**1.1 Define computer security**

Computer security is the field that utilizes tools and techniques that help ensure availability, integrity, and confidentiality of the systems resources and data.

**1.2 What is the difference between passive and active security threats**

An active security threat involves a threat agent attempting to alter or interrupt the information and resources utilized by a system. A passive security threat involves a threat agent attempting to access information from a system.

**1.3 List and briefly define categories of passive and active network security attacks**

An active network security threat alters network data. A passive network security threat eavesdrops on network data.

**1.5 List and briefly define the fundamental security design principles**

Economy of mechanism: Keep systems as simple as possible

Fail-safe defaults: Access is restricted by default, must have explicit permission to access resource

Complete mediation: Each resource access is verified to be legitimate

Open design: Security measures are available for the public

Separation of privilege: Restricted resources are only available to those with proper privileges

Least privilege: Users on a system operate at lowest possible level of privileges to complete task

Least common mechanism: As few functions as possible are shared by users

Psychological acceptability: Security measures interfere as little as possible with users

Isolation: Critical components and data should be as isolated as possible

Encapsulation: Isolation in an object oriented style

Modularity: Architecture that keeps different components independent

Layering: Incorporating multiple security mechanisms into an application

Least astonishment: Security system is not surprising in it’s operation

**1.6 Explain the difference between an attack surface and an attack tree**

An attack surface is the totality of all potential places an attack could begin in a system. An attack tree is a way to describe all of the potential ways an attack targeting a specific goal could be accomplished within a system.