1. A company has a lease expiring on December 31, 1986. The company is notified that the monthly rent will double as of January 1, 1987. This rate will be good for two years. The company wishes to dampen the effect of the rent increase by paying a higher rent for 2 1/2 years. Starting July 1, 1986.
Calculate the percentage increase on July 1, 1986 assuming an interest rate of 12% compounded monthly.
(A) 70% (B) 72% (C) 74% (D) 76% (E) 78%
[SOA 11/86 #1]

2. Kimberley is told that she can receive a 250,000 death benefit from her husband’s life insurance in annual installments of 15,000 at the beginning of each year for 11 years and a final payment of 16,265 at the beginning of each year for 11 years and a final payment of 16,265 at the beginning of the 12th year.
Alternatively, Kimberley may receive annual installments of 13,000 at the beginning of each year for life, with a certain period of 10 years.
Calculate the present value of a 10-year deferred life annuity-due of one per annum at Kimberley’s issue age.
(A) 8.5 (B) 9.0 (C) 9.5 (D) 10.0 (E) 10.5
[SOA 11/89 #17]

3. Ms. Smith has two grandchildren, Adam and Evelyn. Adam will be enrolling in college on September 1, 2004, and Evelyn will be enrolling in college on September 1, 2005. Ms. Smith wishes to give both Adam and Evelyn $1,000 at the beginning of each of their four years of college.
Ms. Smith will fund these payments by making five level annual deposits of P into an account earning an effective interest rate of 7%, with the first deposit on September 1, 1998.
Determine the value of P
(A) Less than $1050
(B) At least $1,050, but less than $1,150
(C) At least $1,150, but less than $1,250
(D) At least $1,250, but less than $1,350
(E) At least $1,350
[CAS 5/99 #5]

4. The death benefit on a life insurance policy can be paid in any of the following ways, each of which has the same present value as the death benefit:
   (i) a perpetuity of 120 at the end of each month;
   (ii) 365.47 at the end of each month for n years; and
   (iii) A payment of 17866.32 at the end of n years.
Calculate the amount of the death benefit.
(A) 8000 (B) 9000 (C) 10000 (D) 12000 (E) 15000
[SOA 5/91 #17]
5. Dottie receives payments of $X$ at the end of each year for $n$ years. The present value of her annuity is 493.
Sam receives payments of $3X$ at the end of each year for $2n$ years. The present value of his annuity is 2748.
Both present values are calculated at the same annual effective interest rate.
Determine $v^n$.
(A) 0.86 (B) 0.87 (C) 0.88 (D) 0.89 (E) 0.90
[SOA 5/98 #4]

6. Jeff deposits 100 at the end of each year for 13 years into Fund X. Antoinette deposits 100 at the end of each year for 14 years into Fund Y.
Fund X earns an annual effective rate of 15% for the first 5 years and an annual effective rate of 6% thereafter. Fund Y earns an annual effective rate of $i$.
At the end of 13 years, the accumulated value of Fund X equals the accumulated value of Fund Y.
Calculate $i$.
(A) 6.4% (B) 6.7% (c) 7.0% (D) 7.4% (E) 7.8%
[SOA 5/98 #5]

Answer: EEB DAB