Questions:

1. In return for an investment of Rs.100,000 on 12 June 2016, an investor receives the following cashflows:

|  |  |
| --- | --- |
| Date | Cashflow |
| 1 October 2016 | 18000 |
| 31 December 2016 | 25000 |
| 14 May 2017 | 41500 |
| 28 September 2017 | 15500 |
| 5 January 2018 | 8000 |

Calculate the investor’s effective annual rate of return, giving your answer correct to the nearest 0.1%.

1. A business takes out a bank loan of 50,000 to be repaid by level quarterly instalments over 5 years.  The annual effective interest rate on the loan is 6%.
2. Calculate the amount of each quarterly repayment.
3. Set up a loan schedule that includes:

• the amount of each repayment

• the split of each repayment between interest and capital

• the capital outstanding after each repayment for the whole term of the loan.

1. Using the loan schedule from part (ii), determine:

(a) the total amount of interest paid over the whole term of the loan

(b) the interest element and the capital element of the 7th repayment

(c) the total interest paid and capital repaid in the 2nd year.

1. A business takes out a bank loan of Rs. 10000 to be repaid by monthly instalments over 2 years.  The annual effective interest rate on the loan is 4%.
2. Calculate the amount of each quarterly repayment.
3. Set up a loan schedule that includes:

• the amount of each repayment

• the split of each repayment between interest and capital

• the capital outstanding after each repayment for the whole term of the loan.

1. Using the loan schedule from part (ii), determine:

(a) the total amount of interest paid over the whole term of the loan

(b) the interest element and the capital element of the 15th repayment

(c) the total interest paid and capital repaid in the 1st year.

1. A couple takes out a loan of 40,000 to purchase a yacht. As the couple have a low current income, but are expecting their income to grow in the coming years, they agree to make monthly repayments in arrears for 15 years, where each monthly repayment is 5 higher than the previous one. The annual effective interest rate on the loan is 8%.
2. By constructing the loan schedule for the whole term of the loan, showing:

• the amount of each repayment

• the split of each repayment between interest and capital, and

• the capital outstanding after each repayment calculate the amount of the first monthly repayment needed to ensure that the capital outstanding is 0 at the end of the term of the loan.

1. Plot a graph showing the capital outstanding at the end of each year of the 15-year term.
2. Comment on your graph.
3. Determine which repayment causes the capital outstanding to fall below 15,000.
4. A couple takes out a loan of 100,000 to purchase a house. As the couple have a low current income, but are expecting their income to grow in the coming years, they agree to make monthly repayments in arrears for 10 years, where each monthly repayment is 25 higher than the previous one. The annual effective interest rate on the loan is 6%.
5. By constructing the loan schedule for the whole term of the loan, showing:

• the amount of each repayment

• the split of each repayment between interest and capital, and

• the capital outstanding after each repayment calculate the amount of the first monthly repayment needed to ensure that the capital outstanding is 0 at the end of the term of the loan.

1. Plot a graph showing the capital outstanding at the end of each year of the 10-year term.
2. Comment on your graph.
3. Determine which repayment causes the capital outstanding to fall below 55,000.
4. In order to buy some new bedroom furniture, a woman takes out a loan of 3,000. Under the terms of the loan, the repayment schedule is as follows:

• no repayments are made for the first 3 years after taking out the loan,

• then repayments of 250 are made quarterly in advance for the next 2 years,

• followed by repayments of 450 quarterly in advance for the next 3 years.

Calculate the APR on this loan.

1. In order to buy some raw materials for her jewellery business, a woman takes out a loan of 15,000. Under the terms of the loan, the repayment schedule is as follows:

• repayments of 1800 are made monthly in advance for the next 2 years,

• followed by repayments of 3600 monthly in advance for the next 2 years.

Calculate the APR on this loan.