Section 2: Case Study – Fund the Future

Time Allocated: 36 minutes

INTRODUCTION

You are working as a financial advisor and have been asked to perform some modeling of projected long term savings for four different people: Alice, Bob, Charlie and Diana. Each of the 4 people will create a special savings account and invest money at regular intervals, with the aim of being able to retire from work once their savings account reaches a balance they are happy with. The accounts will also earn an investment return. Using the information and assumptions provided, you will need to calculate the forecast balances of the accounts at several points in the future as well as perform other analysis as asked.

Your model can be either quarterly or annually as you deem appropriate. It will need to cover a date range starting at 31 December 2016 and run for 45 years.

The key model assumptions (discussed over page) have been provided to you in the Excel file titled 'MO16 Round 2 - Sec 2 - Fund the Future.xlsx'. In some cases, the assumptions are in the Excel file as text within sentences rather than pure numeric cells.

ASSUMPTIONS AND DEFINITIONS

The key assumptions for each person are provided in the supporting Excel file and in the table below. An explanation or definition is provided for some of the items in the text following the table.:

Key Assumptions	Alice	Bob	Charlie	Diana
Initial Account Deposit at 31 Dec 2016	$12,820	$0	$40,000	$5,000
Annual Salary in 2017	$50,000	$35,698	$61,500	$95,000
Growth in annual salary each 1 January (beginning in 2018 unless noted)	3.00% per year	2.20% per year from 2018 to 2026, then 2.80% from 2027 onwards	$5,500 per annum	0% up to and including 2025. 5.00% from 2026 to 2040. 1.50% from 2041 onwards
Core Deposits into Savings Account (beginning in 2017)	9.00% of annual salary every 31 Dec	3.00% of annual salary every quarter end date (31-Mar, 30-Jun, 30-Sep, 31-Dec) (i.e. 12.00% of salary per annum)	7.00% of annual salary every 31 Dec	4.00% of annual salary every 31 Dec
Additional Deposits into Savings Account	None	$20,000 on 30 June 2028	$1,000 every quarter end date, beginning in 2017	$5,000 on 31 Dec 2021 and each 5 year anniversary of that date
Date the Account is Withdrawn and Closed	31 Dec 2044	31 Dec 2057	31 Dec 2039	31 Dec 2060
Forecasted Investment Returns	4.00% p.a. compounded annually each 31 Dec	1.10% p.q. compounded each quarter end	0.90% p.q. compounded each quarter end	8.00% p.a. from 2017 to 2038. 5.00% p.a. from 2039 onwards. Compounded each 31 Dec

Note: p.a. means per annum and p.q. means per quarter.

EXPLANATIONS AND DEFINITIONS

Initial Account Deposit at 31 Dec 2016

This is the opening balance of the savings account at the beginning of the model.

Annual Salary in 2017

The annual salary in the first full year of the model. This is used to help size the deposits into the account. The salary may grow each year based on the information provided.

Core Deposits into Savings Account (beginning in 2017)

The regular amount deposited each quarter or each year. It is expressed as a % of salary.

Additional Deposits into Savings Account

Self-explanatory.

Date the Account is Withdrawn and Closed

The final date to model the account balance to, and the target retirement date of each person.

Remember to *INCLUDE* any deposits and investment returns scheduled to occur on the account closing date before calculating the final closing balance.

Forecasted Investment Returns

Self-explanatory. The investment returns are added to the account balance either each quarter end or each year end (31 Dec) as stated.

OTHER ASSUMPTIONS

- Assume that all account cashflows (deposits, investment returns, withdrawals etc) occur at the end of the final day of the period. Investment returns can be calculated based on the opening balance of each compounding period.

- Assume all periods are of equal length. You should not consider the actual number of days in any given quarter or year. (In other words, perform all relevant calculations on a 30/360 basis.)

For Questions 6 to 13, select your answer from a multiple choice list.
For Questions 14 to 15, you are required to type in your answer.