2.2	Future and Present Value of Annuities

Example 1

A trader paid an annuity of BD150 at the end of each year for 3 years at an interest rate of 5% annually. Find the following:

A) Future value (amount) and interest at the end of the period.
B) Present value (amount) at the end of the period.

Example 2

Calculate the future value, interest and present value of an ordinary annuity of BD200 paid 4 times a year for 6 years if the nominal rate is 4% annually.

Example 3

Calculate the **future value, interest and present value** of an ordinary annuity of BD500 paid 2 times a year for 5 years if the nominal rate is 6% annually, Compounded interest semiannual.

Example 4

A trader paid an annuity of **BD120 at the beginning** of each six months at an interest rate of **8% annually**. Find the following:

1- Future value (amount) and interest at the end of 4 years.

2- Present value of the annuities at the end of the period.

Example 5

Calculate the **future value and the present value** of annuities due of BD80 paid each 4 months a year for 3 years and 8 months if the nominal rate is 2.5% thirdly.

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(1) Ahmed paid an annuity of BD400 at the end of each year for 7 years at an interest rate of 3% annually. Find the following:

a- Future value (amount) and interest at the end of the period.

b- Present value (amount) at the end of the period.

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(2) A trader paid an annuity of BD600 at the beginning of each three months at an interest rate of 6% annually. Find the following:

a- Future value (amount) and interest at the end of the period.

b- Present value (amount) at the end of the period.

Exercises Page 68

(3) Calculate the future value and interest of an ordinary annuity of BD800 paid 4 times a year for 6 years if the nominal rate is 4% annually

2.2	Finding Value of Annuity

Example 1

Amal pays a loan installment at the end of each year for **10 years at 5 % annually**. If her **balance at the end of the period** was **BD1,006.232**. What is the value of each ordinary annuity?

Example 2

Abdulla deposited at the end of each four months for 5 years at 12 % annually compounded interest thirdly. If the present value of his money now is BD5559.195 - What is the value of each annuity?

Example 3

What is annually annuity paid at the beginning of each year, if the future value is BD2794.329 in 10 years at 6 % annually?

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(4) At the beginning of every 4 months, Nasser deposited an annuity in a bank for 7 years at 9% annually. If the accumulated fund for him became $3249.048. Find how much Nasser deposited every 4 months.

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(5) Rayan deposited at the middle and at the end of each year an equal payment for 10 years at 5% annually. If the total amount of annuities at the end of the period was BD5236.664. Find the value of each annuity.

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(6) What semi – annually payment will accumulate to BD1080.549 in five years at 8% annually compounded semi- annually?

Exercises Page 68

(7) Bilal paid an annuity at the end of every year at 6% annually if the amount of annuities after 10 years was BD922.656. Find the value of each annuity.

2.4	Amortized Loan

Example 1

A trader borrowed BD50,548.320 from a bank at compound interest rate 6% annually with 5 equal annual payments.

REQUIRED:

a- Compute annual payments.

b- Prepare amortization loan schedule

Year	Beginning Principal	Annual Payment	Interest Expense	Principal Reduction	Remaining Principal
1					
2					
3					
4					
5					
Total					

Example 2

Ahmed borrowed BD97,368 from a bank at compound interest rate 10% annually for 7 years.

REQUIRED:

a- Compute annual payments.

b- Prepare amortization loan schedule

Year	Beginning Principal	Annual Payment	Interest Expense	Principal Reduction	Remaining Principal
1					
2					
3					
4					
5					
6					
7					
Total					

Exercises Page 75

(10) You are required to prepare amortization loan schedule for a BD40,000 loan to be repaid in equal instalments at the end of each of the next three years. The interest rate is 9% annually, compounded interest semiannually.

a- Compute annual payments.

b- Prepare amortization loan schedule

Year	Beginning Principal	Annual Payment	Interest Expense	Principal Reduction	Remaining Principal
1					
2					
3					
4					
5					
6					
7					
Total					