

1. What calculator can I use in the exam?

You may use any financial calculator, as long as it is a non-programmable calculator. Remember that your answer using a calculator may differ from manual calculations. This is due to rounding. In the Study Guide we refer to the Sharp financial calculator.

2. Which factor table do I use?

Table A (Present value table) should be used when you need the present value of an amount invested at a specific rate for an amount of years eg. if you need R100 at the end of 3 years, interest rate at 12%. The factor is $0,712 \times 100 = 71.20$. That is what you have to invest today R71.20.

Table B (Cumulative present value table) should be used when you need the present value of an annuity (the same amount received every year) received at a specific rate for a specific number of years eg. if you received R100 each year for 3 years, interest rate at 12%. The factor is $2,402 \times 100 = 240.20$. That is present value today R240.20. Table B is also used where cash flows are combined.

Table C (Future value table) should be used when you need the future value of an amount invested at a specific rate for an amount of years eg. if you invest R100 today for 3 years, interest rate at 12%. The factor is $1,4049 \times 100 = 140.49$. That is what you will receive at the end of the 3 years.

Table D (Cumulative future value table) should be used when you need the future value of an annuity (the same amount received every year) received at a specific rate for a specific number of years eg. if you received R100 each year for 3 years, interest rate at 12%. The factor is $3,3744 \times 100 = 337.44$. That is future value in 3 years time.

3. Time line for NPV calculations.

Years			
0	1	2	3

Please note the following:

Year 0 – is the **beginning** of year 1

Year 1 – is the **end** of year 1

– is also the **beginning** of year 2

Year 2 – is the **end** of year 2
– is also the **beginning** of year 3

Year 3 – is the **end** of year 3
– is also the **beginning** of year 4

An so on

4. Why do we use interpolation and extrapolation?

Both methods are one of the tools available for the financial manager or anyone to estimate rates.

Interpolation is the process by which a rate falls **within** the interval of two known rates.

Extrapolation is the process by which a rate falls **outside** the interval of the two known rates.

5. Please explain the interpolation and extrapolation formulas?

Interpolation

$$\text{Using the lower rate} = A + \left(\frac{P - Q}{P - N} \times (B - A) \right) \%$$

$$\text{Using the higher rate} = B - \left(\frac{Q - N}{P - N} \times (B - A) \right) \%$$

Where A is the (Lower) **rate** of return

B is the (Higher) **rate** of return

P is the **amount/NPV** calculated using the **(lower)** rate

N is the **amount/NPV** calculated using the **(higher)** rate

Q is the **amount/NPV** calculated using the **(unknown)** rate

Extrapolation

This is the process by which a rate falls outside the interval of two known rates

$$\text{Using the lower rate} = A - \left(\frac{Q - P}{P - N} \times (B - A) \right) \%$$

$$\text{Using the higher rate} = B + \left(\frac{N - Q}{P - N} \times (B - A) \right) \%$$

Where A is the (Lower) **rate** of return

B is the (Higher) **rate** of return

P is the **amount/NPV** calculated using the (**lower**) rate

N is the **amount/NPV** calculated using the (**higher**) rate

Q is the **amount/NPV** calculated using the (**unknown**) rate

6. How to calculate Internal Rate of Return (IRR)?

Interpolation

$$\text{Internal rate of return} = A + \left(\frac{P}{P - N} \times (B - A) \right) \%$$

Where A is the (Lower) **rate** of return

B is the (Higher) **rate** of return

P is the **amount/NPV** calculated using the (lower) rate

N is the **amount/NPV** calculated using the (higher) rate

Extrapolation

This is the process by which a rate falls outside the interval of two known rates

$$\text{Internal rate of return} = B - \left(\frac{N}{P - N} \times (B - A) \right) \%$$

Where A is the (Lower) **rate** of return

B is the (Higher) **rate** of return

P is the **amount/NPV** calculated using the (lower) rate

N is the **amount/NPV** calculated using the (higher) rate