Sharif University of Technology
Department of Computer Engineering
Data and Network Security- CE 441

Student Name and ID # ....

Final Exam

1. Answer these questions with True/False:
   (a) ____ ASLR defends against the CSRF attack.
   (b) ____ a valid SSL certificate mean that the sever is not malicious.
   (c) ____ least privilege mean that maximum possible permission should be assigned to a process/user.
   (d) ____ DEP/NX defenses do not prevent return-oriented-programming (ROP) attacks.

2. Assume Javascript is disabled in your browser, how would that effect each of the following attacks:
   - Cross-site request forgery (CSRF)
   - SQL injection
   - Cross-site scripting (XSS)
   - Phishing

3. Read on the Heartbleed vulnerability and answer the following questions:
   - Provide a summary of the attack in detail and its importance.
   - Which companies/organizations were effected by the attack?
   - Which element(s) of security (i.e. confidentiality, integrity, availability) were violated?
   - What is the main vulnerability which enabled the attack? discuss in detail.
   - Why the usual security mechanism were unsuccessful in stopping the attack?
   - What defense mechanism(s) would you suggest to defend against such attacks in the future?

4. Read on the Solar Wind hack and answer the following questions:
   - Provide a summary of the attack in detail and its importance.
   - Which companies/organizations were effected by the attack?
   - Which element(s) of security (i.e. confidentiality, integrity, availability) were violated?
   - What is the main vulnerability which enabled the attack? discuss in detail.
   - Why the implemented security mechanism were unsuccessful in stopping the attack?
   - What defense mechanism(s) would you suggest to defend against such attacks in the future?