

End of Topic Test – Chapter 2: Personal Finance — Mark Scheme

Total: 71 marks

1. Budgeting and current account

(a) B1 “OD” means overdrawn/overdraft – the account balance has gone below £0 (the customer has spent more than they had). B1 the unauthorised OD fee was charged because the student went overdrawn without having an agreed/authorised overdraft facility in place. [2]

(b) M1 total income = salary = £980.00 (only credit entry). M1 total expenditure = 28.00 + 60.00 + 42.50 + 20.00 + 25.00 + 85.60 + 520.00 + 63.40. A1 total expenditure = £844.50. [3]

(c) B1 suggestion 1 (e.g. set up balance alerts/check balance before spending). B1 explanation of how it helps (avoids spending when balance is low, so avoids unauthorised OD fees). B1 suggestion 2 with explanation (e.g. build a small savings buffer / reduce discretionary spending such as online shopping, so a cushion exists before payday). [3]

2. Income tax bands

Personal allowance \$12,570; 20% on \$12,571–\$50,270; 40% above \$50,270.

(a) M1 taxable income = 39,500 – 12,570 = 26,930. M1 tax = 0.20 × 26,930. A1 tax = \$5,386. [3]

(b) M1 tax in basic band = 0.20 × (50,270 – 12,570) = 0.20 × 37,700 = \$7,540. M1 tax in higher band = 0.40 × (62,000 – 50,270) = 0.40 × 11,730 = \$4,692. M1 total = 7,540 + 4,692. A1 total tax = \$12,232. [4]

(c) M1 average rate = 12,232 ÷ 62,000 × 100. A1 = 19.7% (1 d.p.). [2]

3. Payslip and deductions

(a) B1 gross pay is total earnings before any deductions; net pay is the amount actually received after tax, NI, and other deductions are subtracted. [2]

(b) M1 total deductions = 310.40 + 165.20 + 72.00 + 122.50 = \$670.10. M1 net pay = 2450.00 – 670.10. A1 net pay = \$1,779.90 (consistent with the payslip’s rounded \$1,780). [3]

(c) M1 income above threshold = 2450 – 2274 = \$176. M1 9% × 176 = \$15.84. A1 the calculated deduction (\$15.84) does *not* match the \$72.00 shown on the payslip – candidates should identify this inconsistency; award the mark for a correct, clearly stated comparison (full credit for correct method and arithmetic even though the figures do not reconcile – this is a genuine discrepancy in the data given). [3]

4. Comparing loans using APR

Amount financed (after \$100 deposit) = \$800; three payments of \$300 at the end of years 1, 2, 3.

(a) B1 amount to be financed identified as \$800. M1 each payment discounted: $\frac{300}{1+i}, \frac{300}{(1+i)^2}, \frac{300}{(1+i)^3}$.

M1 terms summed to equal the amount financed. A1 equation: $800 = \frac{300}{1+i} + \frac{300}{(1+i)^2} + \frac{300}{(1+i)^3}$. [4]

(b) M1 trial value substituted (e.g. $i = 0.10 \Rightarrow PV \approx \746 , too low). M1 second, closer trial (e.g. $i = 0.06 \Rightarrow PV \approx \802 ; $i = 0.062 \Rightarrow PV \approx \799). A1 $i \approx 6.1\%$ (accept 6.0%–6.2%). [3]

(c) B1 the description is misleading – although no interest is charged *by name*, the customer repays $3 \times \$300 = \900 for goods worth \$800 once financed, which is equivalent to an effective interest rate. B1 supported using part (b): this equates to an APR of about 6.1%, so the deal is not truly “no interest”. [2]

5. Comparing savings using AER

Nominal annual rate 2.4%, compounded monthly.

(a) M1 monthly rate = $2.4\% \div 12$. A1 = 0.2% per month. B1 expressed as a decimal, 0.002. [4]

(b) M1 method: each month's interest = starting value $\times 0.002$, rounded to the nearest penny, added to give the next starting value.

	Starting (£)	Interest (£)	Final (£)
Month 1	2000.00	4.00	2004.00
Month 2	2004.00	4.01	2008.01
Month 3	2008.01	4.02	2012.03

A1 Month 1 row correct. A1 Month 2 row correct. A1 Month 3 row correct. [4]

(c) M1 substitute $i = 0.024$, $n = 12$ into $AER = (1 + i/n)^n - 1$. M1 $(1.002)^{12} \approx 1.02427$. A1 AER $\approx 2.43\%$ (2 d.p.). [3]

6. VAT and percentage multipliers

(a) B1 VAT = $75 \times 0.20 = \$15$. B1 price including VAT = $75 \times 1.20 = \$90$. [2]

(b) M1 divide by 1.20: $54 \div 1.20$. A1 = \$45. B1 correct multiplying factor identified/explained ($\div 1.20$, not $\times 0.80$). [3]

(c) M1 reduction = $60 - 51 = \$9$. M1 percentage = $9/60 \times 100$. A1 = 15%. [3]

7. Inflation and real value

(a) M1 expression: $210,000 \times 1.03^6$. M1 $1.03^6 \approx 1.19405$. A1 value $\approx \$250,751$. [3]

(b) B1 the house's nominal value grows at the same 3% rate as general prices (inflation). B1 so the growth in money terms exactly cancels out the fall in the purchasing power of money. B1 conclusion: the *real* (inflation-adjusted) value of the house stays the same – it buys the same amount of goods/services as before, even though its price in \$ has risen. [3]

(c) M1 real growth factor = $1.03^6 \div 1.015^6$. M1 = $1.19405 \div 1.09344 \approx 1.0920$. A1 real percentage increase $\approx 9.2\%$ over the 6 years. [3]

8. Mortgage and recurrence relations

Loan \$120,000, annual rate 4%, monthly payment \$900, monthly rate $0.04/12$.

(a) M1 correct interest factor $\left(1 + \frac{0.04}{12}\right)$ identified. M1 payment of \$900 subtracted each month.

A1 recurrence relation: $B_n = B_{n-1} \left(1 + \frac{0.04}{12}\right) - 900$, with $B_0 = 120,000$. [3]

(b) M1 $B_1 = 120,000 \times \left(1 + \frac{0.04}{12}\right) - 900 = 120,000 + 400 - 900$. A1 $B_1 = \$119,500$. M1 $B_2 = 119,500 \times \left(1 + \frac{0.04}{12}\right) - 900 = 119,500 + 398.33 - 900$. A1 $B_2 \approx \$118,998$ (nearest pound). [4]

(c) B1 columns for month number, opening balance, interest for the month, payment, closing balance. B1 first rows shown: Month 0, opening balance \$120,000 (no interest/payment yet); Month 1: opening = previous closing, interest = opening $\times 0.04/12$, payment = 900, closing = opening + interest – payment. B1 the closing-balance formula is entered once and then filled/dragged down for as many months as required, each row referencing the row above. [3]