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**University Examinations 2014/2015**

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

**BIT 2204: NETWORK SYSTEMS ADMINISTRATION**

**DATE: DECEMBER 2014 TIME: 2 HOURS**

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

**QUESTION ONE (30 MARKS)**

1. Briefly describe the following terms as used with computer networks (10 marks)
2. Acknowledgement
3. Bit error rate
4. Network performance
5. Attenuation
6. Security threat
7. State the four layers of the TCP/IP communication model and describe the services provides at each of the layers (8 marks)
8. Define collision and distinguish between collision detection and collision avoidance as used in bus networks (4 marks)
9. Give one advantage and one disadvantage of using fiber optic pair cable transmission medium as compared to coaxial cable (2 marks)
10. Meru University would wish to extend the current network to the newly constructed tuition block. Outline three internetworking devices you would recommend for use, stating where each would be used. Justify your choice (6 marks)

**QUESTION TWO (20 MARKS)**

1. Using an appropriate examples to illustrate, describe how the following encoding schemes work
2. Non-return to zero level (3 marks)
3. Differentiat Manchester (3 marks)
4. Bipolar AMI (3 marks)
5. With the help of an appropriate diagram, describe the TCP connection termination process (6 marks)
6. Consider the phrase:COME HOME NEXT WEEK MONDAY. Using an encryption the ceasar cipher with key=5, provide the ciphetext generated (5 marks)

**QUESTION THREE (20 MARKS)**

1. Using an appropriate diagram to illustrate, describe the frequency shift keying scheme as used in data encoding (6 marks)
2. With the help of a diagram, describe the structure of thicknet coacial cable (6 marks)
3. Using an example to illustrate, describe how the Domain Name System (DNS) works to resolve a name to an IP address (5 marks)
4. Define a routing table and briefly describe the role played by routing tables in computer networks (3 marks)

**QUESTION FOUR (20 MARKS)**

1. Briefly describe the following wireless transmission medium, giving the transmission rate, frequencies and segment length in each case
2. Satellite (3 marks)
3. Microwave (3 marks)
4. Broadcast radio (2 marks)
5. State and briefly describe four network performance measures (8 marks)
6. Distinguish between the following
7. Reliable network service and unreliable network service (2 marks)
8. Static routing and dynamic routing (2 marks)

**QUESTION FIVE (20 MARKS)**

1. An organization is given the network address **164.32.0.0** for their network
2. Identify the IP address class for the address. Justify your answer (2 marks)
3. Determine the subnet mask for the address above (2 marks)
4. Give the address range for the addresses in the network, identifying the broadcast address (4 marks)
5. Briefly describe the two basic ISDN services and how they help improve the performance of PSTN networks (6 marks)
6. Briefly describe the following network technologies
7. CSMA/CD (2 marks)
8. Slotted token (2 marks)
9. Frame relay (2 marks)