Question # 1 (15 marks)

Resource Reservation Protocol was originally designed to establish signaling links for stationary networks. In mobile networks and applications, Resource Reservation Protocol was applied to mobile wireless technology (example, a cell phone with wireless LAN card for internal access). A study revealed that the transmission delay (measured in minutes) of a Resource Reservation Protocol linked wireless device has an approximate normal distribution with mean 12 minutes and standard deviation 550 seconds. Calculate the following. **Note: In order to get full marks, list all formulas and show calculations.**

A) What is the probability that the transmission delay is more than 15.5 minutes?

B) What is the probability that the transmission delay is more than 10 minutes but not more than 16 minutes?

C) What is the transmission delay that only 5% of all Resource Reservation Protocol linked wireless device exceed?

D) Suppose a sample of 4 Resource Reservation Protocol linked wireless device is selected. What is the probability that the mean transmission delay is more than 30.5 minutes?

E) What is the probability that if 4 Resource Reservation Protocol linked wireless device are selected randomly all 4 made transmission delay is more than 15.5 minutes?

Question # 2 (15 marks)

Part 1

A market researcher selects 10 students at random to participate in a wine-tasting test. Each student is blindfolded and asked to take a drink out of each of two glasses, one containing an expensive wine and the other containing a cheap wine. The students are then asked to identify the more expensive wine. If the students have no ability whatsoever to discern the more expensive wine,

A) What is the probability that the more expensive wine will be correctly identified by more than half of the students?

B) What is the proportion that the more expensive wine will be correctly identified by none of the students?

C) What is the probability that the more expensive wine will be correctly identified by at least seven students?

D) What is the probability that the more expensive wine will be correctly identified by at least two but no more than five students?

E) What is the expected number of students who correctly identify the more expensive wine?

Part 2

A market researcher selects 14 students at random to participate in a wine-tasting test. Each student is blindfolded and asked to take a drink out of each of two glasses, one containing an expensive wine and the other containing a cheap wine. The students are then asked to identify the cheap wine. If the students have no ability whatsoever to discern the cheap wine,

A) What is the probability that the cheap wine will be correctly identified by exactly three of the students?

B) What is the standard deviation of the number of students who correctly identify the cheap wine?

Question # 1 (Answer Key)

1A	0.352
1B	0.2571
1C	27.0792
1D	0.0001
1E	0.0154

Question # 2 (Answer Key)

Part 1A	0.377
Part 1B	0.0010
Part 1C	0.1719
Part 1D	0.6123
Part 1E	5
Part 2A	0.1172
Part 2B	1.8708