

**GLS UNIVERSITY**  
**FACULTY OF COMPUTER APPLICATIONS & INFORMATION TECHNOLOGY**  
**SUBJECT: 210301404- DATA COMMUNICATION & NETWORKS**  
**BCA Sem – IV**  
**Theory Assignment – II**

**Q-1      Fill in the Blanks:**

1.      \_\_\_\_\_ is the process of combining multiple signals into one signal, over a shared medium.
2.      FDM stands for \_\_\_\_\_.
3.      NAK means \_\_\_\_\_
4.      The Asynchronous TDM is also known as \_\_\_\_\_
5.      WDM stands for \_\_\_\_\_.
6.      WDM used \_\_\_\_\_ type of wire.
7.      \_\_\_\_\_ & \_\_\_\_\_ are an analog multiplexing technique.
8.      \_\_\_\_\_ is a digital multiplexing technique.
9.      \_\_\_\_\_ is caused because the signals at different frequencies travel at different speeds along the medium.
10.     The receiver sends a \_\_\_\_\_ back to sender if every thing was ok.
11.     In \_\_\_\_\_, the sender sends one frame and waits for an acknowledgment from the receiver before sending the next frame.
12.     As a signal travels through any medium, its strength decreases due to \_\_\_\_\_.
13.     Some electromagnetic energy can get inserted somewhere during transmission, which is normally called \_\_\_\_\_.
14.     In \_\_\_\_\_, a sequence of overhead bits are added to data to be transmitted.
15.     In \_\_\_\_\_ error, a bit value of 0 changes to 1 or vice-versa.

**Q-2      True or False**

1.      Multiplexing divides the physical line or medium into logical segments called channels.
2.      The mux is responsible for both multiplexing and demultiplexing.
3.      In half duplex communication, both parties can transmit data at the same time.
4.      Multiplexing is same as modulating.
5.      CRC calculation is based on specific portion of data.
6.      The receiver sends in negative acknowledgement if there is any error in the received data.
7.      Attenuation is very small at short distances.
8.      In the sliding window method, only when the first byte is acknowledge by the

receiver that the sender would send the next byte.

9. In a burst error, multiple bits of binary value are changed.

**Q-3 Answer the following questions:**

1. What is multiplexing? Explain the types of multiplexing.
2. Explain types of Errors in detail.
3. What is FDM? What are the advantages of disadvantages of FDM.
4. Write a note on TDM and STDM.
5. FDM vs TDM
6. What is checksum? How does it work?
7. Describe the Go-back-n technique with example.
8. How does the sliding window technique work?
9. Explain stop-and-wait method with diagram.
10. Explain how Cyclic Redundancy Check (CRC) works?
11. Explain LRC Error Detection Technique.
12. Explain VRC Error Detection Technique.

**Q: 4 Do calculate:**

1. Suppose that the sender wants to send 4 frames each of 8 bits, where the frames are 01001100, 10101010, 11110100 and 11001111. Find checksum
2. Suppose that the sender wants to send 4 frames each of 8 bits, where the frames are 11001100, 10001010, 11110100 and 11000011. Find parity bit using VRC.
3. Find CRC. Message is: 10111011 polynomial: 1001

**Note: All the students have to attempt Q-1, Q-2 & Q: 4 is compulsory. Attempt Q-3 in following sequence:**

Roll No.	Question No.
A001 to A020, B001 to B020, C001 to C020	1,5,9
A021 to A040, B021 to B040, C021 to C040	2,6,10
A041 to A060, B041 to B060, C041 to C060	3,7,11
A061 onwards, B061 onwards, C061 onwards	4,8,12