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University Examinations 2013/2014

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

BIT 2204: NETWORK SYSTEM ADMINISTRATION

DATE: APRIL 2014

TIME: 2 HOURS

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

QUESTION ONE – 30 MARKS

- a. Briefly describe the following terms as used with computer networks.
 - i. Signal
 - ii. Logical circuit
 - iii. Attenuation
 - iv. Noise
 - v. Data rate

(10 marks)
- b. With the help of a well labeled diagram, describe the five components of the basic communication model.

(10 marks)
- c. Give two advantages and two disadvantages of using twisted pair cable transmission medium.

(4 marks)
- d. Meru University would wish to extend the current network to the newly constructed tuition block. Outline the transmission media you would recommend for use to link the tuition building with the current network, and to provide network access within the building. In each case, give justification for your choice.

(4 marks)
- e. Distinguish between CSMA/CD and CSMA/CA schemes for bus networks.

(2 marks)

QUESTION TWO – 20 MARKS

- a. Consider the string 100101000110. Use the following encoding schemes to represent the string
 - i. Non- Return to Zero level
 - ii. Differential Manchester
 - iii. Bipolar AMI

(9 marks)
- b. With the help of a diagram, describe the structure of fiber optic cable.

(6 marks)

- c. Consider the domain name **ict.must.ac.ke**. Describe the DNS address resolution process for the address, assuming that no record is available in the DNS cache. (5 marks)

QUESTION THREE – 20 MARKS

- a. Using an appropriate diagram to illustrate, describe the three properties of an analog signal that are used in data encoding. (6 marks)
- b. With the help of an appropriate diagram, describe the TCP connection establishment process. (6 marks)
- c. Mr. Kimani, the network administrator at Nchiru Multipurpose co-operative society wishes to implement a security policy for the organizations network. The first time he tried, he received a lot of complaint from the users, that they can't access their records. He has come to you for advice on how to proceed in developing an effective security policy. Identify the possible reason why the users complained and describe the steps that he should take in coming up with the policy. (8 marks)

QUESTION FOUR – 20 MARKS

- a. Briefly describe the following application layer protocols:
- i. SMTP (3 marks)
 - ii. POP 3 (3 marks)
 - iii. FTP (3 marks)
 - iv. HTTP (3 marks)
- b. An organization is given the network address **123.14.7.0** for their network.
- i. Identify the IP address class for the address. Justify your answer. (2 marks)
 - ii. Describe the term subnet mask and determine the subnet mask for the address above. (2 marks)
 - iii. Give the address range for the addresses in the network, identifying the broadcast address. (2 marks)
- c. Distinguish between connection oriented and connectionless network services. (2 marks)

QUESTION FIVE – 20 MARKS

- a. Briefly describe the following network technologies.
- (i) X-25 (3 marks)
 - (ii) Token ring (3 marks)
 - (iii) FDDI (3 marks)
 - (iv) ISDN (3 marks)
- b. Define network performance and describe three measures of network performance. (8 marks)