Chapter 1: Introduction

1. What is the Internet?

2. What is a (communication) protocol?

3. What is a local area network (LAN) and what is a wireless LAN (WLAN)?

4. What is an *access network* and what is a *core network*?

5. What is circuit switching? Explain its advantages and disadvantages.

6. How is circuit switching implemented?

7. What is meant by “circuit-like behavior” of a computer network?

8. What is meant by resource reservation in a circuit switched network?

9. Name some key resources in a circuit switched network?

10. What is packet switching? Explain its advantages and disadvantages.

11. Compare circuit switching with packet switching.

12. Explain the concept of “store and forward” in packet switching.

13. Identify and explain some key hardware components of the Internet.

14. What are Tire-1, Regional ISPs, and Access ISP networks?

15. What is a broadcast link and what is a point-to-point link?

16. What is a router?

17. What are two performance characteristics of a network link?

18. Identify and explain four sources of packet delay in a packet switched network.

19. Out of the four sources of packet delays, what are mostly deterministic and what are highly variable?

20. Identify three performance characteristics of end-to-end communication between two host computers.

21. Explain the difference between transmission delay and propagation delay in computer networks.

22. Explain how queuing delay changes with traffic intensity.

23. Give an outline of a procedure to measure end-to-end delay between a client computer and a server machine

24. Why are (data) packets lost in a computer network?

25. Why are correctly received data packets occasionally dropped by routers?

26. What better features can an expensive router have compared to a low cost router?

27. What are throughput, instantaneous throughput, and average throughput?

28. What is bottleneck bandwidth?

29. Why are network protocols organized in a layered fashion on hosts and routers?

30. Briefly explain the Internet protocol stack.

31. Briefly explain the ISO/OSI reference model.

32. What is message encapsulation? Explain its advantage.

33. What is a side effect of encapsulation?

34. What is 1-hop communication?

35. What is hop-by-hop, multi-hop communication?

36. Name one protocol from each category: one-hop communication, multi-hop communication, and end-to-end communication.

37. Give typical examples of link speeds – both wired and wireless – and bit error rates in computer networks.

38. What is an Internet Exchange Point (IXP)? How does it serve the end-users?