UNIVERSITY OF JOHANNESBURG

Department of Commercial Accounting

Financial Management 1B

BFB22A2

Last Assessment Opportunity
November 2016

Time: 3 hours **Marks: 100**

Assessors: Mrs L Boyce
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Internal moderator: Mrs M Mouton

INSTRUCTIONS:

- This paper consists of 2 pages (including the cover page and appendix)
- Answer all questions. Show all calculations and workings clearly.
- **Start each question on a new page**.
- Silent, non-programmable calculators may be used.
- Round all calculations to **two decimal places**, unless stipulated otherwise.
- **INDICATE YOUR INDEX NUMBER (FROM THE CLASS LIST) IN THE TOP MIDDLE OF YOUR SCRIPT.**

Question	Topic	Marks	Time
1	Unit 2: Financial Instruments and Financial Markets	20	36 minutes
2	Unit 3: Principles of Foreign Trade and Exchange Rates	20	36 minutes
3	Unit 4: Risk and Uncertainty	20	36 minutes
4	Unit 5: Time value of money	20	36 minutes
5	Unit 6: Cost of Capital	20	36 minutes
		100	**180 minutes**

QUESTION 1 **(20 MARKS)**

1.1 The following advert was published in South African newspapers in August 2016.

REQUIRED:

1.1.1 Name the type of decision that SAA had to take that has led to the publication of this advert. **(1)**

1.1.2 State any two questions that SAA would have had to answer to determine the strategy for the decision in 1.1.1. **(2)**

1.1.3 Name one example of a financial instrument that would fulfil one of the requirements of SAA. **(1)**

1.2 The JSE All Share index stood at 53 787 points as at 2 September 2016. At the beginning of the year (4 January 2016) the index had been 49 599 points and 52 250 points at the end of the first quarter (31 March 2016).

REQUIRED:

1.2.1 What can be concluded about the index on the day of **2 September 2016**? Motivate your answer. **(2)**

1.2.2 What was the general trend of the market over the first quarter of the year? **(1)**

1.2.3 Calculate the percentage change in the market from the start of the second quarter to 2 September 2016. Interpret the percentage outcome. **(3)**

1.3 The following share information was published in September 2016 in one of the prominent business newspapers in South Africa.

Company	**Closing (cents)**	**High (cents)**	**Day Move (%)**	**DY (%)**	**PE**	**Volume ‘000**
WOOLIES	**A**	8152	**B**	3.3	17.4	9 547
REINET	3200	3222	-6	0.7	23.6	7 230
CAXTON	1400	1460	39	4.3	12	5 980

Additional information:

- Dividends declared for REINET amounted to 22.4 cents.
- The share price movement information of REINET for historical periods has been as follows:

Period	**% change in market price**
7 days	3.73%
30 days	3.27%
90 days	2.66%
6 months	4.75%

Formulae:

PE = MPS ÷ EPS

DY = DPS ÷ MPS

REQUIRED:

1.3.1 Which company had the smallest number of shares traded? **(1)**

1.3.2 Calculate the closing market price of WOOLIES **(A)** assuming a dividend of 262.35 cents. **(3)**

1.3.3. Calculate the share price of REINET that investors would have paid for the share 6 months ago. **HINT:** Use as an indexed price. **(3)**

1.3.4 Calculate the shareholder return of REINET taking into account the dividend declared assuming that the shareholder purchased their shares at 2764 cents a year ago. **(3)**

QUESTION 2 **(20 MARKS)**

2.1 The financial manager operates in a constantly changing environment due to a globalised economy. There are three principles that are used to explain the changing environment in which the financial manager operates.

REQUIRED:

Identify and write down each principle that is described in questions **2.1.1 - 2.1.3** below.

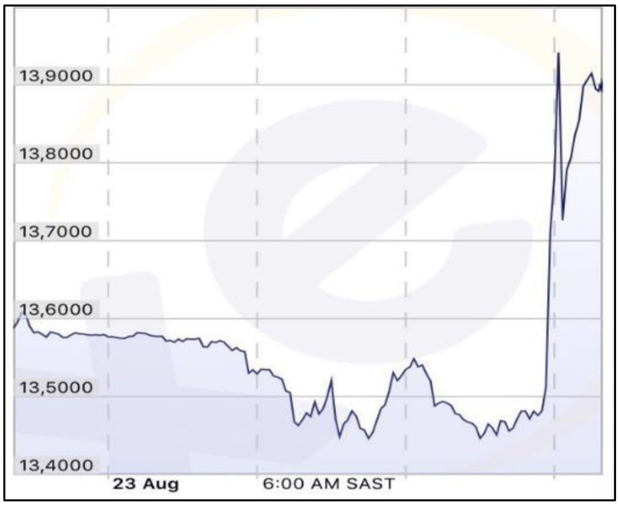
2.1.1 'The virtual world creates unlimited growth potential for the company.' **(1)**

2.1.2 'Adaptability is crucial to the always changing environment.' **(1)**

2.1.3 'The company must make sure that it is part of the world through internet trading.' **(1)**

2.2 Name the organisation established to regulate and encourage free trade as part of globalisation. **(1)**

2.3



REQUIRED:

The factors that affect the exchange rate generally fall into three categories. Name two of these factors describing the influence of the foreign exchange movement of the ZAR taking into account the information above. **(2)**

2.4 A South African exporting company dispatched 15 boxes of citrus fruit to the UK at a cost of £200 per box. The agreement is to receive payment on delivery.

Exchange rate on the day of dispatch: £1 = R18.39

Exchange rate on the day of delivery: £1 = R18.86

REQUIRED:

Calculate the total currency profit/loss due to the exchange rate movements. **(4)**

INSTRUCTION: Use the table below to answer question **2.5 – 2.6**

Standard Bank						
FOREX INDICATION RATES FOR 30 August 2016 as at 14:00						
Rates for amounts up to R 200 000						
Closing rate history for date : 2016-08-29 16:08:24.0 ▼ Load						
		Bank Buying			Bank Selling	
Country	Cur	T/T	Cheques	Foreign Notes	Cheques and T/T	Foreign Notes
QUOTATIONS ON BASIS RAND PER UNIT FOREIGN CURRENCY						
BRITISH STERLING	GBP	18.6023	18.5590	18.4798	19.0916	19.1866
EURO	EUR	15.8649	15.8209	15.7404	16.2974	16.3274
UNITED STATES DOL	USD	14.2238	14.1597	14.2163	14.5413	14.5413
QUOTATIONS ON BASIS FOREIGN CURRENCY PER R1						
ZAR	AED	.2857		.2695	.2238	.2480
AUSTRALIAN DOLLAR	AUD	.0959	.0974	.0969	.0878	.0868
BOTSWANA PULA	BWP	.8058	.8110	.8058	.6862	.6862
CANADIAN DOLLAR	CAD	.0973	.0976	.1003	.0836	.0836
SWISS FRANC	CHF	.0713	.0715	.0823	.0648	.0638
CHINESE YUAN	CNY	.5159		.4782	.4125	.4401
CZECH KRONER	CZK	1.7845	2.4949		1.5714	
DANISH KRONER	DKK	.4933	.4952	.5143	.4320	.4320

2.5 Sanele has just returned from his holiday from Canada. He did not use all of his spending money and wish to convert his Canadian Dollars to South African Rand. He still has 80 Canadian dollars.

REQUIRED:

2.5.1 Indicate whether Sanele must look at the bid rate or the offer rate when converting the Canadian Dollars to South African Rand. **(1)**

2.5.2 Calculate how much South African Rand Sanele will have if he converts the 50 Canadian Dollars to Rand. **(2)**

2.6 Brian is planning his holiday to Las Vegas in the United States. His research revealed that he needs to budget for USD 600 spending money, which he will take in cash with him.

REQUIRED:

2.6.1 Indicate whether Brian must look at the bid rate or the offer rate when converting the South African Rand to United States Dollars. **(1)**

2.6.2 Calculate how much South African Rand Brian needs to convert the Rand to USD 600. **(2)**

2.7 **INSTRUCTION:** Use the below table from BDLive (29 August 2016) to answer question **2.7.**

	USD	GBP	EUR	JP	ZAR	CHF	AUD
US Dollar	1.0000	0.7645	0.8949	102.1700	14.4052	0.9788	1.3216
British Pound	1.3080	1.0000	1.1705	133.6400	18.8430	1.2803	1.7286
Euro	1.1175	0.7645	1.0000	114.1700	16.0954	1.0938	1.4768
Japanese Yen	0.0098	0.8544	0.8759	1.0000	0.1410	0.9580	1.2935
South African Rand	0.0694	0.7483	0.0621	7.0930	1.0000	0.0679	0.0917
Swiss Franc	1.0216	0.0531	0.9142	104.3830	14.7178	1.0000	1.3500
Australian Dollar	0.7567	0.7811	0.6771	77.3090	10.9004	0.7406	1.0000

REQUIRED:

2.7.1 What is the direct quote of the Japanese Yen (JP) / Swiss Franc (CHF) where the domestic currency is the Swiss Franc (CHF)? **(1)**

2.7.2 What is the indirect quote of the Japanese Australian Dollar (AUD) / British Pound (GBP) where the domestic currency is the Australian Dollar (AUD)? **(1)**

2.7.3 What is the definition of a **direct quote**? **(2)**

QUESTION 3 **(20 MARKS)**

INSTRUCTION: State whether the following statements are **True** or **False.**

3.1 Financial risk arises as a result of the way that company assets are financed. **(1)**

3.2 Two series of numbers moving in the opposite direction are referred to as being perfectively negatively correlated. **(1)**

3.3 **INSTRUCTION:** Select the correct option for the statement below.

Companies in the same sector will be positively correlated. Select the companies below that will be positively correlated.

i) 1TIME
ii) CITYLDG
iii) COMAIR

a) i and ii **(1)**
b) i and iii
c) all of the above
d) none of the above

3.4 **INSTRUCTION:** Select the statements that correctly define diversifiable risk.

Diversifiable risk is …

i) Inherent to a specific asset
ii) Cannot be eliminated through diversification
iii) Relates to company specific factors

a) i and ii **(1)**
b) i and iii
c) all of the above
d) none of the above

3.5 You have R5 million that you would like to invest. You have chosen to diversify your portfolio and invest your money in debentures, preference shares, bonds and ordinary shares.

REQUIRED:

Rank these three investment options from lowest risk to highest risk. **(1)**

3.6 Musa is interested in investing on the JSE Ltd. He has viewed an investment report which indicates that the share he wants to invest in has an expected return of 24.8%. Additional information about the share is given below:

State of the economy	Probability of economy occurring	Possible return
Moderate	55%	32%
Normal growth	45%	16%

REQUIRED:

Calculate the standard deviation of the above share. **Show all your calculations in the format of a table and round off to two decimal places**. **(6)**

3.7 Kgothatso would like to invest in a portfolio consisting of two shares, Chesa Nyama Ltd and Rocomamas Ltd. She has managed to obtain the following information about the two shares' average expected returns from industry analysts. (See the information in the table below)

Share	Investment	Average expected return
Chesa Nyama	R10 000	10%
Rocomamas	R30 000	25%

REQUIRED:

Calculate the average return that Kgothatso will earn on this portfolio **(5)**

3.8 Ayanda is considering investing her money in one of two listed companies. Ayanda considers herself to be a rational investor and will select which company to invest in based on the risk and returns associated with each share. The first, Tsogo Sun, is listed in the travel and leisure sector. The second company, Afrox, is listed in the oil and gas sector. Additional details on the two companies is provided in the table below:

	Tsogo Sun	**Afrox**
Expected return	15%	38%
Expected standard deviation	8%	25%

REQUIRED:

3.8.1 Advise Ayanda on which measure is appropriate to use when comparing assets with different returns. **(1)**

3.8.2 Perform the necessary calculations to assist Ayanda in making her final decision. **(1)**

3.8.3 Based on your calculations in 3.8.2, which listed company should Ayanda invest in? Motivate your answer. **(2)**

QUESTION 4 **(20 MARKS)**

4.1 Prosper received the following sales commission from his employer at the end of each year over a period of 3 years. . He invested the cash each year and there are no withdrawals.

Year	Cash Flow
1	R15 000
2	R25 000
3	R18 000

REQUIRED:

Calculate the future value at the end of year and the total value of the investment after three years using an interest rate of 13% compounded annually. Show all calculations, use the **interest rate factor tables.** Round off your final answer to two decimal places. **(9)**

4.2 Sthembiso wants an investment that will allow him to withdraw R8 000 per year for infinity. The investment will provide him with an interest rate of 15% per annum. **(2)**

REQUIRED:

Calculate the amount of the deposit? Show the relevant **formula**. Round off your final answer to two decimal places.

4.3 Joe wishes to invest R15 000 annually in advance for a period of 5 years. The bank will offer him an interest rate of 12% per annum compounded annually.

REQUIRED:

Calculate the value at the end of the period, using the **formula**. Show the relevant formula. Round off your final answer to two decimal places. **(5)**

4.4 A bond is trading at R300 000 is expected to be worth R405 000 at maturity. Interest rate is 10.25% and is compounded annually. **(4)**

REQUIRED:

Calculate the years left until maturity. Use the **calculato**r. Show all your workings. Round off your final answer to two decimal places.

QUESTION 5 **(20 MARKS)**

5.1 Define the term "Return on Investment". **(1)**

5.2 Explain the meaning of "Cost of Capital". Give 3 possible definitions. **(3)**

5.3 **INSTRUCTION:** Indicate whether the following statements are **True** or **False**.
Write your answer as follows, **e.g. 2.1. False**.

5.3.1 The components of cost of capital include short-term funding. **(1)**

5.3.2 Weighted average cost of capital (WACC) consists out of three components namely: ordinary shares, preference shares and debt. **(1)**

5.3.3 The market risk premium takes into account risk factors that will influence the entire market **and** company-specific factors. **(1)**

5.3.4 The cost of preference shares are tax deductible. **(1)**

5.3.5 The 'required rate of return' is the return to pay the providers of capital. **(1)**

5.3.6 Factors that increase risk and are company-specific include: increased business risk and financial risk. **(1)**

5.4 The Players Club Ltd is busy with the calculation of its cost of capital and the financial manager has requested your assistance. On investigation, the following information has been provided. 10 000 ordinary shares were issued 10 years ago at a par value of R5.

The risk-free rate is estimated at 6.2% because of the high inflation rates and labour unrest.

The Players Club Ltd estimates their risk premium to be 14.3%.
Last year The Players Club Ltd paid out a dividend of 11.3%.
The Players Club Ltd also has a long-term loan from Universal Bank reflected at a market value of R150 000 in its statement of financial position. The interest rate on similar loans is 10.5% per annum. Assume a company tax rate of 28%.

REQUIRED:

5.4.1 Calculate The Players Club Ltd required rate of return on **Equity**. **(1)**

5.4.2 Calculate The Players Club Ltd cost of **Debt.** **(1)**

5.5 The following is an extract from the most recent statement of financial position of Jelly Junction Ltd, a manufacturer of manufacturing equipment:

JELLY JUNCTION LTD

Statement of financial position at 31 October 2016

ASSETS	
Property, plant and equipment	R1 360 000
Inventories	R1 700 000
Trade and other receivables	R700 000
Cash and cash equivalents	R440 000
	R4 200 000
EQUITY AND LIABILITIES	
Ordinary share capital	R1 500 000
Preference share capital	R500 000
Long-term liabilities	R2 200 000
	R4 200 000

Additional information:

The cost of ordinary shares has been calculated at 24%.

The cost of preference shares has been calculated at 14%.

The cost of debt has been calculated at 14%.

All of the costs provided are before tax.

Assume a company tax rate of 28%.

REQUIRED:

Calculate the after-tax weighted average cost of capital (WACC) for Jelly Junction Ltd. Show all calculations and round off all amounts to two decimals. **(8)**

TOTAL = 100 MARKS

APPENDIX

Tables:

$$FV_n = PV_0 \text{ x } FVIF_{i,n}$$

$$PV_n = FV_n \text{ x } PVIF_{i,n}$$

$$FVA_n = PMT \text{ x } FVIFA_{i,n}$$

$$PVA_0 = PMT \text{ x } PVIFA_{i,n}$$

$$FVAD_0 = (PMT \text{ x } FVIFA_{i,n}) \text{ x } (1 + i)$$

$$PVAD_0 = (PMT \text{ x } PVIFA_{i,n} \text{ x } (1 + i)$$

Formulas:

$R = \sum(R_i)(P_i)$
$\sigma = \sqrt{\sum_{i=1}^{n}(R_i - R)^2 \times P_i}$
$CV = \frac{\sigma}{R}$
$R_p = (W_1 \times R_1) + (W_2 \times R_2) + \ldots + (W_n \times R_n)$
$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}} \times \frac{100}{1}$
$FV_n = PV_0 \times (1 + i)^n$ $PV_0 = \frac{FV_n}{(1+i)^n}$ $PV_0 = FV_n \times (1+i)^{-n}$

$$\text{FVA} = \text{PMT} \times \left[\frac{(1+i)^n - 1}{i} \right]$$

$$\text{PVA} = \text{PMT} \times \left[\frac{1-(1+i)^{-n}}{i} \right]$$

$$\text{FVAD} = \text{PMT} \times \left[\frac{(1+i)^n - 1}{i} \right] \text{X } (1 + i)$$

$$\text{PVAD} = \text{PMT} \times \left[\frac{1-(1+i)^{-n}}{i} \right] \text{X } (1 + i)$$

$$\text{PV}_{\text{Perp}} = \frac{\text{PMT}}{i}$$

$$\text{EAR} = \left(1 + \frac{i}{m} \right)^m - 1$$

$$\text{FV} = \text{PV}_0 \times \left(1 + \frac{i}{m} \right)^{m \times n}$$

Table 1: Future value of R1 at the end of *n* periods

n	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	1.0000	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500
2	1.0000	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225
3	1.0000	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209
4	1.0000	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490
5	1.0000	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114
6	1.0000	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131
7	1.0000	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0762	2.2107	2.3526	2.5023	2.6600
8	1.0000	1.0829	1.1717	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.3045	2.4760	2.6584	2.8526	3.0590
9	1.0000	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.5580	2.7731	3.0040	3.2519	3.5179
10	1.0000	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456
11	1.0000	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.1518	3.4785	3.8359	4.2262	4.6524
12	1.0000	1.1268	1.2682	1.4258	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384	3.4985	3.8960	4.3345	4.8179	5.3503
13	1.0000	1.1381	1.2936	1.4685	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528
14	1.0000	1.1495	1.3195	1.5126	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975	4.3104	4.8871	5.5348	6.2613	7.0757
15	1.0000	1.1610	1.3459	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	4.7846	5.4736	6.2543	7.1379	8.1371
16	1.0000	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950	5.3109	6.1304	7.0673	8.1372	9.3576
17	1.0000	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1588	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2765	10.7613
18	1.0000	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5436	7.6900	9.0243	10.5752	12.3755
19	1.0000	1.2081	1.4568	1.7535	2.1068	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159	7.2633	8.6128	10.1974	12.0557	14.2318
20	1.0000	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	8.0623	9.6463	11.5231	13.7435	16.3665
21	1.0000	1.2324	1.5157	1.8603	2.2788	2.7860	3.3996	4.1406	5.0338	6.1088	7.4002	8.9492	10.8038	13.0211	15.6676	18.8215
22	1.0000	1.2447	1.5460	1.9161	2.3699	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	9.9336	12.1003	14.7138	17.8610	21.6447
23	1.0000	1.2572	1.5769	1.9736	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	11.0263	13.5523	16.6266	20.3616	24.8915
24	1.0000	1.2697	1.6084	2.0328	2.5633	3.2251	4.0489	5.0724	6.3412	7.9111	9.8497	12.2392	15.1786	18.7881	23.2122	28.6252
25	1.0000	1.2824	1.6406	2.0938	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.8347	13.5855	17.0001	21.2305	26.4619	32.9190
26	1.0000	1.2953	1.6734	2.1566	2.7725	3.5557	4.5494	5.8074	7.3964	9.3992	11.9182	15.0799	19.0401	23.9905	30.1666	37.8568
27	1.0000	1.3082	1.7069	2.2213	2.8834	3.7335	4.8223	6.2139	7.9881	10.2451	13.1100	16.7386	21.3249	27.1093	34.3899	43.5353
28	1.0000	1.3213	1.7410	2.2879	2.9987	3.9201	5.1117	6.6488	8.6271	11.1671	14.4210	18.5799	23.8839	30.6335	39.2045	50.0656
29	1.0000	1.3345	1.7758	2.3566	3.1187	4.1161	5.4184	7.1143	9.3173	12.1722	15.8631	20.6237	26.7499	34.6158	44.6931	57.5755

Table 2: Present value of R1 at the end of *n* periods

n	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	1.0000	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696
2	1.0000	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561
3	1.0000	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575
4	1.0000	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718
5	1.0000	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972
6	1.0000	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323
7	1.0000	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759
8	1.0000	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269
9	1.0000	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843
10	1.0000	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472
11	1.0000	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149
12	1.0000	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869
13	1.0000	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625
14	1.0000	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413
15	1.0000	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229
16	1.0000	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069
17	1.0000	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929
18	1.0000	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808
19	1.0000	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703
20	1.0000	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611
21	1.0000	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531
22	1.0000	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0560	0.0462
23	1.0000	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402
24	1.0000	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0431	0.0349
25	1.0000	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0378	0.0304
26	1.0000	0.7720	0.5976	0.4637	0.3607	0.2812	0.2198	0.1722	0.1352	0.1064	0.0839	0.0663	0.0525	0.0417	0.0331	0.0264
27	1.0000	0.7644	0.5859	0.4502	0.3468	0.2678	0.2074	0.1609	0.1252	0.0976	0.0763	0.0597	0.0469	0.0369	0.0291	0.0230
28	1.0000	0.7568	0.5744	0.4371	0.3335	0.2551	0.1956	0.1504	0.1159	0.0895	0.0693	0.0538	0.0419	0.0326	0.0255	0.0200
29	1.0000	0.7493	0.5631	0.4243	0.3207	0.2429	0.1846	0.1406	0.1073	0.0822	0.0630	0.0485	0.0374	0.0289	0.0224	0.0174

Table 3: Future value of an annuity of R1 per period for *n* periods

n	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000	2.1100	2.1200	2.1300	2.1400	2.1500
3	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2149	3.2464	3.2781	3.3100	3.3421	3.3744	3.4069	3.4396	3.4725
4	4.0604	4.1216	4.1836	4.2465	4.3101	4.3746	4.4399	4.5061	4.5731	4.6410	4.7097	4.7793	4.8498	4.9211	4.9934
5	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051	6.2278	6.3528	6.4803	6.6101	6.7424
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156	7.9129	8.1152	8.3227	8.5355	8.7537
7	7.2135	7.4343	7.6625	7.8983	8.1420	8.3938	8.6540	8.9228	9.2004	9.4872	9.7833	10.0890	10.4047	10.7305	11.0668
8	8.2857	8.5830	8.8923	9.2142	9.5491	9.8975	10.2598	10.6366	11.0285	11.4359	11.8594	12.2997	12.7573	13.2328	13.7268
9	9.3685	9.7546	10.1591	10.5828	11.0266	11.4913	11.9780	12.4876	13.0210	13.5795	14.1640	14.7757	15.4157	16.0853	16.7858
10	10.4622	10.9497	11.4639	12.0061	12.5779	13.1808	13.8164	14.4866	15.1929	15.9374	16.7220	17.5487	18.4197	19.3373	20.3037
11	11.5668	12.1687	12.8078	13.4864	14.2068	14.9716	15.7836	16.6455	17.5603	18.5312	19.5614	20.6546	21.8143	23.0445	24.3493
12	12.6825	13.4121	14.1920	15.0258	15.9171	16.8699	17.8885	18.9771	20.1407	21.3843	22.7132	24.1331	25.6502	27.2707	29.0017
13	13.8093	14.6803	15.6178	16.6268	17.7130	18.8821	20.1406	21.4953	22.9534	24.5227	26.2116	28.0291	29.9847	32.0887	34.3519
14	14.9474	15.9739	17.0863	18.2919	19.5986	21.0151	22.5505	24.2149	26.0192	27.9750	30.0949	32.3926	34.8827	37.5811	40.5047
15	16.0969	17.2934	18.5989	20.0236	21.5786	23.2760	25.1290	27.1521	29.3609	31.7725	34.4054	37.2797	40.4175	43.8424	47.5804
16	17.2579	18.6393	20.1569	21.8245	23.6575	25.6725	27.8881	30.3243	33.0034	35.9497	39.1899	42.7533	46.6717	50.9804	55.7175
17	18.4304	20.0121	21.7616	23.6975	25.8404	28.2129	30.8402	33.7502	36.9737	40.5447	44.5008	48.8837	53.7391	59.1176	65.0751
18	19.6147	21.4123	23.4144	25.6454	28.1324	30.9057	33.9990	37.4502	41.3013	45.5992	50.3959	55.7497	61.7251	68.3941	75.8364
19	20.8109	22.8406	25.1169	27.6712	30.5390	33.7600	37.3790	41.4463	46.0185	51.1591	56.9395	63.4397	70.7494	78.9692	88.2118
20	22.0190	24.2974	26.8704	29.7781	33.0660	36.7856	40.9955	45.7620	51.1601	57.2750	64.2028	72.0524	80.9468	91.0249	102.4436
21	23.2392	25.7833	28.6765	31.9692	35.7193	39.9927	44.8652	50.4229	56.7645	64.0025	72.2651	81.6987	92.4699	104.7684	118.8101
22	24.4716	27.2990	30.5368	34.2480	38.5052	43.3923	49.0057	55.4568	62.8733	71.4027	81.2143	92.5026	105.4910	120.4360	137.6316
23	25.7163	28.8450	32.4529	36.6179	41.4305	46.9958	53.4361	60.8933	69.5319	79.5430	91.1479	104.6029	120.2048	138.2970	159.2764
24	26.9735	30.4219	34.4265	39.0826	44.5020	50.8156	58.1767	66.7648	76.7898	88.4973	102.1742	118.1552	136.8315	158.6586	184.1678
25	28.2432	32.0303	36.4593	41.6459	47.7271	54.8645	63.2490	73.1059	84.7009	98.3471	114.4133	133.3339	155.6196	181.8708	212.7930
26	29.5256	33.6709	38.5530	44.3117	51.1135	59.1564	68.6765	79.9544	93.3240	109.1818	127.9988	150.3339	176.8501	208.3327	245.7120
27	30.8209	35.3443	40.7096	47.0842	54.6691	63.7058	74.4838	87.3508	102.7231	121.0999	143.0786	169.3740	200.8406	238.4993	283.5688
28	32.1291	37.0512	42.9309	49.9676	58.4026	68.5281	80.6977	95.3388	112.9682	134.2099	159.8173	190.6989	227.9499	272.8892	327.1041
29	33.4504	38.7922	45.2189	52.9663	62.3227	73.6398	87.3465	103.9659	124.1354	148.6309	178.3972	214.5828	258.5834	312.0937	377.1697

Table 4: Present value of an annuity of R1 per period for *n* periods

n	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206
13	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542
17	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472
18	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280
19	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593
21	18.8570	17.0112	15.4150	14.0292	12.8212	11.7641	10.8355	10.0168	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125
22	19.6604	17.6580	15.9369	14.4511	13.1630	12.0416	11.0612	10.2007	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587
23	20.4558	18.2922	16.4436	14.8568	13.4886	12.3034	11.2722	10.3711	9.5802	8.8832	8.2664	7.7184	7.2297	6.7921	6.3988
24	21.2434	18.9139	16.9355	15.2470	13.7986	12.5504	11.4693	10.5288	9.7066	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338
25	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641
26	22.7952	20.1210	17.8768	15.9828	14.3752	13.0032	11.8258	10.8100	9.9290	9.1609	8.4881	7.8957	7.3717	6.9061	6.4906
27	23.5596	20.7069	18.3270	16.3296	14.6430	13.2105	11.9867	10.9352	10.0266	9.2372	8.5478	7.9426	7.4086	6.9352	6.5135
28	24.3164	21.2813	18.7641	16.6631	14.8981	13.4062	12.1371	11.0511	10.1161	9.3066	8.6016	7.9844	7.4412	6.9607	6.5335
29	25.0658	21.8444	19.1885	16.9837	15.1411	13.5907	12.2777	11.1584	10.1983	9.3696	8.6501	8.0218	7.4701	6.9830	6.5509