

b) Calculate the amounts that your grandmother will get one year from Bank A and Bank B, respectively. (4 marks)

c) Based on the information in part (b), which of the three banks should your grandmother choose? (1 mark)

- 1.29 a** Bank A: $\$50,000 \times (1 + 5\%) = \$52,500$ (2 marks)
 Bank B: $\$50,000 \times (1 + 6\%) = \$53,000$ (2 marks)
 Bank C: $\$50,000 \times (1 + 6.5\%) = \$53,250$ (2 marks)

b Bank A: $\$50,000 \times \left(1 + \frac{5.5\%}{4}\right)^4 = \$52,807.2$ (2 marks)

Bank B: $\$50,000 \times \left(1 + \frac{6\%}{2}\right)^2 = \$53,045$ (2 marks)

- c** Since my grandmother can get the largest amount of money from Bank C in one year, she should choose Bank C. (1 mark)

- 1.32 a** The total PV of annual cash inflows
 $= \$20,000 \div (1 + 10\%) + \$20,000 \div (1 + 10\%)^2$ (2 marks)
 $= \$34,710.74$

PV of Speedy's market value at the end of Year 2
 $= \$15,000 \div (1 + 10\%)^2$ (1 mark)
 $= \$12,396.69$

Total PV = $\$34,710.74 + \$12,396.69 = \$47,107.43$
 NPV = $\$47,107.43 - \$50,000 = -\$2,892.6$ (2 marks)

Since the NPV is negative, Mavis should not buy the computer system. (1 mark)

- b** New NPV = $\$47,107.43 - \$45,000 = \$2,107.4$ (2 marks)
 Since the NPV is positive, the financial benefit of buying the system outweighs its cost. Mavis should buy the system. (1 mark)

- c** The total PV of annual cash inflows
 $= \$25,000 \div (1 + 10\%) + \$25,000 \div (1 + 10\%)^2 + \$25,000 \div (1 + 10\%)^3$ (2 marks)
 $= \$62,171.30$

PV of Excellent's market value at the end of Year 3
 $= \$20,000 \div (1 + 10\%)^3$ (1 mark)
 $= \$15,026.30$

Total PV = $\$62,171.30 + \$15,026.30 = \$77,197.6$
 NPV = $\$77,197.6 - \$80,000 = -\$2,802.4$ (2 marks)

- d** Since the NPV of Speedy ($\$2,107.4$) is positive and is higher than that of Excellent ($-\$2,802.4$), Mavis should buy Speedy.

1.33 a The total tuition fees after three years:

$$FV = \$150,000 \times (1 + 5\%)^3 \quad (1 \text{ mark})$$

$$= \$173,643.75 \quad (1 \text{ mark})$$

The amount of money that Tom has to deposit now:

$$PV = \frac{\$173,643.75}{(1 + 9\%)^3} \quad (2 \text{ marks})$$

$$= \$134,084.8 \quad (1 \text{ mark})$$

Therefore, Tom has to deposit \$134,084.8 now so that he will have sufficient funds to pay for Nancy's tuition fees in her first college year.

b The amount of Tom's deposit in one year:

$$FV = \$134,084.8 \times (1 + 9\%) \quad (1 \text{ mark})$$

$$= \$146,152.43$$

One year after Tom deposits the money, the amount of money required in order to have enough money for Nancy's tuition fees

$$= \frac{\$173,643.75}{(1 + 8\%)^2} \quad (2 \text{ marks})$$

$$= \$148,871.53$$

Extra amount of money that Tom has to deposit

$$= \$148,871.53 - \$146,152.43 \quad (1 \text{ mark})$$

$$= \$2,719.1 \quad (1 \text{ mark})$$