King Fahd University of Petroleum & Minerals
Department of Math and Stat

Semester 132 *Math 131, Second Major Exam* *April 19, 2014*

Name : *I.D. #* *Sec. #* .

1. An investor has a choice of investing a sum of money at 6% semiannually or at 5.9% compounded quarterly. Which one is better? Justify your answer. (2 points)

2. Suppose that $1000 amounted to $1150 in a saving account after 2 years. If interest was compounded monthly, find the nominal rate of interest that was earned by the money. (2 points)

3. How long will it take money to double at an effective rate of 10.4 %? (2 points)

4. A debt of $2000 due in 3 years from now and $3000 due in 7 years from now is to repaid by a single immediate payment now and another payment of $1500 due 9 years from now. If the interest rate is 7% compounded annually, how much is the immediate payment? (4 points)

5. An annuity due consisting of equal payments at the beginning of each quarter for 3 years is to be purchased for $15,000. If the interest rate is 4% compounded quarterly, how much is each payment? (3 points)

6. A coin is tossed 3 times in succession. If E is the event that at least one head occurs and G is the event that at least one tail occurs. Find $P\left[(E \cup G)'\right]$. (2 points)

7. How many distinguishable arrangements of all the letters in the word DAMMAM are possible? (2 points)

Answer _____

8. An opinion survey of 100 people was conducted the results of which are shown in the table. (3 points)

	Support	Against	Neutral	Total
Engineer	20	17	5	42
Technician	30	15	3	48
Manager	2	4	4	10
	52	36	12	100

If a person is randomly selected, find the following empirical probabilities

a) P(the person supports the action) Answer _____

b) P(the person is a technician and is against the action) Answer _____

c) P(the person is a manager or neutral) Answer _____

9. A committee of 4 is to be formed from a group of 8 men and 5 women. In how many ways can the committee be formed if (5 points)

a) at least 3 members must be women? Answer _____

b) all the members must be of the same sex? Answer _____

$$a_{\overline{n}|r} = \frac{1-(1+r)^{-n}}{r} \qquad s_{\overline{n}|r} = \frac{(1+r)^{n}-1}{r}$$