Option 1 (7 marks)

	Amount at start of year	Value of Scholarships	Amount after scholarships awarded for following year
2018	20,000	—	20,000
2019	20,000	3,000	17,000
2020	17,000	3,000	14,000
2021	14,000	3,000	11,000
2022	11,000	3,000	8,000
2023	8,000	3,000	5,000
2024	5,000	3,000	2,000
2025	2,000	2,000	0
	Entire Column Correct (1)	Entire column correct (1)	Entire column correct (1)

If start scholarships in 2018 (-1)

Complete the table above for Option 1.

How long will the trust fund last for this option? Include why in your response.

Time (1)

Explanation (1)

eg. (1) 8 years
(1) no scholarships in 2018
6/4yr 2019 - 2024
then finish with less scholarships in 2025

How many scholarships can be awarded in this time? Justify with a calculation.

Calculation (1)

Answer (1)

eg. $(6 \times 6) + 4 = 40$ (1) (1)

Option 2 (11 marks)

Entire Column ① F.T. Entire column ① F.T. Entire column ①

	Amount at start of year	Interest	Interest + principal	Value of Scholarships	Amount remaining at end of year
2018	20,000	1200	21,200	3,000	18,200
2019	18,200	1092	19,292	3,000	16,292
2020	16,292	977.52	17,269.52	3,000	14,269.52
2021	14,269.52	856.17	15,125.69	3,000	12,125.69
2022	12,125.69	727.54	12,853.23	3,000	9,853.23
2023	9,853.23	591.19	10,444.43	3,000	7,444.43
2024	7,444.43	446.67	7,891.09	3,000	4,891.09
2025	4,891.09	293.47	5,184.56	3,000	2,184.56
2026	2184.56	131.07	2315.63	2,000	315.63
				Not 3,000 ①	Final Answer ① ±0.10 due to rounding

F.T. accordingly

Be aware students may/not round results.

Show your calculations for the first row in the table above and then complete the table.

e.g. $I = 20{,}000 \times 0.06 = 1200$ ①

$1 + P = 20{,}000 + 1{,}200 = 21{,}200$

$E.O.Y = 21{,}200 - 3{,}000 = 18{,}200$ ①

Interest ①

Final ①

How long does the trust fund last? Include why in your response.

Time ①

Explanation ①

e.g. 9 years ①

1st 8 years get 6, Last year 4. ①

How many scholarships can be awarded in this time? Justify with a calculation.

Calculation ①

Answer ①

F.T. errors from table

eg. $(6 \times 8) + 4 = 52$ ① ①

Option 3 (This table shows how much is left in the trust fund after 5 years of the scholarship program already running) (9 marks)

		Amount at start of year	Interest	Interest + principal	Value of Scholarships	Amount remaining at end of year
2023	9	11806.17	324.67	12130.84		12130.84
	10	12130.84	333.60	12464.44	3000	9464.44
2024	11	9464.44	260.27	9724.71		9724.71
	12	9724.71	267.43	9992.14	3000	6992.14
2025	13	6992.14	192.28	7184.43		7184.43
	14	7184.43	197.57	7382.00	3000	4382.00
2026	15	4382.00	120.50	4502.50		4502.50
	16	4502.50	123.82	4626.32	3000	1626.32
2027	17	1626.32	44.72	1671.05		1671.05
	18	1671.05	45.95	1717.00	1500.00	217.00

Entire table (1)

Entire (1) F.T.

Final Answer (1) F.T. ± 0.10 due to rounding

Show how Line 10 of this table has been calculated and complete the table for this option.

correct rate in decimal form (1) eg. 12,130.84 × 0.0275 = 333.60

Amount at end of year (1) 12130.84 + 333.60 = 12,464.44

12464.44 − 3,000 = 9,464.44

How long does the trust fund last? Include why in your response.

Time (1) eg. 10 years (1)

Explanation (1) 9 full years of 6 scholarships
1 year with only 3

How many scholarships can be awarded in this time? Justify with a calculation.

Calculation (1) e.g. (9 × 6) + 3 = 57 (1)

Answer (1)

F.T. from table

PART B (6 marks)

Consider how many scholarships could be awarded and the 'life' of the trust fund.

What do you think would happen with each option if the only change was:

a) the scholarship value for **Option 1** was increased by $100 each year?

Comment on
- 'Life' (1) or # of scholarships
- Explanation (1)

e.g. Less time (1)
As cost more / less scholarships (1)

b) the interest rate in **Option 2** was increased to 7% p.a.?

e.g. more scholarships
more interest earned

c) the compounding period in **Option 3** was changed to 'compounding monthly'?

e.g. more money
more regularly compounded
so possibly more scholarships

END OF APPLICATION