

## Math 325 Exam#1

Name \_\_\_\_\_

ID# \_\_\_\_\_

1. (10 pts) Given the following data

222 224 221 225 228

Find the mean and the standard deviation.

2. (20 pts) If we randomly select a two digit number, the sample space is

$$S = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

Define the event  $A$ : the selected number is odd number and  $B$ : the selected number is bigger than 5. Find the following probabilities

(1)  $P(A)$

(2)  $P(B)$

(3)  $P(A \cup B)$

(4)  $P(A \cap B)$

(5)  $P(A|B)$

(6)  $P(B|A)$

(7)  $P(\bar{A} \cap \bar{B})$

(8)  $P(\bar{A} \cup \bar{B})$

(9)  $P(\bar{A}|\bar{B})$

(10)  $P(\bar{B}|\bar{A})$

3. (10 pts) Companies A and B produce the same part. Company A produces 70% of the parts and 4% of them are defective. Company B produces 30% of the parts and 7% of them are defective. One part is randomly selected.
- (a) What is the probability that this part is defective?
  - (b) If the part is tested to be defective, what is the probability that this part is produced by company A?
4. (20 pts) A survey shows that 20% of all sales professionals in America have home fax machines and 40% use car phones. Among those who have home fax machines 25% use car phones also. One sales professional is randomly selected. What is the probability that
- (a) the sales professional uses a car phone?
  - (b) the sales professional has a home fax machine and uses a car phone also?
  - (c) the sales professional does not have a home fax machine and does not use a car phone neither?
  - (d) the sales professional does not have a home fax machine neither if we already know that he/she does not use a car phone?

5. (20 pts) Among 20 VCRs, 3 are defective. A sample of 3 VCRs is selected for testing from these 20 VCRs. What is the probability that
- (a) None of them will be defective?
  - (b) Exactly one of them will be defective?
  - (c) Exactly two of them will be defective?
  - (d) At most two of them will be defective?
6. (20 pts) A company produces VCRs that are 5% defective. Twenty VCRs are randomly selected. What is the probability that
- (a) First two selections will not be defective?
  - (b) None of them will be defective?
  - (c) Exactly one of them will be defective?
  - (d) At least one of them will be defective?