



**HeronBridge**  
**COLLEGE**

**Grade 12: Advanced Programme Mathematics  
Prelim**

**Paper 2: Finance & Modelling**

1 Hour

102 Marks

July, 2016

Examiner: M Klein

Name: \_\_\_\_\_

Teacher: \_\_\_\_\_

1. This paper consists of 3 pages and an information sheet.
2. Show ALL calculations, answers only will NOT be awarded full marks.
3. Approved non-programmable calculators are permissible unless stated otherwise. Ensure your calculator is set to RADIANS
4. Round off answers to ONE decimal places, unless stated otherwise.
5. Diagrams are NOT necessarily drawn to scale.

**Question 1****[12 Marks]**

Mr Smith opened a savings account on the last day of the year 2014 with a deposit of R5 000. He made regular monthly payments of R1 200 at the end of each month in 2015, 2016 and the first 6 months of 2017 in order to finance a holiday in July 2017. He misses one payment at the end of May 2016 due to large medical bills. How much money will he have in his account at the beginning of July 2017, if the interest rate is 8%p.a compounded monthly. [12]

**Question 2****[16 Marks]**

Matthew deposits an amount of R6 500 into a savings account which pays 12,5%p.a interest. After 6 months he withdraws R2 500. One year after the initial investment, the interest rate drops to 10%p.a. compounded quarterly. He makes a another deposit of R5 000, 2 years after opening the account. How much money will he have after 5 years? [16]

**Question 3****[22 Marks]**

A loan is to be repaid in monthly instalments of R5 000 over a period of 10 years. The interest rate charged for the first 4 years is 12%p.a. compounded monthly and thereafter the interest rate changes to 16%p.a compounded quarterly. Calculate the size of the original loan. Payment of the loan commences at the end of the first month after the loan is taken out. [22]

**Question 4****[52 Marks]**

Mr Jones borrows R500 000 to renovate his house. He undertakes to repay the loan in monthly instalments over a period of 10 years at an interest rate of 10%p.a compounded monthly.

1. Due to cash flow problems, he only starts to repay the loan at the end of the third month after receiving the money. Calculate the size of his monthly repayments if the loan is amortised 10 years after it is taken out. [10]
2. Calculate the balance outstanding on the loan after his 10<sup>th</sup> payment. [10]
3. How much did the alterations on his house cost him in total? [4]
4. He inherits R100 000 one year after taking out the loan and faces the following dilemma. Should he use this windfall to repay the loan, or should he take his family to Disney world? He decides that you only live once and takes his family on holiday. If he had decided to pay his inheritance into the loan account and had continued with the same monthly repayments, how many

payments would he have had to make and what would have been the size of his final payment? [22]

5. How much did his holiday cost him? [6]