Week 9 Data Communication 2

Question 1

Explain in a few sentences, what is wave modulation? Why do we use modulation? Explain how Amplitude Modulation (AM) and Frequency Modulation (FM) work.

Question 2

Describe the difference between Simplex, Half duplex and Full Duplex Transmission Modes. Find examples of each.

Question 3

1. Flow control and Error control are the control mechanism at data link layer and transport layer. State the need for flow control and error control.
2. Explain how Stop-and-wait flow control works and how Sliding-window protocol is used for flow control. Discuss advantages and disadvantages.
3. Error control in the data link layer is based on automatic repeat request (ARQ). Explain how Stop-and-wait ARQ works.

Question 4

Both TCP and UDP are protocols used for sending bits of data — known as packets — over the Internet. They both build on top of the Internet protocol. In other words, whether you are sending a packet via TCP or UDP, that packet is sent to an IP address. These packets are treated similarly, as they are forwarded from your computer to intermediary routers and on to the destination. Explain in a few sentences, what is the difference between TCP and UDP?

Question 5

The timer of a system using the Stop-and-Wait ARQ Protocol has a time-out of 6 ms.

Draw a time-diagram to show 5 frame exchanges, assuming that the third data frame is lost and the acknowledgment of the 4th data frame is lost, all other data frames and control frames are not lost or damaged.

Your diagram should have the sender on the left and the receiver on the right, with the time axis running down the page, showing data and acknowledgment message exchange. Make sure you indicate the sequence number associated with any data or acknowledgment segment.

Programming: Stop-and-Wait ARQ protocol implementation example

(Read more at: https://microbit.nominetresearch.uk/networking-book-online-python/ acknowledgements/acknowledgements/)

Tutors: if you still have time left, please answer students' questions if they have any.