

Solutions to Chapter 1 Problems

Problems 1.1 and 1.2 are designed to help the instructor determine the interests of the class. There are no strictly correct or strictly incorrect answers. These questions may help the instructor in developing examples for the lectures that will coincide with the class interests.

- 1.1 In one or two paragraphs, state why you want to study the design and analysis of communication systems.
- 1.2 What specific information would you like to learn in this class?

For Problems 1.3 – 1.5 provide enough explanation to justify each answer. Use your imagination.

The answers below are just some of the possible examples. The key to the solutions is to see that the student understands the various parameters involved in performance-versus-cost tradeoffs and that the student understands that different applications will produce different tradeoffs.

- 1.3 Give an example of a communication system where *accuracy of reception* is the most important parameter.

Examples include automated teller machines and medical imaging systems.

- 1.4 Give an example of a communication system where *reliability* is the most important parameter.

Consider a voice communication system on the space shuttle. If the voice message has slight static or buzzing, the user can still understand what is being said. If, however, the unit is unreliable, then the parties may not be able to communicate at all.

- 1.5 Give an example of a communication system where *equipment simplicity* (lack of complexity in hardware and software) is the most important parameter.

Consider an inexpensive AM/FM radio or a cheap wireline telephone handset. These products attempt to minimize consumer cost while still providing an “acceptable” level of service.