Multiple-choice section

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Question | 1 | 2 | 3 | 4 | 5 | 6 |
| Answer | D | D | A | D | C | D |

Question 1 [13.2]

D

I = 

$6000 = P × 0.08 × 2.5

P = 

= $30 000

Question 2 [13.2]

D

A = P(1 + r)n

= 387(1 + 0.067)4

= $502

Question 3 [13.3]

A

P = 

Question 4 [13.4]

D

Annual interest rate of 6% is equivalent to 2% in 2 months.

Compounded value: $30 000(1.03)12

Question 5 [13.4]

C

Interest Wayne’s investment:. 2000(1.05)4 – 2000 = 2000((1.05)4 – 1)

Interest Gareth’s investment: 4 × 0.05 × 2000 = 2000 × 0.2

Difference in the interest amounts:



Question 6 [13.6]

D

Remaining amount  
= P(1 – )n

=1000(1 – 0.000 028 7)100

= 997 g

Multiple-choice results: 6

Short answer section

Question 7 10 marks [13.1, 13.2]

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

(b) The amount that an item depreciates is called the depreciation value. Depreciation over a number of years is called total depreciation.

(c) Increase in cost or value is called appreciation and decrease in cost or value is called depreciation.

(d) The value of an item after it depreciates is called the written-down value or the adjusted value.

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

(f) Straight-line depreciation applies when items lose a constant amount of value each year.

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

Question 8 4 marks [13.2]

Using yearly intervals:

A = 15 000(1.06)2

= $16 854

I = $1854

Using half-yearly intervals

A = 15 000(1.03)4

= $16 882.63

I = $1882.63

Question 9 4 marks [13.3]

A = P(1 + i)n

676 = P(1.08)5

P =   
 P = $460

Question 10 4 marks [13.3]

A = P(1 + r)n

53 320 = 47 000(1 + r)4

(1 + r) = 

(1 + r) = 1.032

r = (1.032 – 1) × 100 = 3.2 %

Question 11 6 marks [13.4]

|  |  |
| --- | --- |
| (a) Half-yearly    The effective interest rate is 17.18% | (b) monthly    The effective interest rate is 17.81% |

Question 12 4 marks [13.5]

|  |  |
| --- | --- |
| (a) Straight-line depreciation  =  = 990  Written-down value  = $(2200 – 990)  = $1210 | (b) Written-down value  =  = $1351.08 |

Question 13 4 marks [13.4]

|  |  |
| --- | --- |
| 26% p.a. compounding daily: | 26.8% p.a. compounding quarterly: |

26% p.a. compounding daily gives a higher effective interest rate.

Question 14 4 marks [13.3]

A = P(1 + r)n

850 = 720 × (1.05)n

By trial and error:

720(1.05)4 = 875.16

or 1.05*n* = 1.180 555 556

(1.05)4 = 1.215 506 25

n = 4 years

Question 15 4 marks [13.5]

320 = 260

r = 

r = 5.3%

Short answer total: 44

Extended answer section

Question 16 6 marks [13.2]

(a)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Years | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Amount A | 1000 | 1133 | 1266 | 1399 | 1532 | 1665 | 1798 | 1931 |
| Amount B | 1000 | 1100 | 1210 | 1331 | 1464 | 1610.50 | 1771.56 | 1948.71 |

|  |  |
| --- | --- |
| (b) It will double when P = PrT or rT = 1.  As r = 0.133, T = 7.5188  It will take 8 years.  (Trial and error, or continuing the table above, will lead to the same result.) | (c) 1000(1 + r)T = 2000.  1.1T = 2 Trial and error:  1.17 = 1.95  1.18 = 2.14  It will take 8 years. |

Question 17 6 marks [13.3]

|  |  |
| --- | --- |
| (a) (i) Increase = 3  original = 4  Percentage increase  = 3 ÷ 4  = 0.75   = 75%  Average annual increase   =   = 15% | (ii)    The inflation rate is 11.84% p.a. |
| (b) (i) Increase = 14  original = 4  Percentage increase  = 14 ÷ 4  = 3.5  = 350%  Average annual increase %  =    = 35% | (ii)    The inflation rate is 16.23% p.a. |
| (c) (i) Increase = 20  original = 4  Percentage increase  = 20 ÷ 4  = 5  = 500%  Average annual increase %  =    = 33.33% | (ii)    The inflation rate is 12.69% p.a. |

Extended answer results: 12

TOTAL test results: 62