Name :   *Student ID* :

Question 1

Aakash has a liability of 6000 due in four years. This liability will be met with payments of A in two years and B in six years. Aakash is employing a full immunization strategy using an annual effective interest rate of 5%.

Calculate.

$|A - B|$

Question 2

Trevor has assets at time 2 of A and at time 9 of B. He has a liability of 95,000 at time 5. Trevor has achieved Redington immunization in his portfolio using an annual effective interest rate of 4%.

Calculate .

$\dfrac{A}{B}$

Name :   *Student ID* :

Question 3

A company must pay liabilities of 4000 and 6000 at the end of years one and two, respectively. The only investments available to the company are one-year zero-coupon bonds with an annual effective yield of 8% and two-year zero-coupon bonds with an annual effective yield of 11%.
Determine how much the company must invest today to exactly match its liabilities.

Question 4

Porter makes three-year loans that include inflation protection. The annual interest rate compounded continuously that must be paid is 3.2% plus the rate of inflation.
The U.S. government borrows 100,000 for three years from Porter. The actual annual inflation rate during the first year was 2.4% compounded continuously. The actual annual inflation rates for the second and third years respectively was 2.8% and 4.2% compounded continuously.
The U.S. government is considered a risk free borrower, which means there is no chance of default.
Calculate the amount that the U.S. government will owe Porter at the end of three years.