EE 381 Homework 1 – Part 2

Name, I.D. #, and Date: _____

Instructions: Attempt each problem. Submit part 2 with the other parts of homework 1 on 1/29/18 in seminar. Attach additional sheets if necessary.

1.) Of the 320 patients in the Los Angeles hospital 40 have high blood pressure, sixty have type 2 diabetes, and 5 have both high blood pressure and type 2 diabetes. The remaining 215 patients have neither high blood pressure nor type 2 diabetes. Are the patients with high blood pressure and the patients with type 2 diabetes mutually exclusive? Are the patients with high blood pressure and the patients with type 2 diabetes dependent or independent?

2.) At the Lake shore high school 30 of the students drive motorcycles and 50 of the students drive cars. None of the students who drive motorcycles drive cars and vice versa. One hundred twenty of the students drive neither a car nor a motorcycle. Are the motorcycle and car drivers mutually exclusive? Are the motorcycle and car drivers dependent or independent?

3.) Urn I contains two red chips and four white chips: urn II, three red and one white. A chip is drawn at random from urn I and transferred to urn II. Then a chip is drawn from urn II. What is the probability that the chip drawn from urn II is red?

4.) Two assembly lines Alpha and Beta make the same electronic component. When the components are completed they are grouped together in the same inventory without distinction as to which assembly they came from. Assembly line Alpha is faster; so at any time, 60% of the components come from Alpha. Both Alpha and Beta have quality control issues. Past reviews of the assembly lines have determined that 3% of Alpha's components are defective while 1% of Beta's are defective. If a random component is defective what is the probability it came from Beta?