 Marks)
- g. Explain the following modes of operation within the token ring:
 - i. Listen mode (2 Marks)
 - ii. By – pass mode (2 Marks)

QUESTION FOUR – 20 MARKS

- a. Explain the meaning of the term frame relay. (2 Marks)
- b. Distinguish between the SMTP and POP services. (4 Marks)
- c. Compare and contrast the Linux network operating system versus the windows network operating system. (4 Marks)
- d. Give a brief history of the Unix Network Operating System. (3 Marks)
- e. With the use of a diagram, explain the FTP processes. (3 Marks)
- f. Discuss the rationale behind grouping of the OSI layered Network Model. (4 Marks)

QUESTION FIVE – 20 MARKS

- a. Explain the usage of the following Linux commands:
 - i. ls-l (2 Marks)
 - ii. pwd (2 Marks)
 - iii. move (2 Marks)
 - iv. ping (2 Marks)
- b. List the main activities which network systems administrators are involved in. (4 Marks)
- c. With the use of a diagram, explain the 2-tiered versus the 3-tiered client server models. (4 Marks)
- d. Discuss the measures of network performance. (2 Marks)
- e. Explain the following acronyms:
 - i. FDDI (1 Mark)
 - ii. ISDN (1 Mark)