## KING FAHD UNIVERSITY OF PETROLEUM & MINERALS DEPARTMENT OF MATHEMATICS AND STATISTICS Term 142

	STAT 211 BUSINESS STATISTICS I		$\frown$
Please circle your instructor na	me:		( )
W.	Al- Sabah	M. Saleh	

Name: \_\_\_\_\_ ID #: \_\_\_\_\_

Important Note:

• Show all your work including formulas, intermediate steps and final answer

Question No	Full Marks	Marks Obtained
1	3	
2	3	
3	4	
4	4	
5	6	
6	5	
Total	25	

Q1: What is the error in each of the following statements?

- a. The probability that a computer sales person will sell 0, 1, 2, or 3 computers on a given week are 0.18, 0.15, 0.29, and 0.39 respectively. (1 pt)
- b. The probability that you will come to the class on time tomorrow is 0.4 and the probability that you will not come to the class on time tomorrow is 0.5. (1 pt)
- c. The probability that a driver will make 0, 1, 2, 3, 4, 5 car accidents in a year are 0.25, 0.15, 0.40, 0.25, 0.45 respectively. (1 *pt*)

Q2: Suppose that 5% of the time item A is available in a store while the item B is available 7% of the time. Find the probability that both items A and B are available.

a. Assuming that availability of the item A has nothing to do with that of item B. (1 pt)

b. Assuming that A and B are never available together. (1 pt)

c. Assuming that if the item *A* available, then with probability 0.2, the item *B* will be available. (1 pt)

Q3: Three contractors, A, B and C bid on two projects. The projects manager wants to choose the winning contractors. What is the sample space? (4 pts)

Q4: An article in a business journal listed firms according to whether or not shareholders returns and top executive salaries as in the following table

Shareholders	Top Executive		
	Made More than \$1 million	Made Less than \$1 million	
Made Money	3	4	
Lost Money	2	1	

a. If a firm is randomly chosen from the list,

- i. What is the probability that its top executive made more than \$1 million? (1 pt)
- ii. What is the probability that its shareholders lost money? (1 pt)
- iii. What is the probability that its top executive made less than \$1 million or its shareholders made money? (1 pt)

b. If a firm had negative shareholder returns, what is the probability that its top executive made over \$1 million? (1 pt)

Q5: The probability that Ali will get an offer on the first job he applies for is 0.4 and the probability that will get an offer on the second job he applies is 0.5. He thinks that the probability that he will get an offer on the both job is 0.12.

a. What is the probability that Ali gets an offer on the second job given that he receives an offer for the first job? (2 pts)

b. What is the probability that Ali does not get an offer on either of the two jobs he applies for? (3 pts)

c. Are the job offers independent? Explain. (1 pt)

Q6: An assembler of computer terminals and moderns uses parts from two sources. Company A supplies 80% of the parts and company B supplies the remaining parts. From past experience, the assembler knows that 5% or the pars supplies by company Aare defective and 3% of the parts supplies by company B are defective. An assembled model is selected at random.

a. What is the probability that it is defective? (3 pts)

b. If the selected model is found to have a defective part, which of the two companies is more likely to have supplied the defective parts? (2 pts)

## Some Useful Formulas

- $P(A \text{ or } B) = P(A \cup B) = P(A) + P(B) P(A \cap B)$
- $P(A \cap B') = P(A) P(A \cap B)$
- $P(A | B) = \frac{P(A \cap B)}{P(B)}$ , P(B) > 0
- $P(A \cap B) = P(A) \times P(B \mid A) = P(B) \times P(A \mid B)$