Chapter 8 Test

For questions 1 to 4, select the best answer.

1. Which situation represents an ordinary simple annuity?
   A A car loan is paid off 12 months before the final payment is due.
   B A deposit of $75 is made into an interest-bearing account at the start of each month.
   C A deposit of $300 is made at the end of every month into an account that earns 3% annual interest.
   D A furniture store charges $109 per month for 3 years for a dining room set, with annual interest at 12%, compounded semi-annually.

2. What is the future value of an annuity with quarterly payments of $650 for 4 years at 5% per year, compounded quarterly?
   A $2616.30   B $9373.19
   C $10 920.00   D $11 434.26

3. What is the monthly payment on $3600 borrowed at 9% annual interest, compounded monthly, for 2 years?
   A $370.88   B $164.47
   C $137.47   D $46.88

4. Leah wishes to borrow $5000. She has found four options. Which option has Leah pay the least amount of interest?
   A a 1-year loan to be repaid monthly at 15% per year, compounded monthly
   B a 2-year loan to be repaid quarterly at 10% per year, compounded quarterly
   C a 3-year loan to be repaid weekly at 4% per year, compounded weekly
   D a 4-year loan to be repaid semi-annually at 5% per year, compounded semi-annually

5. An electronics store offers a payment plan at 9.3% per year, compounded monthly. A customer can pay for a digital video camera by monthly payments of $72.89 for 2 years. How much total interest would the store earn with this the plan?

6. A homeowner is planning to replace the vinyl siding on his house within the next 3 years. He receives a quote of $5900. The homeowner has a savings account that pays 3.9% annual interest, compounded monthly.
   a) Determine the monthly deposit the homeowner must make to pay in cash for the vinyl siding in
      i) 1 year   ii) 2 years   iii) 3 years
   b) For each payment period in part a), determine how much of the money used to pay for the vinyl siding will come from interest.

7. Determine the quarterly investment needed to generate $41 000 in 10 years if interest is earned at 4.2% per year, compounded quarterly.

8. A couple wish to have a retirement income of $50 000 per year for 30 years, starting at age 65. Their retirement savings fund earns 6.9% annual interest, compounded annually. Determine the amount the couple will need to have in the fund by the time they reach age 65.

9. Ishaan purchased a used car 2 year ago. He borrowed $10 500 over 6 years at 8.25% annual interest, compounded monthly.
   a) Determine Ishaan's monthly payment.
   b) Calculate the total amount he has paid so far.
   c) Determine the amount remaining on the loan.
   d) Determine the amount of interest Ishaan will save by paying the loan in fulltoday.
   e) Ishaan's financial institution will allow Ishaan to change the terms of his loan. He decides that he will pay his remaining debt in quarterly payments over 4 years. Will Ishaan end up paying more interest, less interest, or the same amount of interest over the remaining life of the loan by making this change?

10. Sarai, aged 20, is saving for retirement. She has just opened a savings account that pays 6% annual interest, compounded annually.
    a) What annual investment would Sarai need to make to have $1 000 000 by the time she turns 60?
    b) Calculate the total amount invested in part a).
    c) Suppose that Sarai does save $1 000 000 by the time she turns 60. Determine the maximum annual payment she can receive if she wants her retirement fund to last for 30 years.