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* **Chapter 3: pg 82 - Question # 6 (was page#86 in 12th edition): Clearly explain the differences among analog data, analog transmission, digital data, and digital transmission.**

Digital and analog are two fundamentally different types of data that can flow through the circuit. Computers produce digital data that are binary, either on or off, 0 or 1. In contrast, telephones produce analog data whose electrical signals are shaped like the sound waves they transfer; they can take on any value in a wide range of possibilities, not just 0 or 1. Data can be transmitted through a circuit in the same form they are produced. And most computers transmit their digital data through digital circuits to printers and other attached devices. Analog voice data can be transmitted through telephone networks in analog form. In general, networks designed primarily to transmit digital computer data tend to use digital transmission, and networks designed primarily to transmit analog voice data tend to use analog transmission.

* **Chapter 3: pg 82 - Question # 9 (was page#86 in 12th edition): Briefly describe three important coding schemes.**

ASCII: is the most popular code for data communications and is the standard code on most microcomputers. And it has a 7-bits code type and a 8-bits code type

ISO-8859 is an 8-bit code that includes the ASCII codes plus non-English letters used by many European languages.

Unicode is the other commonly used coding scheme. There are many different versions of Unicode. UTF-8 UTF-16 and others. By using more bits the Unicode can represent more characters.

* **Chapter 4: pg 105 - Question # 2 (was page#112 in 12th edition): What is media access control, and why is it important?**

Media access control is the way when computers transmit use it. And it is just between two computers on the circuits and many permits can be transmit at any time.

It becomes important when many computers use the same circuits. It is critical to ensure that each two computers can not attempt to transmit data at the same time.

* **Chapter 4: pg 105 - Question # 11 (was page#112 in 12th edition): How do amplifiers differ from repeaters?**

An amplifier takes the incoming signal, increases its strength, and restransmits it on the next section of the circuits.

Repeaters are commonly used on digital circuits. A repeater receives the incoming signal, translates it into a digital message and retransmits the message.

* **Chapter 5: pg 143 - Question # 5 (was page#149 in 12th edition): How is TCP different from UDP?**

UDP is used when the sender needs to send a single small packet to the receiver, and it has a 8 bytes head, but the TCP has a 20 bytes. And UDP doesn’t need to worry about segmenting the outgoing messages or reassembling them upon receipt, so it can be fast. Unlike the TCP UDP does not check for lost messages, so occasionally a UDP datagram is lost and the message must be resent.

* **Chapter 5: pg 143 - Question # 24 (was page#149 in 12th edition): What type of routing does a TCP/IP client use? What type of routing does a TCP/IP gateway use? Explain.**

TCP/IP client use the static routing because it is decentralized which means that all computers or routers in the network make their own routing decisions following a formal routing protocol. And the client of TCP/IP will need to point to a single gateway router.

The TCP/IP gateway uses dynamic routing because it is used when multiple routes appears in a network. It will process multiple requests and choose the best routes when routing messages, which is TCP/IP usually need to do.

* **REFERENCES:**

Business Data Communications and Networking (13th Edition) [Fitzgerald, Dennis, Durcikova]

* **ASSIGNMENT GRADING RUBRIC:**

**\*\*\* DO NOT REMOVE BELOW GRADING RUBRIC FROM YOUR SUBMISSION \*\*\***

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|  | **Grade** | **Qualities Demonstrated by the Assignment Submission** | **Grade Assigned** |
| **Content (70%)**  **Measures the quality of the content in the assignment** | A+ 🡺 100 | The content demonstrates exceptional understanding of all relevant subject matter and its inter-relationships. All major relevant issues are thoroughly covered, and all content is very focused and on-topic. There is no known way to improve the content, and there are absolutely no technical or coverage errors present. |  |
| A 🡺 96 | The content demonstrates exceptional understanding of all relevant subject matter and its inter-relationships. All major relevant issues are thoroughly covered, and all content is very focused and on-topic. At most one insignificant technical or coverage error may be present |
| A- 🡺 92 | The content demonstrates deep understanding of all relevant subject matter and its inter-relationships. All major relevant issues are covered, and all content is on-topic. |
| B+ 🡺 88 | The content demonstrates understanding of all relevant subject matter and its inter-relationships. Almost all major relevant issues are covered, and the content is at least reasonably on-topic. |
| B 🡺 85 | The content demonstrates understanding of most relevant subject matter and its inter-relationships. Almost all major relevant issues are covered, and all content is at least reasonably on-topic. |
| B- 🡺 82 | The content demonstrates moderate understanding of much relevant subject matter and its inter-relationships. There is reasonable coverage of major relevant issues, and the content is at least reasonably on-topic. |
| C+ 🡺 78 | The content demonstrates some understanding of relevant subject matter and its inter-relationships. Some major relevant issues are covered, and at least some content is on-topic. |
| C 🡺 75 | The content demonstrates understanding of a small portion of the relevant subject matter and its inter-relationships. Some major relevant issues are covered, and at least a small portion of the content is on-topic. |
| C- 🡺 72 | The content demonstrates little understanding of and insight into the relevant subject matter and its inter-relationships. A small portion of the major relevant issues are covered. The focus of the content may be off topic or on insubstantial or secondary topics |
| D 🡺 67 | The content demonstrates almost no understanding of or insight into the relevant subject matter and its inter-relationships. Almost none of the major relevant issues are covered, and the content may be almost entirely off-topic. |
| F 🡺 0 | The content demonstrates no understanding of or insight into the relevant subject matter and its inter-relationships. No major relevant issues are covered, and the content is entirely off-topic. |
| **Exposition (30%)**  **Measures how well the content is expressed** | A+ 🡺 100 | The presentation of all ideas and designs is exceptionally clear and persuasive; the entire submission is exceptionally organized. There is no known way to improve the clarity or organization of the submission. |  |
| A 🡺 96 | The presentation of all ideas and designs is exceptionally clear and persuasive; the entire submission is exceptionally organized. There may be at most one insignificant way to improve the clarity or organization of the submission. |
| A- 🡺 92 | The presentation of all ideas and designs is very clear and persuasive; the entire submission is very organized. |
| B+ 🡺 88 | The presentation of all ideas and designs is clear and persuasive; the entire submission is organized. |
| B 🡺 85 | The presentation of most ideas and designs is clear and persuasive; most of the submission is organized. |
| B- 🡺 82 | The presentation of most ideas and designs is generally clear; most of the submission is reasonably organized. |
| C+ 🡺 78 | Some parts of the submission are hard to understand; some parts are disorganized. |
| C 🡺 75 | About half of the submission is hard to understand; about half is disorganized. |
| C- 🡺 72 | Most parts of the submission are hard to understand; most parts are disorganized. |
| D 🡺 67 | Almost all of the submission is hard to understand and disorganized. |
| F 🡺 0 | The entire submission is hard to understand and disorganized. |
| **OVERALL GRADE:** | | |  |