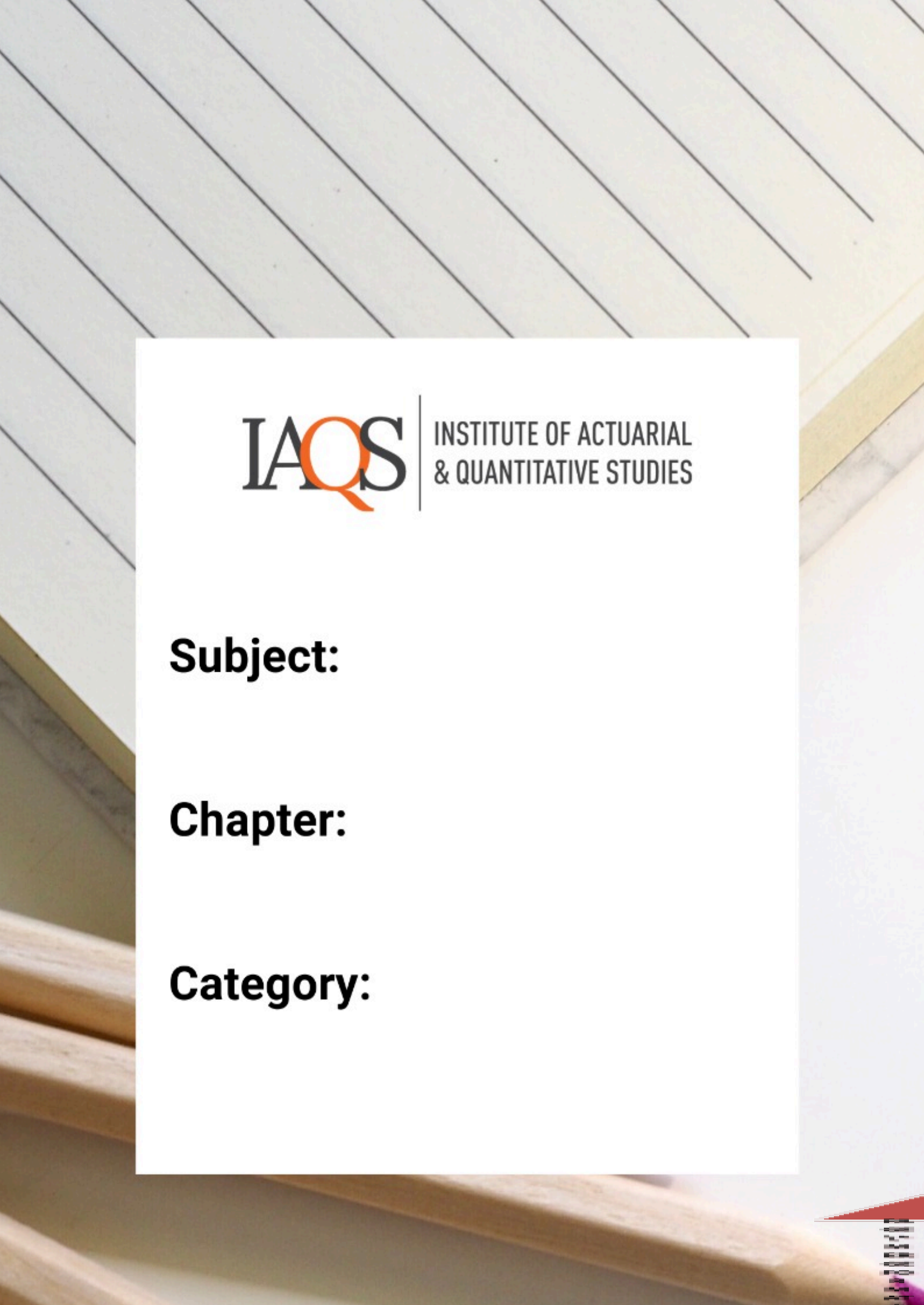
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Subject:
Chapter:
Category:

Q1. CM1B A2024 Q1

A company has been presented with two alternative business projects, A and B. The company must decide which of the two projects to invest in. The projected year-end cashflows for the two projects are given in the 'Q1 Base' worksheet.

(i) Calculate the internal rate of return for each project. [4]

The company sets an internal target for the rate of return at 4.5% p.a. effective.

(ii) Calculate, for each project, the present value of the net cashflows at the target rate of return. [3]

(iii) Calculate, for each project, the discounted payback period at the target rate of return. [6]

The company decides which project to invest in based on the internal rate of return, the present value of the cashflows and the discounted payback period.

(iv) Explain, with reference to your answers to parts (i), (ii) and (iii), which project the company should invest in. [8] [Total 21]

Q2. CM1B A2023 Q1

A company wishes to invest in a fleet of 50 vehicles for use by its workforce and will choose between two alternative vehicles for the entire fleet – an Electric Vehicle or a traditional Internal Combustion Engine car. The Electric Vehicles incur a higher initial cost than the Internal Combustion Engine cars but have lower running and maintenance costs. Worksheet 'Q1 Base' gives details of the costs involved for each type of vehicle.

The company intends to run the fleet for a period of 5 years. It anticipates that the average annual mileage for each vehicle type will be 20,000 miles, spread uniformly over each year.

(i) Calculate, for each vehicle type, the present value of the total cost to the company of buying and running the fleet. You should use a risk discount rate of 4.5% per annum. [25]

(ii) Recommend, with reasons, the most suitable type of vehicle for the fleet, based on your answer to part (i). [2]

The company wishes to consider how its estimate of annual mileage per car would impact its decision on which vehicle type to choose for the fleet.

(iii) Determine the annual average mileage per car, which would result in the same cost, in present value terms, for each fleet. [2]

The company has now proposed to run the fleet for a shorter period of 3 years, and to take account of the sale proceeds of the vehicles at the end of this period, when making its decision. It expects the residual value of the vehicles at the end of 3 years to be 40% of the original purchase price for Internal Combustion Engine cars and 50% for Electric Vehicles.

PRACTICE QUESTIONS

(iv) Copy your Q1(i) (ii) worksheet to the Q1(iv) worksheet and update your results and recommendation to take account of the company's new proposal, based on an annual mileage of 20,000 miles. [7]

(v) Discuss the suitability of this model as a tool for helping the company select the fleet. [6] [Total 42]

Q3. CM1B S2022 Q3

The Finance Director of the company has been presented with two potential projects.

Project A streamlines financial processes. Further details of this project, including expected cashflows, are set out in worksheet 'Q3 ProjectA Data'.

Project B is the development of a new finance administration system. Further details of this project, including expected cashflows, are set out in worksheet 'Q3 ProjectB Data'.

The Finance Director wants to implement one of the two projects and has asked you for a recommendation.

The company has a policy of using an annual effective target rate of return of 6% p.a.

(i) Determine the Net Present Value (NPV) for each project. [16]

(ii) Explain which project you will recommend, based on your answers to part (i). [2]

Despite your recommendation, the Finance Director has decided to implement the other project.

(iii) Suggest reasons for the Finance Director's decision. [6] [Total 24]

Q4. CM1B A2022 Q3

A piece of land is available for sale for £10,000. Green Energy Ltd believes that it can install electricity-producing solar panels on the land.

The total cost of development will be £85,000. This cost will be paid monthly in advance in six equal instalments. The first payment will be made at the same time that the land is purchased. Electricity production will start 6 months after the land is purchased.

It is estimated that the development will produce 80,000 units of electricity per year, with production assumed to be uniform across each year. Green Energy Ltd will sell the produced electricity to the national power supplier at a rate of £0.12 per unit. Payments for electricity produced will be received quarterly in arrears.

The level of electricity production will fall as the solar panels start to degrade. It is estimated that the level of electricity produced will fall by 0.5% p.a. Electricity production is assumed to fall annually, with the first decrease of 0.5% occurring 6 months after production begins.

PRACTICE QUESTIONS

Green Energy Ltd will start monthly maintenance work after 6 months of electricity production. The maintenance costs are expected to be £1,000 p.a. incurred monthly in arrears. Annual maintenance costs will increase by 3% p.a. with the first increase taking place 1 year after the maintenance work starts.

The risk discount rate is 6.5% p.a. effective.

(i) Construct an annual cashflow schedule including all income and outgo payments for Green Energy Ltd for the first 30 years of the project. [23]

(ii) Determine, using the schedule produced in part (i):

(a) the accumulated profit after 30 years.

(b) the project year in which the accumulated profit first becomes positive. [5]

The local government has decided to offer an incentive to new generators of renewable electricity. This incentive will be paid at a rate of £0.10 per unit of electricity produced in the first 5 years of electricity production and will be payable at the end of every 6-month period.

(iii) Determine, using a revised annual cashflow schedule, how your answer to part (ii)(b) will change once these incentive payments are taken into account. [7]

(iv) Comment on the suitability of the model and the assumptions used by Green Energy Ltd. [7] [Total 42]

Q5. CM1B S2021 Q2

A couple are buying a house and have taken out a special 'First-time buyer' mortgage, which allows for lower payments in the earlier years.

The mortgage, of £300,000, has a term of 30 years. For the first 6 months, no repayments are made, although interest still accrues on the loan. Interest-only repayments are due from this point until the end of the third year. After the end of the third year, and up to the end of the term, level repayments are due, set at a level such that the mortgage will be repaid in full at the end of the 30-year term.

All repayments are made monthly in arrears. Interest is charged at an effective rate of 4.5% p.a.

(i) Calculate the amount of each monthly repayment, without using a scenario solving tool such as Goal Seek or Solver. [7]

(ii) Construct the loan schedule for the mortgage. [8]

The conditions of the loan permit borrowers to make additional payments in order to reduce the term of the mortgage. These additional payments can be made once each year, excluding the first year, subject to a maximum of 10% of the outstanding capital amount, as determined at the beginning of each year of payment. The original repayments, including the repayments in the first 3 years, will not change but the term of the mortgage will reduce.

The original repayment schedule will remain unchanged except for the term.

The couple decide to make additional payments to reduce the term of the mortgage as much as possible.

(iii) Determine the shortest possible term that can be achieved in this way. [11] [Total 26]