Questions:

1. An investment of Rs.1,500 is made at time 0 and a further investment of Rs.2,000 is made at time 5.  The investments accumulate at a simple rate of interest of 3% pa.  Calculate the total accumulated value at the end of every year for the next 10 years.
2. An investment of Rs.17,000 is made at time 0 and a further investment of Rs.25,000 is made at time 8.  The investments accumulate at a simple rate of interest of 5.6% pa.  Calculate the total accumulated value at the end of every year for the next 25 years.
3. The effective compounding rate of interest per annum on a certain building society account is currently 7%, but in 2 years’ time it will be reduced to 6%. Find the accumulation in 5 years’ time of an investment of £4,000 in this account.
4. The effective compounding rate of interest per annum on a certain savings account is currently 4%, but in 5 years’ time it will be increased to 4.75%. Find the accumulation in 15 years’ time of an investment of £25,000 in this account.
5. The effective compounding rate of interest per annum on a certain building society account is currently 8.25%, but in 2 years’ time it will be reduced to 5.25%. Find the present value at time 0 if the accumulated value at the end of 8 years is Rs.15000.
6. The effective compounding rate of interest per annum on a certain building society account is currently 4.5%, but in 7 years’ time it will be increased to 6%. Find the present value at time 0 if the accumulated value at the end of 12 years is Rs.5000.
7. Use a spreadsheet to calculate the present value at time 0 of an annuity of payable yearly in arrears for 10 years using a rate of interest of 2.3% annually, where the annual payment under the annuity is £1350.
8. Use a spreadsheet to calculate the present value at time 0 of an annuity of payable monthly in arrears for 15 years using a rate of interest of 6.75% annually, where the annual payment under the annuity is £12000.
9. Use a spreadsheet to calculate the present value at time 0 of an annuity of payable monthly in arrears for 20 years using a rate of interest of 5% convertible half‐yearly, where the annual payment under the annuity is £300.
10. (i) Payments of £550 are made at times 6 to 15 years inclusive.  The effective rate of discount is 3% pa.  Calculate the present value of these payments at time 0.

(ii) Repeat the calculations in part (i) assuming that the rate of discount is now 3% pa from time 0 to time 10 and 3.5% pa thereafter.

1. Use a spreadsheet to calculate the accumulated value at time 12 of an annuity paid annually in advance for 12 years with an annual payment of £150.  Use i = 4% pa effective.  Demonstrate the value obtained using year‐on‐year accumulations and separately using an annuity formula.
2. On 15 November in each of the years 1994 to 2009 inclusive, an investor deposited £500 in a special savings account. Find the sum that can be withdrawn by the investor on 15 November 2013 if the bank interest rate was 7% per annum for the entire period.