

COURSE CODE: AC 402/IDE AC 402 (S) 2011

UNIVERSITY OF SWAZILAND

DEPARTMENT OF ACCOUNTING

SUPPLEMENTARY EXAMINATION PAPER 2010/2011

DEGREE / DIPLOMA AND YEAR OF STUDY : B.COM IV

TITLE OF PAPER : MANAGEMENT ACCOUNTING I

COURSE CODE: AC 402

TIME ALLOWED : THREE (3) HOURS

INSTRUCTIONS:

- 1. THE TOTAL NUMBER OF QUESTIONS ON THIS PAPER ARE FIVE**
- 2. ANSWER QUESTION ONE AND ANY OTHER THREE QUESTIONS**
- 3. THE MARKS AWARDED FOR A QUESTION /PART ARE INDICATED AT THE END OF EACH QUESTION /PART OF QUESTION.**
- 4. WHERE APPLICABLE, SUBMIT ALL WORKINGS AND CALCULATIONS.**

NOTE: YOU ARE REMINDED THAT IN ASSESSING YOUR WORK, ACCOUNT WILL BE TAKEN OF ACCURACY OF THE LANGUAGE AND GENERAL QUALITY OF EXPRESSION, TOGETHER WITH THE LAYOUT AND PRESENTATION OF YOUR FINAL ANSWER.

SPECIAL REQUIREMENTS: P.V. TABLES

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR.

QUESTION 1

ABC Ltd which is engaged in the manufacture of a single product, the Blackout, uses standard costs and flexible budgets for management control purposes.

The standard cost per unit for direct material is 8 kilograms at E2.40 per kilogram.

The budgeted direct labour for a 4 week period is 120,000 hours at a budgeted cost of E336,000.

The budgeted variable production overhead cost for the same number of hours is E108,000.

During the period, actual direct wages incurred were E306,912 and 42,000 units of Blackout were produced.

Reported variances were:

Direct labour rate : 2cents per hour favourable

Direct materials usage : E38, 400 (A)

Direct materials price : E38, 000 (F)

Variable production overhead: E 1, 200 (F)

Variable production overhead expenditure: E 1, 500 (A)

The materials price variance was calculated on quantities purchased, and amounted to 10 cent per kilogram (favorable).

There were no opening stocks of direct materials, but closing stocks amounted to 28, 000 kilograms.

Required : for the period:

- | | |
|---|-------------|
| (a) The quantity of direct materials purchased | (4 marks) |
| (b) The quantity of direct materials used in excess of the standard allowed
(in kilograms), and the actual quantity used in total; | (3 ½ Marks) |
| (c) The variable production overhead efficiency variance, | (3 ½ Marks) |
| (d) The actual hours worked; | (3 ½ Marks) |
| (e) The standard hours allowed for the production achieved, and
from this standard Hours per unit of Blackout. | (3 ½ Marks) |
| (f) Actual Variable overhead costs | (3 ½ Marks) |
| (g) Variable overhead cost per unit | (3 ½ Marks) |

Total = 25 marks

QUESTION 2

A company producing two products with joint facilities is considering dropping Product B since it is being sold at a loss according to a profitability analysis prepared under the full-cost approach for a typical year.

	<u>Production A</u>	<u>Production B</u>	<u>Total</u>
Number of units sold	<u>20,000</u>	<u>10,000</u>	<u>30,000</u>
Sales revenue	<u>E200,000</u>	<u>E120,000</u>	<u>E320,000</u>
Direct material	E 28,000	E 40,000	E 68,000
Variable direct labor	60,000	50,000	110,000
Factory overhead	30,000	25,000	55,000
Selling & administration expenses	60,000	50,000	80,000
	E178,000	E135,000	E313,000
Net Income (Loss)	E 22,000	(E 15,000)	E 7,000

Factory overhead is applied on a direct labor cost basis. The fixed component is E33,000 per year. The present fixed costs will be reduced by E15,000 per year if Product B is discontinued.

Except for commissions of 10 per cent on sales, the selling and administrative expenses are nonvariable with volume. No change in the nonvariable component is expected if Product B is eliminated.

Required:

- (a) Does it appear advisable to drop Product B? Support your answer with quantitative data.

(12 ½ Marks)

- (b) Without regard to your answer to (a) assume that it is necessary to keep Product B in the line. Further assume that the sales of Product B will remain at the present level of 10,000 units.

How many additional units of Product A will have to be sold if the present net income of E7,000 is to be increased to E10,000?

(12 ½ Marks)

Total = 25 Marks

QUESTION 3

Jenny Lowe started a new business in 1994 to product portable, climate controlled shelters. The shelters have many applications in special events and sporting activities. Jenny's accountant prepared the following variable costing income statement after the first year to help her in making decisions.

Jenny Lowe Enterprises		
Income Statement		
For the Year Ended December 31, 2010		
Sales (1,500 shelters @ E2,500)		E3,750.000
Variable cost of good sold:		
Beginning inventory		
Cost of goods manufactured (1,750 @ E1,300)	<u>2,275.00</u>	
Cost of goods available for sale	E2,275.000	
Less ending inventory (250 @ E1,300)	<u>325,000</u>	<u>1 950</u>
Product contribution margin		E1,800,000
Less variable selling and administrative		
Expenses (1,500 @ E180)		<u>270,000</u>
Total contribution margin		E1,530.000
Less Fixed expenses:		
Fixed factory overhead	E1,500.000	
Fixed selling and administrative expenses	<u>190.000</u>	<u>1,690.000</u>
Net loss		<u>E (160,000)</u>

During the year, the following variable production costs per unit were recorded: direct materials E800, direct labor, E300, and overhead, e200.

Ms Lowe was upset about the net loss because she had wanted to borrow funds to expand capacity. Her friend who teaches accounting at a local university suggested that the use of absorption costing could change the picture.

- a. Prepare an absorption costing income statement. (5 Marks)
 - b. Explain the source of the difference between the net income (loss) figures under the two costing systems. (4 Marks)
 - c. Would it be appropriate to present an absorption costing income statement to the local banker in light of Ms. Lowe’s knowledge of the net loss determined under variable costing? Explain. (4 Marks)
 - d. Assume that during the second year of operations, Ms. Lowe’s company produced 1,750 shelters, sold 1,850, and experienced the same total fixed costs.
 - 1. Prepare a variable costing income statement (4 Marks)
 - 2. Prepare an absorption costing income statement (4 Marks)
 - 3. Explain the difference between the net incomes for the second year under the two systems. (4 Marks)
- Total 25 Marks**

QUESTION 4

Child Safety Products, Inc. manufactures a rugged child safety seat for automobiles. For 1995, the firm projects sales of 20,000 units, variable manufacturing costs are E35 per unit and variable selling, general, and administrative costs are E10 per unit. Fixed costs will be incurred uniformly throughout the fiscal period and amount to E950,000. Each unit is to be sold for E60.

- a. Compute the breakeven point in dollars and units of product. (5 Marks)
- b. Compute the number of units to be sold to earn income before taxes of E90,000
For the year. (5 Marks)
- c. If the income tax rate is 60%, compute the number of units that must be sold
to earn an after-tax profit of E150,000. (5 Marks)
- d. What are the break-even assumptions? (10 Marks)

Total = 25 Marks

QUESTION 5

1. Woza Ltd manufactures and sells two grades, A and B, of a single wood product. Each grade is processed through two phases, cutting and finishing. The following unit information is given:

	Grade A	Grade B
Selling price	E15.00	E10.00
Direct materials	E 2.80	1.00
Variable labor	6.00	5.00
Variable overhead	1.20	1.00
Fixed overhead applied	.72	.60
Labour requirements in hours:		
Cutting	$\frac{1}{2}$	$\frac{1}{2}$
Finishing	$\frac{2}{5}$	$\frac{1}{5}$

The Cutting Department has 200 hours available each week. The Finishing Department has 120 hours available each week. Sales constraints are : Grade A, 400 units per week; Grade B, 300 units per week.

Required:

- Using a graphic approach, determine the product mix that maximizes profits **(10 Marks)**
 - Determine the maximum marginal contribution. **(3 Marks)**
2. The Willing Company manufactures two types of coils, a Pip and a Pop. Marginal contributions are : E4 on a Pip and E5 on a Pop. Production involves two processes: molding and winding. Willing must produce at least 20 Pips a day, and can make any additional combination of coils subject to the following production constraints,

Process	Hours Required		Total Hours available per day
	Pip	Pop	
Molding	1	2	900
Winding	2	3	1,500

Required: Using a graphic approach;

- a. Determine the production mix that maximizes daily profit, (9 Marks)
- b. What is that maximum profit? (3 Marks)

Total 25 Marks

B. FINANCIAL TABLES

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Table 1: Future Value Interest Factor $(1 + r)^n$

Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%
1	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
2	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
3	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
4	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
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4695	1.5389	1.6109	1.6855	1.7628	1.8429	1.9254
6	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
7	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
8	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	2.8528
9	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
10	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	2.8384	3.1028	3.3876	3.7072
11	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
12	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
13	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
14	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
15	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
16	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
17	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
18	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
19	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
20	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8897	4.6810	5.6044	6.7275	8.0523	9.6463	11.5231	13.7435
25	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
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.0627	13.2677	17.4494	22.8923	29.9599	39.1159	50.9502
35	1.4166	1.9999	2.8139	3.9461	5.5160	7.6861	10.6766	14.7853	20.4140	28.1024	38.5749	52.7996	72.0685	98.1002
40	1.4889	2.2080	3.2620	4.8010	7.0400	10.2857	14.9745	21.7245	31.4094	45.2593	65.0009	93.0510	132.7816	188.8835
50	1.6446	2.6916	4.3839	7.1067	11.4674	18.4202	29.4570	48.9018	74.3575	117.3809	184.5648	289.0022	450.7359	700.2330

Periods	15%	16%	17%	18%	19%	20%	22%	24%	25%	26%	28%	30%	32%	36%
1	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000	1.2200	1.2400	1.2500	1.2600	1.2800	1.3000	1.3200	1.3600
2	1.3225	1.3456	1.3689	1.3924	1.4161	1.4400	1.4884	1.5376	1.5625	1.5876	1.6384	1.6900	1.7424	1.8496
3	1.5209	1.5609	1.6016	1.6430	1.6852	1.7280	1.8158	1.9066	1.9531	2.0004	2.0972	2.1970	2.3000	2.5155
4	1.7490	1.8106	1.8739	1.9388	2.0053	2.0736	2.2153	2.3642	2.4414	2.5205	2.6844	2.8561	3.0360	3.4210
5	2.0114	2.1003	2.1924	2.2878	2.3864	2.4883	2.7027	2.9316	3.0518	3.1758	3.4360	3.7129	4.0075	4.6526
6	2.3131	2.4364	2.5652	2.6996	2.8398	2.9860	3.2973	3.6352	3.8147	4.0015	4.3980	4.8268	5.2899	6.3275
7	2.6800	2.8262	3.0012	3.1855	3.3793	3.5832	4.0227	4.5077	4.7684	5.0419	5.6295	6.2749	6.9826	8.6054
8	3.0590	3.2784	3.5115	3.7589	4.0214	4.2998	4.9077	5.5895	5.9605	6.3528	7.2058	8.1573	9.2170	11.7034
9	3.5179	3.8030	4.1084	4.4355	4.7854	5.1598	5.9874	6.9310	7.4506	8.0045	9.2234	10.6045	12.1665	15.9166
10	4.0456	4.4114	4.8068	5.2338	5.6947	6.1917	7.3046	8.5944	9.3132	10.0857	11.8059	13.7858	16.0588	21.6466
11	4.6524	5.1173	5.6240	6.1759	6.7767	7.4301	8.9117	10.6571	11.6415	12.7080	15.1116	17.9216	21.1989	29.4393
12	5.3503	5.9360	6.5801	7.2876	8.0642	8.9161	10.8722	13.2148	14.5519	16.0120	19.3428	23.2981	27.9825	40.0375
13	6.1528	6.8858	7.6987	8.5994	9.5964	10.6993	13.2641	16.3863	18.1899	20.1752	24.7588	30.2875	36.9370	54.4510
14	7.0757	7.9875	9.0075	10.1472	11.4198	12.8392	16.1822	20.3191	22.7374	25.4207	31.6913	39.3738	48.7568	74.0534
15	8.1371	9.2655	10.5387	11.9737	13.5895	15.4070	18.7423	25.1856	28.4217	32.0301	40.5648	51.1859	64.3590	100.7126
16	9.3576	10.7480	12.3303	14.1290	16.1715	18.4884	24.0856	31.2426	35.5271	40.3579	51.9230	66.5417	84.9538	136.9691
17	10.7613	12.4677	14.4265	16.6722	19.2441	22.1861	29.3844	38.7408	44.4089	50.8510	66.4614	86.5042	112.1390	186.2779
18	12.3755	14.4625	16.8790	19.6733	22.9005	26.6233	35.8490	48.0386	55.5112	64.0722	85.0706	112.4554	148.0235	253.3380
19	14.2318	16.7765	19.7484	23.2144	27.2516	31.9480	43.7358	59.5679	69.3889	80.7310	108.8904	146.1920	195.3911	344.5397
20	16.3665	19.4608	23.1056	27.3930	32.4294	38.3378	53.3576	73.8641	88.7362	101.7211	139.3797	190.0496	257.9162	468.5740
25	32.9190	40.8742	50.6578	62.6686	77.3881	95.3962	144.2101	216.5420	264.6978	323.0454	478.9049	705.6410	1033.590	2180.081
30	66.2118	85.8499	111.0647	143.3706	184.6753	237.3763	389.7579	634.8199	807.7936	1025.927	1645.505	2619.996	4142.075	10143.02
35	133.1755	180.3141	243.5035	327.9973	440.7006	590.6682	1053.402	1861.054	2465.190	3256.135	5653.911	9727.860	16599.22	47191.28
40	267.8635	378.7212	533.8687	750.3783	1051.668	1469.772	2847.038	5455.913	7523.164	10347.18	19426.69	36118.86	66520.77	219561.6
50	1083.657	1670.704	2566.215	3927.357	5988.914	9100.438	20796.56	46890.43	70064.92	104358.4	229349.9	497929.2	1068308.2	4752754.9

Table 2: Future Value Interest Factor Annuity

Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%
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
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
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
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
5	5.1010	5.2040	5.3091	5.4163	5.5258	5.6371	5.7507	5.8666	5.9847	6.1051	6.2278	6.3528	6.4803	6.6101
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7158	7.9129	8.1152	8.3227	8.5355
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
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
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
10	10.4622	10.9497	11.4639	12.0061	12.5779	13.1806	13.8164	14.4888	15.1989	15.9474	16.7362	17.5673	18.4437	19.3683
11	11.5666	12.1687	12.8078	13.4864	14.2068	14.9718	15.7836	16.6455	17.5603	18.5312	19.5614	20.6546	21.8143	23.0445
12	12.6825	13.4121	14.1920	15.0258	15.9171	16.8699	17.8865	18.9711	20.1407	21.3999	22.7534	24.2061	25.7635	27.4307
13	13.8093	14.6803	15.6178	16.6288	17.7130	18.8821	20.1408	21.4953	22.9534	24.5227	26.2016	28.0091	29.9547	32.0487
14	14.9474	15.9739	17.0863	18.2819	19.5686	20.9511	22.4355	24.0271	25.7329	27.5599	29.5149	31.6169	33.8757	36.3011
15	16.0969	17.2634	18.5989	20.0236	21.5578	23.1980	24.9509	26.8231	28.8229	30.9554	33.2375	35.6777	38.2897	41.0824
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	46.8717	50.9804
17	18.4304	20.0121	21.7816	23.6975	25.8404	28.2129	30.8402	33.7502	36.9737	40.5447	44.5008	48.8837	53.7391	59.1176
18	19.6147	21.4123	23.4144	25.8454	28.1324	30.9057	33.9990	37.4502	41.3013	45.5992	50.3959	55.7497	61.7251	68.3941
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	78.9892
20	22.0190	24.2974	26.8704	29.7781	33.0680	36.7858	40.9955	45.7820	51.1801	57.2750	64.2028	72.0524	80.9488	91.0249
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	155.8196	181.8708
30	34.7849	40.5681	47.5754	56.0849	66.4388	79.0582	94.4808	113.2832	136.3075	164.4840	199.0209	241.3327	293.1992	358.7868
35	41.6603	49.9945	60.4621	73.8522	90.3203	111.4348	138.2369	172.3168	215.7108	271.0244	341.5896	431.6835	546.8808	693.5727
40	48.8864	60.4020	75.4013	95.0255	120.7998	154.7620	199.6351	259.0565	337.8824	442.5928	581.8261	787.0914	1013.7042	1342.0251
50	64.4832	84.5794	112.7969	152.6671	209.3480	290.3359	406.5289	573.7702	815.0836	1153.9085	1668.5712	2400.0182	3459.5071	4994.5213

Periods	15%	16%	17%	18%	19%	20%	22%	24%	25%	26%	28%	30%	32%	36%
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
2	2.1500	2.1600	2.1700	2.1800	2.1900	2.2000	2.2200	2.2400	2.2500	2.2600	2.2800	2.3000	2.3200	2.3600
3	3.4725	3.5056	3.5389	3.5724	3.6061	3.6400	3.7084	3.7778	3.8125	3.8476	3.9184	3.9900	4.0624	4.2066
4	4.9934	5.0665	5.1405	5.2154	5.2913	5.3680	5.5242	5.6842	5.7856	5.8480	6.0156	6.1870	6.3624	6.7251
5	6.7424	6.8771	7.0144	7.1542	7.2966	7.4416	7.7366	8.0484	8.2070	8.3684	8.6999	9.0431	9.3983	10.1481
6	8.7537	8.9775	9.2068	9.4420	9.6830	9.9299	10.4423	10.9801	11.2588	11.5442	12.1359	12.7560	13.4058	14.7987
7	11.0668	11.4139	11.7720	12.1415	12.5227	12.9159	13.7396	14.6153	15.0735	15.5458	16.5339	17.5828	18.6956	21.1282
8	13.7268	14.2401	14.7733	15.3270	15.9020	16.4991	17.7623	19.1229	19.8419	20.5878	22.1634	23.8577	25.6782	29.7318
9	16.7858	17.5185	18.2847	19.0859	19.9234	20.7989	22.6700	24.7125	25.8023	26.9404	29.3692	32.0150	34.8953	41.4350
10	20.3037	21.3215	22.3931	23.5213	24.7069	25.9587	28.6574	31.6434	33.2529	34.9449	38.5826	42.6195	47.0818	57.3516
11	24.3493	25.7329	27.1999	28.7551	30.4035	32.1504	35.9620	40.2379	42.5961	45.0306	50.3985	56.4053	63.1215	78.9882
12	29.0017	30.8502	32.8239	34.9311	37.1802	39.5805	44.8737	50.8950	54.2077	57.7388	65.5100	74.3270	84.3204	108.4375
13	34.3519	36.7862	39.4040	42.2187	45.2445	48.4968	55.7459	64.1097	68.7598	73.7506	84.8529	97.8250	112.3030	148.4750
14	40.5047	43.6720	47.1027	50.8190	54.8409	59.1959	69.0100	80.4961	88.9495	93.9258	109.6117	127.9125	149.2399	202.9260
15	47.5804	51.6595	56.1101	60.9653	66.2807	72.0351	85.1922	100.8151	109.6868	119.3485	141.3029	167.2863	197.9967	276.9793
16	55.7175	60.9250	66.6488	72.9390	79.8502	87.4421	104.9345	126.0108	138.1085	151.3788	181.8677	218.4722	262.3557	377.6919
17	65.0751	71.6730	78.9792	87.0680	96.0218	105.9306	129.0201	157.2534	173.6357	191.7345	233.7907	285.0139	347.3095	514.8610
18	75.8364	84.1407	93.4056	103.7403	115.2859	128.1167	158.4045	195.9942	218.0446	242.5855	300.2521	371.5180	459.4485	700.9389
19	88.2118	98.6032	110.2846	123.4135	138.1864	154.7400	194.2535	244.0328	273.5558	306.8577	385.3227	483.9734	607.4721	954.2769
20	102.4436	115.3797	130.0329	146.6280	165.4180	186.8880	237.9893	303.8006	342.9447	387.3887	494.2131	630.1655	802.8631	1298.8186
25	212.7930	249.2140	292.1049	342.6035	402.0425	471.9811	650.9551	898.0918	1054.7912	1238.6363	1706.8031	2348.8033	3226.84	6053.0039
30	434.7451	530.3117	647.4391	790.9480	966.7122	1181.8816	1767.0813	2640.9164	3227.1743	3942.0260	5873.2306	8729.9855	12940.86	28172.28
35	881.1702	1120.7130	1426.4910	1816.6516	2314.2137	2948.3411	4783.6447	7750.2251	9856.7613	12527.44	20188.968	32422.87	51889.43	131084.12
40	1779.09	2360.76	3134.52	4163.21	5529.83	7343.86	12936.54	22728.80	30068.66	39792.98	69377.46	120392.88	207874.27	609890.48
50	7217.72	10435.65	15089.50	21813.09	31515.34	45497.19	94525.28	195372.64	280255.69	401374.47	819103.08	1659761	3338480	13202084

Table 3: Present Value Interest Factor $(1 + r)^{-n}$

Periodo	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%
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
2	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
3	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
4	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
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6808	0.6499	0.6208	0.5935	0.5679	0.5428	0.5194
6	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
7	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
8	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
9	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
10	0.9053	0.8203	0.7441	0.6758	0.6139	0.5584	0.5092	0.4662	0.4274	0.3925	0.3602	0.3300	0.2996	0.2697
11	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
12	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
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2282	0.2042	0.1821
14	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
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1590	0.1401
16	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
17	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
18	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
19	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
20	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
25	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
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0259	0.0189	0.0139	0.0102
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053
50	0.6080	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014

Periodo	15%	16%	17%	18%	19%	20%	22%	24%	25%	26%	28%	30%	32%	36%
1	0.8696	0.8621	0.8547	0.8475	0.8403	0.8333	0.8197	0.8065	0.8000	0.7937	0.7813	0.7692	0.7576	0.7353
2	0.7561	0.7432	0.7305	0.7182	0.7062	0.6944	0.6719	0.6504	0.6400	0.6299	0.6104	0.5917	0.5739	0.5407
3	0.6575	0.6407	0.6244	0.6086	0.5934	0.5787	0.5507	0.5245	0.5120	0.4999	0.4768	0.4552	0.4348	0.3975
4	0.5718	0.5523	0.5337	0.5158	0.4987	0.4823	0.4514	0.4230	0.4096	0.3968	0.3725	0.3501	0.3294	0.2923
5	0.4972	0.4761	0.4561	0.4371	0.4180	0.4019	0.3700	0.3411	0.3277	0.3149	0.2910	0.2693	0.2495	0.2149
6	0.4323	0.4104	0.3898	0.3704	0.3521	0.3349	0.3033	0.2751	0.2621	0.2499	0.2274	0.2072	0.1890	0.1580
7	0.3759	0.3538	0.3332	0.3139	0.2959	0.2791	0.2486	0.2218	0.2097	0.1983	0.1776	0.1594	0.1432	0.1162
8	0.3269	0.3050	0.2848	0.2660	0.2487	0.2326	0.2038	0.1789	0.1678	0.1574	0.1388	0.1226	0.1085	0.0854
9	0.2843	0.2630	0.2434	0.2255	0.2090	0.1938	0.1670	0.1443	0.1342	0.1249	0.1084	0.0943	0.0822	0.0628
10	0.2472	0.2267	0.2080	0.1911	0.1758	0.1615	0.1369	0.1164	0.1074	0.0992	0.0847	0.0725	0.0623	0.0462
11	0.2149	0.1954	0.1778	0.1619	0.1476	0.1348	0.1122	0.0938	0.0859	0.0787	0.0662	0.0558	0.0472	0.0340
12	0.1869	0.1685	0.1520	0.1372	0.1240	0.1122	0.0920	0.0757	0.0687	0.0625	0.0517	0.0429	0.0357	0.0250
13	0.1625	0.1452	0.1299	0.1163	0.1042	0.0935	0.0754	0.0610	0.0550	0.0496	0.0404	0.0330	0.0271	0.0184
14	0.1413	0.1252	0.1110	0.0985	0.0876	0.0779	0.0618	0.0492	0.0440	0.0393	0.0316	0.0254	0.0205	0.0135
15	0.1229	0.1079	0.0949	0.0835	0.0736	0.0649	0.0507	0.0397	0.0352	0.0312	0.0247	0.0195	0.0155	0.0099
16	0.1069	0.0930	0.0811	0.0708	0.0618	0.0541	0.0415	0.0320	0.0281	0.0248	0.0193	0.0150	0.0118	0.0073
17	0.0929	0.0802	0.0693	0.0600	0.0520	0.0451	0.0340	0.0258	0.0225	0.0197	0.0150	0.0116	0.0089	0.0054
18	0.0808	0.0691	0.0592	0.0508	0.0437	0.0376	0.0279	0.0208	0.0180	0.0156	0.0118	0.0089	0.0068	0.0039
19	0.0703	0.0596	0.0506	0.0431	0.0367	0.0313	0.0229	0.0168	0.0144	0.0124	0.0092	0.0066	0.0051	0.0029
20	0.0611	0.0514	0.0433	0.0365	0.0308	0.0261	0.0187	0.0135	0.0115	0.0098	0.0072	0.0053	0.0039	0.0021
25	0.0304	0.0245	0.0197	0.0160	0.0129	0.0105	0.0069	0.0046	0.0038	0.0031	0.0021	0.0014	0.0010	0.0005
30	0.0151	0.0116	0.0090	0.0070	0.0054	0.0042	0.0026	0.0016	0.0012	0.0010	0.0006	0.0004	0.0002	0.0001
35	0.0075	0.0055	0.0041	0.0030	0.0023	0.0017	0.0009	0.0005	0.0004	0.0003	0.0002	0.0001	0.0001	0.0000
40	0.0037	0.0026	0.0019	0.0013	0.0010	0.0007	0.0004	0.0002	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000
50	0.0009	0.0006	0.0004	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4: Present Value Interest Factor Annuity $\frac{1 - \frac{1}{(1 + r)^n}}{r}$

Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%
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
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	1.6464
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	2.3220
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
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	3.4330
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	3.8885
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	4.2885
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	4.6395
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	4.9484
10	9.4713	8.9826	8.5302	8.1109	7.7247	7.3691	7.0338	6.7181	6.4117	6.1148	5.8272	5.5497	5.2822	5.0256
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8002	6.4815	6.1827	5.8947	5.6176	5.3523
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	5.6630
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	5.8474
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9818	6.6282	6.3025	6.0080
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8108	6.4624	6.1494
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4666	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2695
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	6.3794
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	6.4695
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	6.5585
20	18.0456	16.3514	14.8775	13.5903	12.4822	11.4699	10.5940	9.8181	9.1285	8.5136	7.9633	7.4594	7.0248	6.6322
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	6.8747
30	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.6938	8.0552	7.4957	7.0000
35	29.4086	24.9986	21.4872	18.6646	16.3742	14.4982	12.9477	11.6546	10.5668	9.6442	8.8552	8.1755	7.5858	7.0700
40	32.8347	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7791	8.9511	8.2438	7.6344	7.1000
50	39.1961	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007	12.2335	10.9817	9.8148	9.0417	8.3045	7.6762	7.1300

Periods	15%	16%	17%	18%	19%	20%	22%	24%	26%	28%	30%	32%	34%
1	0.8696	0.8621	0.8547	0.8475	0.8403	0.8333	0.8197	0.8065	0.8000	0.7937	0.7813	0.7692	0.7576
2	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278	1.4915	1.4568	1.4400	1.4235	1.3916	1.3609	1.3315
3	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065	2.0422	1.9813	1.9520	1.9234	1.8684	1.8161	1.7663
4	2.8550	2.7982	2.7432	2.6901	2.6386	2.5887	2.4936	2.4043	2.3616	2.3202	2.2410	2.1662	2.0957
5	3.3522	3.2743	3.1993	3.1272	3.0578	2.9906	2.8636	2.7454	2.6883	2.6351	2.5326	2.4356	2.3452
6	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255	3.1669	3.0205	2.9514	2.8850	2.7594	2.6427	2.5342
7	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046	3.4155	3.2423	3.1611	3.0833	2.9370	2.8021	2.6775
8	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372	3.6193	3.4212	3.3289	3.2407	3.0758	2.9247	2.7860
9	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310	3.7863	3.5655	3.4631	3.3657	3.1842	3.0190	2.8681
10	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925	3.9232	3.6819	3.5705	3.4648	3.2689	3.0915	2.9304
11	5.2337	5.0286	4.8364	4.6560	4.4865	4.3271	4.0354	3.7757	3.6564	3.5435	3.3351	3.1473	2.9776
12	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392	4.1274	3.8514	3.7251	3.6059	3.3868	3.1903	3.0133
13	5.5831	5.3423	5.1183	4.9095	4.7147	4.5327	4.2028	3.9124	3.7801	3.6555	3.4272	3.2233	3.0404
14	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106	4.2646	3.9616	3.8241	3.6949	3.4587	3.2487	3.0609
15	5.8474	5.5755	5.3242	5.0916	4.8759	4.6755	4.3152	4.0013	3.8583	3.7261	3.4834	3.2682	3.0784
16	5.9542	5.6685	5.4053	5.1624	4.9377	4.7296	4.3567	4.0333	3.8874	3.7509	3.5026	3.2832	3.0882
17	6.0472	5.7487	5.4746	5.2223	4.9897	4.7746	4.3908	4.0591	3.9099	3.7705	3.5177	3.2948	3.0971
18	6.1280	5.8178	5.5339	5.2732	5.0333	4.8122	4.4187	4.0799	3.9278	3.7861	3.5294	3.3037	3.1039
19	6.1982	5.8775	5.5845	5.3162	5.0700	4.8435	4.4415	4.0967	3.9424	3.7985	3.5386	3.3105	3.1090
20	6.2593	5.9288	5.6278	5.3527	5.1099	4.8698	4.4603	4.1103	3.9539	3.8083	3.5458	3.3158	3.1129
25	6.4641	6.0971	5.7662	5.4669	5.1951	4.9476	4.5139	4.1474	3.9849	3.8342	3.5640	3.3286	3.1220
30	6.5660	6.1772	5.8294	5.5168	5.2347	4.9789	4.5338	4.1601	3.9950	3.8424	3.5693	3.3321	3.1242
35	6.6166	6.2153	5.8582	5.5386	5.2512	4.9915	4.5411	4.1844	3.9984	3.8450	3.5708	3.3330	3.1248
40	6.6418	6.2335	5.8713	5.5482	5.2582	4.9966	4.5439	4.1869	3.9995	3.8458	3.5712	3.3332	3.1250
50	6.6605	6.2463	5.8801	5.5541	5.2623	4.9995	4.5452	4.1886	3.9999	3.8461	3.5714	3.3333	3.1250