**Homework 1**

**Q1: Consider an automated teller machine (ATM) in which users provide a personal identification number (PIN) and a card for account access. Give examples of confidentiality, integrity, and availability requirements associated with the system and, in each case, indicate the degree of importance of the requirement.**

**Q2: For each of the following assets, assign a low, moderate, or high impact level for the loss of confidentiality, availability, and integrity, respectively. Justify your answers.**

a. An organization managing public information on its Web server.

b. A law enforcement organization managing extremely sensitive investigative information.

c. A financial organization managing routine administrative information (not privacy related information).

d. An information system used for large acquisitions in a contracting organization contains both sensitive, pre-solicitation phase contract information and routine administrative information. Assess the impact for the two data sets separately and the information system as a whole.

e. A power plant contains a SCADA (supervisory control and data acquisition) system controlling the distribution of electric power for a large military installation. The SCADA system contains both real-time sensor data and routine administrative information. Assess the impact for the two data sets separately and the information system as a whole.

**Q3: Briefly define the Caesar cipher.**

**Q4: Briefly define the monoalphabetic cipher.**

**Q5: Briefly define the Playfair cipher.**

**Q6: What is the difference between a monoalphabetic cipher and a polyalphabetic**

**cipher?**

**Q7 What are two problems with the one-time pad?**

**Q8: What is a transposition cipher?**

**Q9: What is steganography?**

**Q10: Encrypt the following message using Playfair cipher?**

**Plaintext:** “HE WENT TO THE STORE”

**Key is** "PROBLEMS"?