

# Examination Assignment

## Communication Protocols

In this assignment there are totally **19** questions and **26** points.

For **G** (godkänd), you need to earn at least **18** points and for **VG** (väl godkänd), you need to earn at least **24** points. Please note that the submission deadline is **2022-02-06 23:59**.

1. Parallel transmission method is not used for long-distance applications. Why? (1p)
2. What are simplex, half-duplex and full-duplex data transmissions? (1p)
3. Briefly explain how synchronization and sampling are done in UART. (1p)
4. What is handshaking in communication systems? Explain it by an example. (2p)
5. What is differential signaling? Why and in which application types is it used? (2p)
6. Name and explain an advantage and a disadvantage of the SPI protocol. (1p)
7. What is clock stretching in the I2C? Why and how does a node use clock stretching? (2p)
8. Why do we need to terminate a CAN bus with two resistors? (1p)
9. CAN uses NRZ encoding. How can NRZ encoding improve the EMC of the system? (1p)
10. What is bit stuffing? How and why is it used by CAN? (2p)
11. Briefly explain how bus arbitration is done in the CAN protocol. (2p)
12. Briefly explain how receivers in a CAN bus get synchronized to the sender. (1p)
13. LIN is a deterministic communication system. What does it mean? (1p)
14. Briefly explain how slaves in a LIN cluster get synchronized to the master. (1p)
15. Briefly explain the time-triggered and event-triggered transmission methods. (2p)
16. How are multicast and broadcast transmissions handled by the Ethernet protocol? (1p)
17. What is a VLAN and what are the advantages of using VLANs? (2p)
18. What are the main responsibilities of Internet Protocol(IP)? (1p)
19. Explain the main difference between the UDP and the TCP. (1p)