IE 360 Engineering Economic Analysis

Exam 1

Sample Test - Dr. Park

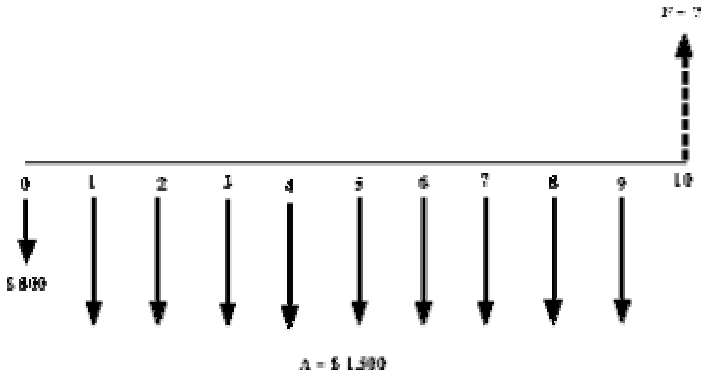
Name:

Read the following instructions carefully

- Fill in your name on this exam sheet.
- Fill in your name, exam version number and the course number on your general purpose Scan Sheet. Use the scan sheet to answer all the questions.
- You must return both the exam sheet and the scan sheet at the end of this examination. This is the only check we have that you attended the examination.
- In recognition of the Student Honor Code, you should neither give nor receive aid on this examination.
- Note that your answers may differ slightly from the choices listed due to rounding errors. Select the closest answer from the listed choices.

Problem 1

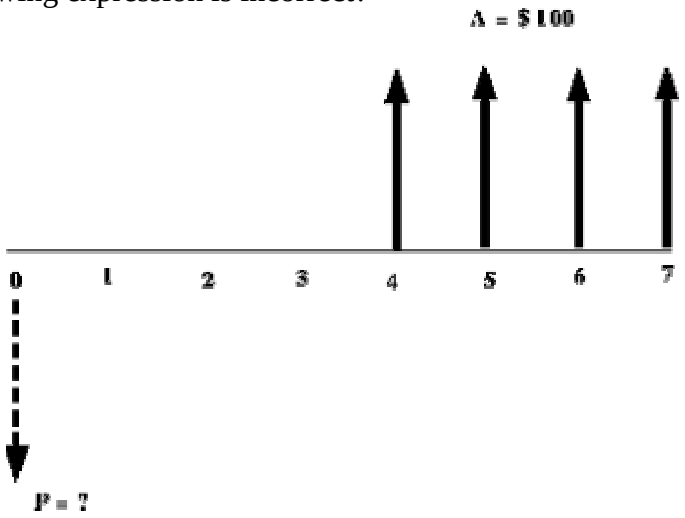
If you make the following series of deposits at an interest rate of 10% compounded anually, what would be the total balance at the end of 10 years?



A. $ F = 22,256
B. $ F = 24,481
C. $ F = 24,881
D. $ F = 25,981

Problem 2

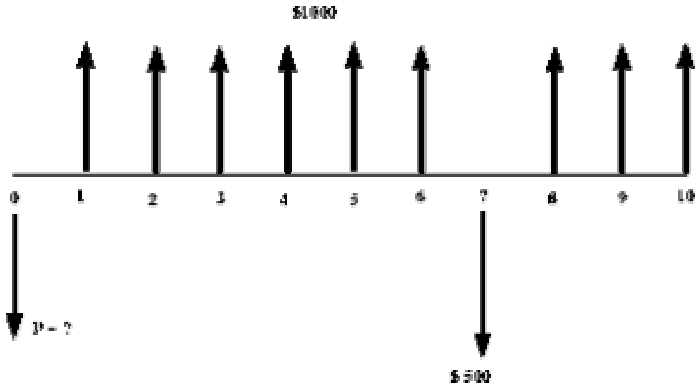
In computing the equivalent present worth of the following cash flow series at period 0, which of the following expression is incorrect?



A. P = $ 100(P/A,i,4)(P/F,i,4)
B. P = $ 100(F/A,i,4)(P/F,i,7)
C. P = $ 100(P/A,i,7) - $ 100(P/A,i,3)
D. P = $100[(P/F,i,4) + (P/F,i,5) + (P/F,i,6) + (P/F,i,7)]

Problem 3

To withdraw the following $ 1,000 payment series in the figure, determine the minimum deposite (P) you should make now if your deposits earn an interest rate of 10 % compounded anually. Note that you are making another deposite at the end of year 7 in the amount of $ 500. With the minimum deposit P, your balance at the end of year 10 should be 0.

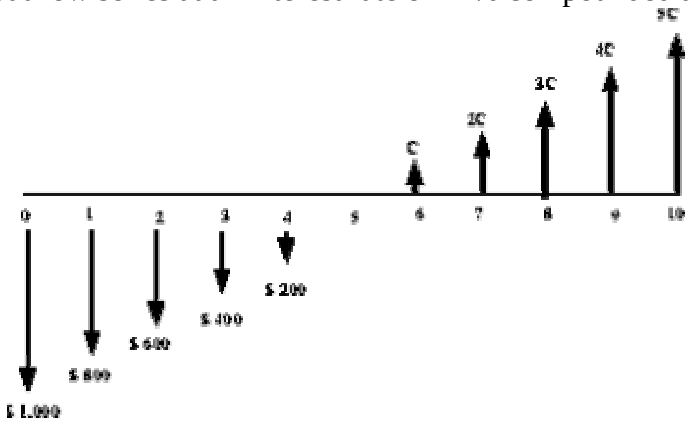


A. P = $ 4,912

B. P = $ 4,465
C. P = $ 5,374
D. P = $ 5,912

Problem 4

Consider the cash flow series shown below. What value of C makes the inflow series equivalent to the outflow series at an interest rate of 12% compounded annually?



A. C = $ 200
B. C = $ 282.7
C. C = $ 394.65
D. C = $ 458.90

Problem 5

You just received credit card applications from two different banks. The interest terms on your unpaid balance are as follows:

- Bank A: 15% compounded monthly
- Bank B: 14.8% compounded daily
  Which of the following statements is incorrect?

A. The effective annual interest rate for bank A is 16.075%
B. The nominal interset rate for bank B is 14.8%
C. Bank A's term is a better deal because you will pay less interest on your unpaid balance.
D. The effective monthly interest rate for Bank A is 1.25%

Problem 6

John secured a home improvement loan in the amount of $ 10,000 from a local bank at an interest rate of 9% compounded monthly. He agreed to pay the loan in 60 equal monthly installments. Right after the 24th payment, John wishes to pay off the remainder of the loan in a lump sum amount. What is the payment size?

A. $ 7,473
B. $ 6,000
C. $ 6,528
D. $ 7,710

Problem 7

Vi Wilson is interested in buying an automobile priced at $ 18,000. She can come up with a down payment in the amount of $ 3,000 from her personal savings. The remainder of the loan will be financed over a period of 36 months from the dealer at an interest rate of 6.25% compounded monthly. Which of the following statement is correct?

A. The dealer's annual percentage rate (APR) is 6.432%.
B. The monthly payemnt can be calculated by A = $15,000(A/P,6.25%,3)/12
C. The monthly payment can be calculated by A = $15,000(A/P,6.24%/12,36)
D. The monthly payment can be calculated by A = $15,000(A/P,6.432%,3)/12

Problem 8

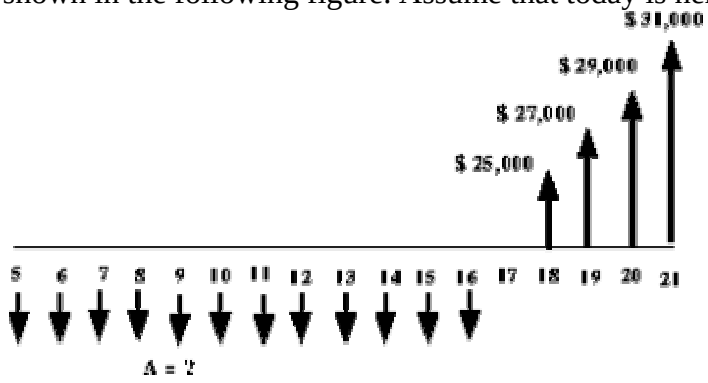
What is the future worth of an equal quarterly payment series of $2,500 for 10 years if interest rate is 9% compounded monthly?

A. F = $ 158,653
B. F = $ 151,930
C. F = $ 154,718
D. F = $ 160,058

Problem 9

A couple is planning to finance their 5-year-old daughter's college education. They were able establish a college fund that earns 8% compounded annually. What annual deposit

must be made from the daughter`s 5th birthday to her 16th birthday to meet the future college expenses shown in the following figure. Assume that today is her 5th birthday.



A. A = $ 3,048
B. A = $ 5,893
C. A = $ 4,494
D. A = $ 4,854

Problem 10

You are considering two savings plans for your future retirement.

- **Option 1:** Deposit $1,000 at the end of each quarter for the first 10 years. At the end of 10 years. At the end of 10 years, make no further deposits, but leave the amount accumulated at the end of 10 years for the next 15 years.
- **Option 2:** Do nothing for the first 10 years. Then deposite $6,000 at the end of each year for the next 15 years.

If You deposits or investments earn at an interest rate of 6% compounded quarterly, which of the following statement is correct? With Option 2, when compared with Option 1, you will be able to accumulate

A. $ 7,067 more at the end of 25 years from now
B. $ 8,523 more at the end of 25 years from now
C. $ 14,757 less at the end of 25 years from now
D. $ 13,302 less at the end of 25 years from now