Multiple-choice section

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

Question 1 [13.2]

D



Question 2 [13.3]

B

A = P(1 + r)n

$29.95 = P(1.056)5

P = 

Question 3 [13.4]

C

Annual interest rate of 4% is equivalent to 2% in 6 months.

Compounded value: $40 000(1.02)6

Question 4 [13.4]

C

The final amount for Will is 5000(1.04)5 so the interest earned is 5000(1.04)5 – 5000.

Grace earns 5000 × 0.04 ×5 = 5000 × 0.2 interest.

The difference is:

5000(1.04)5 – 5000 – 5000 × 0.02 = 5000[(1.04)5 – 1 – 0.2]

= 5000(1.045 – 1.2)

Question 5 [13.3]

B

A = P(1 + r)n

$75 350 = 50 000(1 + r)10

 = (1 + r)10

1 + r = 

1 + r = 1.042

r = 0.042

r = 4.2%

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

(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]

A = 4000(1.12)2 using yearly intervals

= $5017.60

I = $1017.60

A = 4000(1.06)4 using half-yearly intervals

= $5049.91

I = $1049.91

Question 9 4 marks [13.3]



The cost of the TV would have been $582

Question 10 4 marks [13.3]

A = P(1 + r)n

45036 = 40 000(1 + r)5

(1 + r) =  = 1.024

r = (1.024 – 1) × 100 %

r = 2.4%

Question 11 6 marks [13.4]

|  |  |
| --- | --- |
| (a) Half-yearly    The effective interest rate is 18.27% | (b) monthly    The effective interest rate is 18.97% |

Question 12 4 marks [13.5]

|  |  |
| --- | --- |
| (a) Straight-line depreciation  =  = $1215  Written-down value  = $(1800 – 1215) = $585 | (b) Written-down value  =  = $837.87 |

Question 13 4 marks [13.4]

|  |  |
| --- | --- |
| A = P(1 + r)n  A (bank) = 20 000(1.09)5  = 30 772.48 | I (uncle ) = 20 000 × 0.1 × 5  = $10 000  A = $20 000 + 10 000  = $30 000 |

Should accept uncle’s offer. Will owe $30 000.

Question 14 4 marks [13.3]

A = P(1 + r)n

750 = 650 × (1.03)n

650(1.03)5 = 753.53 (by trial and error)

1.035 = 1.15927

n = 5 years

Question 15 4 marks [13.5]

280 = 220(1 + )4

R = 

r = 6.2%

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 | 1101 | 1202 | 1303 | 1404 | 1505 | 1606 | 1707 |
| Amount B | 1000 | 1080 | 1166.40 | 1259.71 | 1360.49 | 1469.33 | 1586.87 | 1713.82 |

|  |  |
| --- | --- |
| (b) It will double when P = PrT or rT = 1.  As r = 0.101, T = 9.9. It will take 10 years.  (Trial and error, or continuing the table above, will lead to the same result.) | (c) 1000(1 + r)T = 2000.  1.08T = 2 Trial and error 1.089 = 1.999 1.0810 = 2.1589 It will take 10 years. |

Question 17 6 marks [13.3]

|  |  |
| --- | --- |
| (a) (i) Increase = 3 original = 8 Percentage increase = 3 ÷ 5 = 0.6  = 60%  Average annual increase %  =   = 12% | (ii) r =   = 9.86% |
| (b) (i) Increase = 11 original = 5 Percentage increase  = 11 ÷ 5 = 2.2  = 220%  Average annual increase %  =  = 22% | (ii) r =   = 12.33% |
| (c) (i) Increase = 20 original = 5  percentage increase  = 20 ÷ 5 = 4  = 400%  Average annual increase %  =  = 26.67% | (ii) r =   = 11.33% |

Extended answer results: 12

TOTAL test results: 62