**FINAL EXAM TOPICS**

**COMPUTER NETWORKS**

Embedded microcomputer systems specialization

1. Fundamentals of data communication. Describe the following basic concepts!
* Spectrum, frequency-domain description
* Signal to noise ratio
* Distortions
1. Describe the following information theory concepts!
* Entropy of an information source and its properties
* Measure of information and its unit

Explain the generic model of a communication system!

1. Information theoretic properties of a channel
* Channel capacity
* Transfer rate, data signaling rate
* Transmitted information, information loss
1. Describe the common modulation and coding techniques of data transmission systems!
2. Compare the types of transmission medium used in computer networks according to the following parameters
* bandwidth
* maximum network throughput
* attenuation
* noise susceptibility
* mode of signal transmission
* transmission distance
* immunity
1. Explain data link control protocols on a practical example.
2. Compare the common multiplexing methods. Describe the standard solutions!
3. Describe the OSI model! Give a detailed description of the layers and their functions. How can the open network architecture be described according to the OSI?
4. Describe the TCP/IP protocol suite! Give a detailed description of the layers and their functions.
5. Describe the common IP address classes and their properties!
6. Describe VLSM, its properties and its use in network- and end device identification.
7. Describe the structure, operation and applications of circuit switched networks.
8. Describe the structure, operation and applications of packet switched networks.
9. Describe the routing algorithms used in packet switched networks. Compare the pros and cons of the algorithms.
10. Compare the link-state and distance vector routing algorithms! Describe the exterior and interior routing protocols and their properties!
11. Describe the error detection and error correction methods used in data transmission systems!
12. Describe the types congestion control methods. Describe the congestion avoidance solutions used in data transmission systems.
13. Describe the IEEE 802.3 protocol and compare it with the Ethernet!
14. Explain the importance of structuring and its implementation possibilities in computer networks.
15. Describe the concept of collision domain and broadcast domain, and their uses. What devices can be used to segment these domains?
16. Explain the network configuration, using a network device, through a practical example!