King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

Math 131 (Term 153)

Exam 2 (Duration: 90 minutes)

Student Name_____ **Student ID:** _____

Question	Score
1	\10
2	\15
3	\15
4	\10
5	\08
6	\08
7	\19
8	\15
Total Score	\100

Exercise 1 (10 points)

How long will it take for 500 SR to amount to 700 SR if invested at 8% compounded quarterly? (**Give the final answer in years and months**)

Exercise 2 (15 points)

A debt of 6,000 SR due in five years is to be repaid by a payment of 2,000 SR now, a second payment at the end of two years, a third payment of 1,000 SR at the end of four years. How much the second payment should be if the interest rate is 8% compounded quarterly? (**Round your answer to 2 decimal places**)

Exercise 3 (15 points)

Suppose 50 SR is placed in a savings account at the end of each month for **4** years. Assume that the savings account pays 6% compounded monthly. (**Round your answer to 2 decimal places**)

(a) How much is in the account after **4** years?

(b) If no further deposits are made, how much is in the account after **6** years?

Exercise 4 (10 points)

Suppose that insurance proceeds of 25,000 SR are used to purchase an annuity of equal payments at the beginning of each month for 4 years. If interest is at the rate of 9% compounded monthly, find the amount of each payment. (**Round your answer to 2 decimal places**)

Exercise 5 (08 points)

A Canadian postal code consists of a string of six characters, of which three are letters and three are digits, which begins with a letter and for which each letter is followed by a (single) digit, (e.g., **B3H3J5** and **Z1K6L4** are valid postal codes).

(a) How many Canadian postal codes are possible?

(b) How many of these end with **4Z6**?

Exercise 6 (08 points)

A hand of 7 cards is dealt from a deck of 52 cards. How many hands are possible with at most 3 red cards?

Exercise 7 (19 points)

Urn I contains 1 Black and 2 Red marbles. Urn II contains 1 White and 1 Black marbles. An urn is selected at random. Then a marble is randomly drawn from it and placed in the other urn, from which we randomly draw a marble.

(a) (14 points) Set the tree diagram with the corresponding probabilities.

(b) (05 points) Find the probability that the second draw yields a Black marble. (**Round your answer to 2 decimal places**)

Exercise 8 (15 points)

A first card is drawn from a deck of 52 cards. Then a second card is drawn.

Let E = {Second card is a **Spade**} and F = {First card is a **Heart**}

(a) (08 points) Set the tree diagram with the corresponding probabilities.

(b) (07 points) Are E and F independent?