KING FAHD UNIVERSITY OF PETROLEUM & MINERALS DEPARTMENT OF MATHEMATICS & STATISTICS DHAHRAN, SAUDI ARABIA

MATH 131: FINITE MTHEMATICS

Semester 152 Major Exam Three Monday, April 25, 2016 **Allowed time 75 minutes**

Name:	ID#:
Serial #:	Section:

Directions:

- 1) You must **show all your work** to obtain full credit.
- 2) You are allowed to use electronic calculators and other reasonable writing accessories that help write the exam.
- 3) Do not keep your mobile with you during the exam, turn off your mobile and leave it aside.

Question No	Full Marks	Marks Obtained
Q1	2	
Q2	2	
<i>Q3</i>	5	
Q4	11	
<i>Q5</i>	8	
Q6	6	
07	6	
Total	40	

1.	How many distinguishable arrangements of all the letters in the word MISSISSIPPI are possible? (2 marks)
2.	A baseball team has 15 members and must play an away game. Three cars will be used for transportation. In how many ways can the manager assign the members to specific cars if each car can accommodate five members? (2 marks)
3.	Customers are used to evaluate preliminary product designs. In the past, 95% of highly successful products received good reviews, 60% of moderately successful products received good reviews, and 10% of poor products received good reviews. In addition, 40% of products have been highly successful, 35% have been moderately successful, and 25% have been poor products. What is the probability that a product attains a good review? (5 marks)

4.	Suppose that of all individuals buying a new model car, 60% include a DVD player optio in their purchase, 43% include leather seats option, and 22% include both options a DVD player and Leather seats. We are interested in knowing the inclusion of the options. (2+2+2+1+2+2 marks) a. Write out the sample space for the problem.				
	b.	Find the probability that leather seats option was included given that the selected individual included a DVD player option.			
	c.	Find the probability that the DVD player or the leather seats were included.			
	d.	Find the probability that none of the two options was included.			
	e.	Are the vents "DVD player was included" and the event "selected individual included the leather seats option" independent?			
	f.	Are the vents "DVD player was included" and the event "selected individual included the leather seats option" mutually exclusive?			

	A box of 500 computer chips contains 10 that are defective. Three chips are selected, at random, without replacement, from the box. (3+3+2 marks) What is the probability that the third one selected is defective?
b.	What is the probability that the third one selected is defective given that the first one selected was defective and the second one selected was not defective?
c.	What is the probability that all three are defective?
6.	A survey by KRC Research for U. S. News reported that 37% of people plan to spend more on eating out after they retire. If eight people are selected at random, then determine the probability that two or fewer in the sample indicate that they actually plan to spend more on eating out after retirement. (6 marks)

7. An electronics store sells a particular model of Tablet PC. The table below shows the probability distribution of the daily demand (*x*) for this Tablet PC.

x	0	1	2	3	4	5
f(x)	0.1	0.4	0.2	0.15	0.1	0.05

a. Find the average amount of daily demand for this Tablet PC. (2 marks)

b. Determine the standard deviation of the amount of daily demand for this Tablet PC. (4 marks)