

IEB Finance, growth and decay practice — Questions

6 newly generated questions across all 12 finance, growth and decay topics the IEB examines in Paper I — 76 marks in all. Every answer is worked in the memorandum booklet. Nothing here is taken from a past paper.

Borrowing: the present-value annuity

1

[15]

A home loan of R1 550 000 is repaid in equal monthly payments over 25 years. The interest rate is 11% per annum compounded monthly, and the first payment is made one month after the loan is granted. Give answers correct to two decimal places.

-
- (a) Calculate the minimum monthly repayment needed to pay off the loan. (4)

Answer: _____

-
- (b) Calculate the balance outstanding at the end of year 19, immediately after the payment at that time. (4)

Answer: _____

-
- (c) Determine the effective annual interest rate of the loan. (3)

Answer: _____

-
- (d) If you pay R21 300 per month instead, how many payments will it take to pay off the loan? (The last payment may be smaller.) (4)

Answer: _____

Saving: the future-value annuity

2

[11]

Give answers correct to two decimal places.

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- (a) You invest R2 800 at the end of each month at 9% per annum compounded monthly. After the 36th payment you change your payments to R1 850 per month for 36 months, and then stop paying and leave the money to grow. What is the investment worth at the end of year 10? (7)

Answer: _____

-
- (b) A savings account earns 11% per annum compounded half-yearly. The first deposit of R16 000 is made six months after the account is opened, and the same amount is deposited at the end of every six months after that. How much is in the account 5 years after it was opened, just after the deposit made then? (4)

Answer: _____

3

[12]

You want to have R470 000 in 6 years' time. Your savings account earns 7% per annum compounded monthly. Give answers correct to two decimal places.

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- (a) Calculate the equal monthly deposit that reaches the goal, if the first deposit is made one month from now and the last one at the end of the 6 years. (4)

Answer: _____

-
- (b) Instead, you deposit a single amount of R240 000 now and nothing more. After how many months will the account first hold at least R470 000? (4)

Answer: _____

-
- (c) Instead, you deposit R240 000 now and R800 at the end of every month. What will the account hold at the end of the 6 years? (4)

Answer: _____

Compound growth

4

[11]

A house was bought for R2 450 000 on 1 January 2014. Its value has grown at 7% per annum, compounded annually. Give answers correct to two decimal places.

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- (a) Calculate the value of the house on 1 January 2021. (2)

Answer: _____

-
- (b) In which year will the value of the house first be more than R3 675 000? (Its value changes on 1 January each year.) (4)

Answer: _____

-
- (c) A car bought for R400 000 on the same day depreciates at 20% per annum on the straight-line method. What is it worth 4 years later? (2)

Answer: _____

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- (d) Had the car depreciated at 20% per annum on the reducing-balance method instead, how much more would it be worth after 4 years? (3)

Answer: _____

Depreciation

5

[11]

You start a business and buy a delivery truck for R1 075 000. Give answers correct to two decimal places.

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- (a) If the inflation rate is 7% per annum, how much will a new truck cost in 6 years' time? (2)

Answer: _____

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- (b) If the truck depreciates at 25% per annum on the reducing-balance method, what will it be worth in 6 years' time? (2)

Answer: _____

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- (c) A sinking fund is set up to pay the difference between the new truck's price and the old truck's value in 6 years. It earns 8% per annum compounded monthly, and equal monthly deposits start one month from now, the last one at the end of year 6. Calculate the monthly deposit. (4)

Answer: _____

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- (d) Suppose instead that the truck is worth R337 000 after 6 years. At what annual rate did it depreciate on the reducing-balance method? (3)

Answer: _____

Nominal and effective rates

6

[16]

You can afford to repay R15 000 per month on a home loan. Give answers correct to two decimal places.

- (a) The bank quotes an effective annual interest rate of 11.02%. Determine the equivalent nominal annual rate, compounded monthly, correct to two decimal places. (3)

Answer: _____

- (b) Using this nominal rate, calculate the largest loan that repayments of R15 000 per month can pay off in 30 years. The first payment is made one month after the loan is granted. (4)

Answer: _____

- (c) The house you want costs R1 890 000. How much must you pay as a deposit? (2)

Answer: _____

- (d) At the end of year 19, immediately after the payment then, you pay a lump sum of R70 000 into the loan. Calculate the balance outstanding immediately after the lump sum. (4)

Answer: _____

- (e) You keep paying R15 000 per month. How many more payments will pay off the loan? (The last payment may be smaller.) (3)

Answer: _____