Multiple-choice section – choose the correct answer

Question 1 [13.2]

The cost of a bed is currently $416. Assuming an inflation rate of 6.5% p.a., how much will it cost in five years, to the nearest dollar?

A $135 B $430 C $551 D $570

Question 2 [13.3]

The cost of a novel is currently $29.95. Assuming an inflation rate of 5.6% p.a., how much did it cost five years ago?

A $ B $ C $ D $29.95(1.056)5

Question 3 [13.4]

The final value of a $40 000 investment, which increases every 6 months at the annual compound interest rate of 4% for 3 years is:

A  B 

C  D 

Question 4 [13.4]

Will and Grace both invest $5000 for 5 years. Will’s investment compounds at 4% p.a. and Grace’s investment pays simple interest at the rate of 4%. The extra amount of interest that Will’s investment made over the 5 years is:

A $ B $

C $ D $

Question 5 [13.3]

Tarren invests $50 000 for 10 years and makes a final amount of $75 350. What is the rate, if the loan is compounded annually?

A 4.2% p.a. B 4.02% p.a. C 40.2% p.a. D 10.42% p.a.

Question 6 [13.6]

Radioactive plutonium-239 found at the Fukushima Nuclear Plant in Japan decays at a rate of 0.002 87% p.a. What would be the undecayed mass remaining from 1 kg of plutonium-239 after 100 years, to the nearest gram?

A 54 g B 750 g C 972 g D 997 g

Multiple-choice results: \_\_\_\_ / 6

Short answer section

Question 7 10 marks

Use words from the list below to complete the following sentences.

interest principal appreciation straight-line depreciation compound interest depreciation

adjusted value total depreciation depreciation value written-down value

(a) The original amount of money loaned or invested is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(b) The amount that an item depreciates is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Depreciation over a number of years is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(c) Increase in cost or value is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and decrease in cost or value is called \_\_\_\_\_\_\_\_\_\_\_\_\_.

(d) The value of an item after it depreciates is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(e) Interest that is calculated on the principal and interest from the previous time period is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(f) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ applies when items lose a constant amount of value each year.

(g) Simple interest depends on the principal, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate per annum and the time in years.

Question 8 4 marks [13.2]

Show how $4000 invested at 12% p.a. for 2 years can earn different amounts of interest by calculating the interest earned when compounding yearly and half-yearly.

Question 9 4 marks [13.3]

A new TV currently costs $745. What did a similar TV cost 4 years ago if the rate of inflation was approximately 6% each year? (Assume the cost of the TV kept pace with inflation.) Give your answer correct to the nearest dollar.

Question 10 4 marks [13.3]

Chloe is paid a salary of $45 036. Five years ago she was paid $40 000. What was the average annual rate of percentage increase of her salary? Give your answer correct to 1 decimal place.

Question 11 6 marks [13.4]

Find the effective rate of interest, correct to 2 decimal places, if an amount of money is borrowed at an interest rate of 17.5% p.a. and is compounded:

(a) half-yearly

(b) monthly.

Question 12 4 marks [13.5]

The prime cost of a washing machine 3 years ago was $1800. If its value depreciates at the rate of 22.5% find its present written-down value, correct to the nearest cent, assuming:

(a) straight-line depreciation

(b) reducing balance depreciation.

Question 13 4 marks [13.4]

Joel wants to borrow $20 000 so he can buy a car. He is offered a car loan from a bank at 9% compounding annually. His uncle offers him a loan at 10% p.a. simple interest. He wants to repay the loan in 5 years. Assuming he does not repay any of the loan for 5 years, which loan should he accept and how much will he have to repay?

Question 14 4 marks [13.3]

After how many years will an investment of $650 be worth at least $750 if it increases by 3% p.a. in line with inflation?

Question 15 4 marks [13.6]

A rare species of fish has increased its population over the last four years from 220 to 280 due to a breeding program. What has been the average annual rate of growth? Give your answer correct to  
1 decimal place.

Short answer total: \_\_\_\_\_ / 44

Extended answer section

Question 16 6 marks [13.2]

Two friends invested $1000, each in different ways. Alice used a simple interest account at 10.1% p.a., while Bob used an 8% compound interest account, compounding annually.

(a) Complete the table to show the amounts their investments were worth at the end of each year. Continue the table until Amount B (Bob's Amount) is greater than Amount A (Alice's Amount).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Years | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Amount A |  |  |  |  |  |  |  |  |
| Amount B |  |  |  |  |  |  |  |  |

(b) How long will Alice’s investment take to double in value?

(c) How long will Bob’s investment take to double in value?

Question 17 6 marks [13.3]

Some early postage rates for letters are given in the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | 1966 | 1971 | 1976 | 1981 |
| Cost in cents | 5 | 8 | 16 | 25 |

(a) (i) What was the average annual percentage increase from 1966 to 1971?

(ii) What annual inflation rate between 1966 and 1971 would correspond to the increase in price from 5 to 8 cents, correct to 2 decimal places?

(b) (i) What was the average annual percentage increase from 1966 to 1976?

(ii) What annual inflation rate between 1966 and 1976 would correspond to the increase in price from 5 to 16 cents, correct to 2 decimal places?

(c) (i) What was the average annual percentage increase from 1966 to 1981?

(ii) What annual inflation rate between 1966 and 1981 would correspond to the increase in price from 5 to 25 cents, correct to 2 decimal places?

Extended answer results: \_\_\_ / 12

TOTAL test results: \_\_\_ / 62