These are revision questions. You should also revise the questions on Assignments 1 and 2.

1. Explain the 5-layer and 7-layer models of distributed communications. What function does each layer play? How do the two models relate to each other? In the 5-layer model, what does each layer give to or receive from the layer beneath? What are the names of the entities at each layer?

2. What is the main design principle of the Internet? Is this different to the main design principle of a telecommunications network? What does “best effort” mean?

3. What is HTTP? How does this protocol work? What is meant by saying that this protocol “lacks state”? Give 2 advantages and 2 disadvantages of the lack of state.

4. What is SMTP? How does this protocol work? Is this a push or a pull protocol?

5. What are TCP and UDP? What are the differences between these? Explain the main features of TCP and of UDP. When would you use one or the other, if you were an application designer?

6. Explain the system of IP numbering. Explain the way in which routing works in the Internet.

7. What is a checksum function? Give an example of a checksum in UDP.

8. What is a multiple access control protocol? What is the function of these protocols? Explain the differences between TDMA, FDMA and CDMA.

9. What is the meaning of in-band and out-of-band communications? What is a virtual circuit? When is it used?

10. What is the signal-to-noise ratio? What is Shannon’s Law? Give a numerical example of the application of Shannon’s law.

11. What is Voice-over-IP? Is it feasible? What Internet protocols would you use to develop an application involving Voice-over-IP? What impacts would these protocols have on the application?