

**Problem Set 2**  
CSCE 440/640

**Due dates:** Electronic submission of the pdf file of this homework is due on **9/14/2016 before 2:50pm** on [ecampus.tamu.edu](http://ecampus.tamu.edu), a signed paper copy of the pdf file is due on **9/14/2016** at the beginning of class.

**Name:** (put your name here)

**Resources.** (All people, books, articles, web pages, etc. that have been consulted when producing your answers to this homework)

On my honor, as an Aggie, I have neither given nor received any unauthorized aid on any portion of the academic work included in this assignment. Furthermore, I have disclosed all resources (people, books, web sites, etc.) that have been used to prepare this homework.

**Signature:** \_\_\_\_\_

Read chapters 2 and 3 in the lecture notes and chapter 5 in the textbook.

### **Quantum Circuits**

**Problem 1.** (10 points) Exercise 2.11 in the lecture notes. Hint:  $X = HZH$ .

**Solution.**

**Problem 2.** (10 points) Exercise 2.16 in the lecture notes.

**Solution.**

**Problem 3.** (15 points) Exercise 2.22 in the lecture notes.

**Solution.**

**Problem 4.** (15 points) Exercise 2.23 in the lecture notes.

**Solution.**

### **Entangled States and Teleportation.**

**Problem 5.** (15 points) Exercise 3.1 in the lecture notes.

**Solution.**

**Problem 6.** (15 points) Exercise 3.2 in the lecture notes.

**Solution.**

**Problem 7.** (20 points) Exercise 3.3 in the lecture notes.

**Solution.**

### **Checklist:**

- ☐ Did you add your name?
- ☐ Did you disclose all resources that you have used?  
(This includes all people, books, websites, etc. that you have consulted)
- ☐ Did you sign that you followed the Aggie honor code?
- ☐ Did you solve all problems?
- ☐ Did you submit the pdf file resulting from your latex source file on ecampus?
- ☐ Did you submit a hardcopy of the pdf file in class?