EASTERN UNIVERSITY, SRI LANKA FACULTY OF COMMERCE AND MANAGEMENT. THIRD YEAR SECOND SEMESTER EXAMINATION IN BUSINESS ADMINISTRATION/ COMMERCE (SPECIALIZATION IN HUMAN RESOURCE MANAGEMENT/ SPECIALIZATION IN MARKETING MANAGEMENT/ SPECIALIZATION IN ENTERPRISE DEVELOPMENT)2007/ 2008 (MARCH/ APRIL – 2009) (PROPER/ REPEAT)

DAF 3123 - MANAGEMENT ACCOUNTING

Answer all questions Calculator is permitted

Time: 03 Hours

BRAR

1. i. How does 'Management Accounting differ from 'Financial Accounting' and 'Cost Accounting'?

(03 Marks)

ii. How are changes in technology affecting Management Accounting?

(02 Marks)

iii. An existing company has a machine which has been in operation for 2 years; its remaining estimated useful life is 10 years with no salvage value in the end. Its current market value is Rs.25,000. The management is considering a proposal to purchase an improved model of similar machine which gives increased output. The relevant particulars are as follows:

	Existing Machine	New Machine
Purchase price (Rs.)	60,000	100,000
Estimated life (years)	12`	10
Salvage value (Rs.)	0	0
Method of depreciation	Straight line method	Straight line method
Annual operating hours	1,000	1,000
Selling price per unit (Rs.)	3	3
Output per hour (units)	15	30
Material per unit (Rs.)	0.40	0.40
Labour cost per hour (Rs.)	11	16
Consumable stores per year (Rs.)	2,000	1,000
Repairs and maintenance per year (Rs.)	3,000	2,000

Working capital (Rs.)10,00020,000Income tax rate55%55%

Should the existing machine be replaced? Assume that the company's required rate of return is 10%.

(15 Marks)

(Total 20 Marks)

2. i. Outlines the steps you would take to improve the efficiency of cash management.

(05 Marks)

- ii. Explain the following terms.
 - a. Zero Working Capital
 - b. Core Working Capital
 - c. Over Capitalization
 - d. Under Capitalization

(05 Marks)

III. You are supplied with the following information in respect of Rainbow (Pvt.) Ltd.for the ensuing year.

		and a
Production for the year	69,000 units	9 în 19
Finished goods in store	3 months	1
Raw material in store	2 months' consumption	
Production process	1 month	
Credit allowed by creditors	2 months	
Credit given to debtors	3 months	
Selling price per unit	Rs.50	
Raw material	50% of Selling price	
Direct wages	10% of Selling price	
Overheads	20% of Selling price	

There is a regular Production and Sales Cycle and wages and overhead accrue evenly. Wages are paid in the next month of accrual. Material is introduced in the beginning of production cycle.

You are required to find out the Working Capital Requirement of the company.

(10 Marks)

(Total 20 Marks)

3. i. What are the tax consequences on dividend policy?

07 APR 2009 (03 Marks)

BRAR

ii. Assume that the expected dividend (D1) on each share of common stock is Rs.4. Each share of common stock is currently trading at Rs.35 and has an expected growth rate of 8%. What is the yield on common stock?

(5 Marks)

iii. Stock A has an expected growth rate of 14% for the first 3 years and 7% thereafter. Each share of stock just received an annual Rs.4 dividend per share. The appropriate discount rate is 15%. What is the value of the common stock under this scenario?

(12 Marks) (Total 20 Marks)

I. Millennium Company (Pvt.) Ltd. has given the following particulars. You are required to prepare a cash budget for three months ending 31st December, 2009.

		*		
Months	Sales	Materials	 Wages 	Overheads
	Rs.	Rs.	Rs.	Rs.
August	40,000	20,400	7,600	3,800
September	42,000	20,000	7,600	4,200
October	46,000	-19,600	8,000	4,600
November	50,000	20,000	8,400	4,800
December	60,000	21,600	9,000	5,000

- b. Sales/ debtors 10% Sales are on cash basis. 50% of the credit sales are collected next month and the balance in the following months.
 - Creditors Materials 2 months.
 - Wages 1/5 months.
 - Overheads 1/2 months.
- c. Cash balance on 1st October, 2009 is expected to be Rs.8,000
- d. A machinery will be installed in August, 2009 at a cost of Rs.100,000. The monthly installment of Rs.5,000 is payable from October onwards.

- f. Dividend at 10% on preference share capital of Rs.300,000 will be paid on 1st December 2009.
- g. Advance to be received for sale of vehicle Rs.20,000 in December.
- h. Income-tax (advance) to be paid in December Rs.5,000.

(10 Marks)

ii. Century Sri Lanka Ltd. is manufacturing three products A, C and E in two production departments F and G. The following details in respect of these products are given below:

mon will be pulsed out at tertial 2005 mileta-			Products	3
		A	С	E
	1 101 10	(in thou	sands of	rupees)
Closing balance of finished stock anticipated on 3	1-03-2009	720	540	1,800
Closing balance of finished stock anticipated on 3	1-03-2010	600	570	1,000
[Note: stock is valued at standard cost]				
di tudi tae ameri 174 (di Swim akitudi tu		Standa	ard cost p	ber unit
Standard cost (in Rs.)		24	15	20
Standard profit as a percentage of selling price		20	25	16 ² / ₃
Normal loss in processing (percentage of input)		10	20	5
Budgeted sales:			· 6	
we have been a subset when a subset of the second	Total	(in thơu	sands of	rupees)
Southern region	5,800	1,200	1,000	3,600
Western region	5,100	1,500	1,200	2,400
Northern region	3,200	800	400	2,000
Eastern region	3,180	700	400	2,080
	17,280	4,20Q	3,000	10,080

Standard labour time per unit and wage	er 000.38			
rate per hour:				
The on each basis, SUN, of the one difference	Rate/hr. Rs.	Standard	time per i	unit (hrs.)
Department F	10.00	0.25	0.20	0.20
Department G	12.00	0.25	0.20	0.25

You are required to prepare:

- (a) The production budget for 2009-2010.
- (b) The direct labour budget for 2009-2010, product wise and department wise.

(10 Marks)

(Total 20 Marks)

5. i. The following information was obtained from a Company in a certain year:

SalesRs.100,000Valuable costRs.60,000Fixed costRs.30,000

Find the P/V Ratio, break-even point and margin of safety.

(03 Marks)

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II. Calculate the internal rate of return and profitability index for a project that is expected to generate 8 years of annual net cash flows of Rs.75000. The project has a net investment of Rs.360,000 and the required return on the project is 12%.

(07 Marks)

iii. ABC Ltd. has decided to purchase a machine to expand the company's installed capacity to meet the growing demand for its products. There are three machines under consideration of the management. The relevant details including estimated yearly expenditure and sales are given below. All sales are on cash. Corporate income tax is 40%, interest on capital may be assumed to be 10%.

		·	Machines	
		1 *	2	3
Init	ial investment required	300,000	300,000	300,000
Est	timated annual sales	500,000	400,000	450,000
Со	st of production (estimated):		*	
	Direct material	40,000	50,000	48,000
-	Direct Labour	50,000	30,000	36,000
	Factory overheads	60,000	50,000	58,000
	Administration costs	20,000	10,000	15,000
	Selling and distribution costs	10,000	10,000	10,000

The economic life of Machine 1 is 2 years, while it is 3 years for the other two. The scarp values are Rs.40,000, Rs.25,000, and Rs.30,000 respectively.

You are required to find out the most profitable investment based on 'Pay Back Period Method'.

(10 Marks) (Total 20 Marks)

Present Value and Future Value Tables

IBRAKP

07 APR 2009

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Table A-1 Future Value Interest Factors for One Dollar Compounded at k Percent for n Periods: $FVIP_{k,n} = (1 + k)^n$

Dariad	101	1	1	1					-							1.	9.0	-		
Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
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	1.1500	1.1600	1.2000	1.2400	C12500	1.3000
	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	1.3456	1.4400	1.5376	1.5625	1.6900
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	1.5209	1,5609	1.7280	1.9066	1.9531	2.1970
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	1.7490	1.8106	2,0736	2.3642	2.4414	2.8561
D	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	2.1003	2.4883	2.9316	3.0518	3.7129
e	1 0045	4 4 0 0 0																		
7	1.0015	1.1252	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	2.4364	2.9860	3.6352	3.8147	4.8268
8	1.0721	1.148/	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	2.8262	3.5832	4.5077	4.7684	6.2749
0	1.0829	1.1/1/	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.3045	2.4750	2.6584	2.8526	3.0590	3.2784	4.2998	5.5895	5.9605	8.1573
3	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	3,8030	5.1598	6.9310	7.4506	10.604
10	1.1040	1.2190	1.3439	1.4802	1.6289	1.7908	1.9572	2.1589	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	6.1917	8.5944	9.3132	13.786
11	1 1 1 57	4.0404	1 0010																	
10	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	5.1173	7,4301	10.657	11.642	17.922
12	1.1200	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	5.9360	8.9161	13.215	14.552	23.298
14	1.1301	1.2930	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	6.8858	10.699	16.386	18.190	30.288
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	7.0757	7.9875	12.839	20.319	22.737	39.374
10	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	9.2655	15.407	25.196	28,422	51.186
10	1 1700	4 9799	4 0.047																	
10	1.1726	1.3/28	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	10.748	18.488	31.243	35.527	66.542
11	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	10.761	12.468	22.186	38.741	44.409	86.504
10	1.1961	1.4262	1.7024	2.0258	2.4066	2.8543	3,3799	3.9960	4.7171	5,5599	6.5436	7.6900	9.0243	10.575	12.375	14.463	26.623	48.039	55.511	112.455
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	10.197	12.056	14.232	16.777	31.948	59.568	69.389	146.192
20	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	8.0623	9.6463	11.523	13.743	16.367	19.461	38.338	73.864	86.736	190.050
24	4 0004																			
21	1.2324	1.5157	1.8603	2.2788	2.7860	3.3996	4.1406	5.0338	6.1088	7.4002	8.9492	10.804	13.021	15.668	18,822	22.574	46.005	91.592	108.420	247.065
22	1.294/	1.5460	1.9161	2.3699	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	9.9336	12.100	14.714	17.861	21.645	26.186	55.206	113.574	135.525	321.184
24	1.2012	1.5769	1.9736	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	11.026	13.552	16.627	20.362	24.891	30.376	66.247	140.831	169.407	417.539
24	1.2097	1.6084	2.0328	2.5633	3.2251	4.0489	5.0724	6.3412	7.9111	9.8497	12.239	15.179	18.788	23.212	28.625	35.236	79.497	174.631	211.758	542.801
20	1.2024	1.6406	2.0938	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.835	13.585	17.000	21.231	26.462	32.919	40.874	95.396	216.542	264.698	705.641
20	4 2 4 7 5																			
30	1.34/6	1.8114	2.4273	3.2434	4,3219	5.7435	7.6123	10.063	13.268	17.449	22.892	29.960	39.116	50,950	66.212	85.850	237.376	634.820	807,794	
30	1.4100	1.9999	2.8139	3.9461	5,5160	7.6861	10.677	14.785	20.414	28.102	38.575	52.800	72.069	98.100	133.176	180.314	590.668		*	
30	1.4308	2.0399	2.8983	4.1039	5.7918	8.1473	11.424	15.968	22.251	30.913	42.818	59.136	81.437	111.834	153.152	209.164	708.802		-	*
40	1.4889	2.2080	3.2520	4.8010	7.0400	10.286	14.974	21.725	31.409	45.259	65.001	93.051	132.782	188.884	267.864	378.721	8		*	4
00	1.0445	2.6916	4.3839	7.1067	11.467	18.420	29.457	46.902	74,358	117.391	184.565	289.002	450.736	700.233	*	\$	*			
													1	3	and the second second	and a state of the				

Table A-2 Future Value Interest Factors for a One-Dollar Annuity Compouned at k Percent for n Periods: FV/FA _{k,n} = [(1 + k)ⁿ - 1] / k

Períod	1%	2%	3%	4%	5%	6%	7%	- 8%	9%	10%	11%	12%	1.3%	1 14%	15%	16%	20%	1 248/	255/	1 2017
1	1.0000	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1,1100	1 1 200	1 1 300	1 1400	1 1 1 500	1 1 500	1 2000	1 24%	1 25%	30%
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 1306	2 1400	2 1500	2 1600	2 2000	2 2400	1.2500	1.3000
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 4 3 9 6	3 4725	2.1000	2.2000	2.2400	2.2500	2.3000
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	1 9211	4 9924	5.0000	5.0400	5.7776	5.0125	3.9900
5	5.1010	5.2040	5.3091	5.4183	5.5256	5.6371	5.7507	5,8666	5.9847	6.1051	6.2278	6.3528	6 4803	6 6101	6 7424	6.8771	7 4440	0.0042	0./050	6.1870
		-								1	1		0.4000	0.0101	0.7424	0.0771	7.4410	6.0404	0.2070	9.0431
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 3 2 2 7	8 5355	8 7 87	8 9775	0 0 200	10.000	44.250	40.750
7	7.2135	7.4343	7.6625	7.8983	8.1420	8.3938	8.6540	8.9228	9,2004	9.4872	9.7833	10.089	10 405	10 730	11 067	44 444	0.040	10.500	11.209	12.755
8	8.2857	8.5830	8.8923	9.2142	9.5491	9.8975	10.260	10.637	11.028	11.436	11,859	12,300	12 757	13 233	11.007	14 340	16.400	14.010	10.073	17.583
. 9	9.3685	9.7546	10.159	10.583	11.027	11.491	11.978	12,488	13.021	13.579	14 164	14 776	15 416	16 086	16 796	47 540	10.455	19.123	19.042	23.808
10	10,462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16 722	17 549	18 420	10 237	20.204	11.013	20.799	24.772	25.802	32.015
			100									111040	10.420	10.007	20.304	21.321	20.309	31.643	33.253	42.019
11	11.567	12,169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	19.561	20.655	21 814	23 045	24 349	25 722	22 150	40.000	12 500	FC 105
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22 713	24 133	25 650	27 274	29.343	20.733	32.150	40.238	42.555	56.405
13	13.809	14.680	15.618	16.627	17,713	18,882	20.141	21.495	22.953	24.523	26.212	28.029	29 985	32 089	34 352	30.000	49.407	50.895	54.208	14.321
14	14.947	15.974	17.086	18.292	19.599	21.015	22,550	24,215	26.019	27 975	30 095	32 393	34 883	27 694	40 505	49 579	40.437	04,110	00.760	97.525
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31,772	34 405	37 280	40 417	43 842	40.000	43.072	33,130	400.490	60,949	127.913
											011400	01.200	40.417	40.042	47.000	51.000	72.035	100.015	109.687	167.286
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950	39,190	42.753	46.672	50 980	55 717	60.925	87 449	126 041	128 100	749 470
17	18.430	20.012	21.762	23.698	25.840	28.213	30,840	33.750	36.974	40,545	44,501	48.884	53 739	59 118	65.075	71 673	105 034	120.011	130.109	210.4/2
18	19.615	21.412	23.414	25.645	28.132	30.906	33,999	37.450	41.301	45.599	50,396	55.750	61.725	68 394	75.836	84 141	128 117	106 004	218 046	200,014
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159	56,939	63,440	70.749	78 969	88 212	98 603	154 740	244 033	210.043	492 972
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45,762	51.160	57.275	64.203	72.052	80.947	91.025	102 444	115 380	186 688	303 601	342 045	610 165
																110.000	100.000	505.001	044.540	030.100
21	23.239	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	72.265	81,699	92,470	104,768	118.810	134 841	225 026	377 465	479 681	820 215
22	24.472	27.299	30.537	34.248	38.505	43.392	49.006	55.457	62.873	71.403	81.214	92.503	105.491	120.436	137.632	157 415	271 031	469 056	538 101	*
23	25.716	28.845	32.453	36.618	41.430	46.996	53.436	60.893	69.532	79.543	91.148	104.603	120.205	138.297	159.276	183.601	326 237	582 630	673 626	*
24	26.973	30.422	34.426	39.083	44.502	50.816	58.177	68.765	76.790	88.497	102.174	118.155	136.831	158.659	184,168	213.978	392 484	723 461	843 033	
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347	114.413	133.334	155.620	181.871	212.793	249.214	471,981	898 092	*	
											10.00 and 1						47 1.001	000.002		
30	34.785	40.568	47.575	56.085	66.439	79.058	94.461	113.283	136.308	164.494	199.021	241.333	293.199	356.787	434.745	530.312	*	8	*	
35	41.660	49.994	60.462	73.652	90.320	111.435	138.237	172.317	215.711	271.024	341.590	431.663	546,681	693.573	881.170	*		*		*
36	43.077	51.994	63.276	77.598	95.836	119.121	148.913	187.102	236.125	299.127	380.164	484.463	618.749	791.673	4	4	4	*		
40	48.886	60,402	75.401	95.026	120.800	154.762	199.635	259.057	337.882	442.593	581.826	767.091	*		*		*	+	*	*
50	64.463	84.579	112.797	152.667	209.348	290.336	406.529	573.770	815.084	*		*	*		*	*	*		×	•

Table A-3 Present Value Interest Factors for One Dollar Discounted at k Percent for n Periods: PVIF kn = 1 / (1 + k) n

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%
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	0.8621	0.8333	0.8065	0.800
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	0.7561	0.7432	0.6944	0.6504	0.6400
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	0.6575	0.6407	0.5787	0.5245	0.5120
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	0.5718	0.5523	0.4823	0.4230	0.4096
5	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	0.4761	0.4019	0.3411	0.3277
				1														1	
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	0.4323	0.4104	0.3349	0.2751	0.2621
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	0.3759	0.3538	0.2791	0.2218	0.2097
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	0.3269	0.3050	0.2326	0.1789	0.1678
.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	0.2843	0.2630	0.1938	0.1443	0.1342
10	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	0.2267	0.1615	0.1164	0.1074
						1													
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	0.2149	0.1954	0.1346	0.0938	0.0859
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	0.1869	0.1685	0.1122	0.0757	0.0687
13	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	0.1452	0.0935	0.0610	0.0550
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	0.1413	0.1252	0.0779	0.0492	0.0440
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	0.1599	0.1401	0.1229	0.1079	0.0649	0.0397	0.0352
	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	0.0930	0.0541	0.0320	0.0281
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	0.0929	0.0802	0.0451	0.0258	0.0225
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	0.0808	0.0691	0.0376	0.0208	0.0180
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	0.0703	0.0596	0.0313	0.0168	0.0144
20	0.8195	0.6730	0.5537	0.4584	0.3769	0,3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0261	0.0135	0.0115
																			1
21	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	0.0443	0.0217	0.0109	0.0092
22	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	0.0382	0.0181	0.0088	0.0074
23	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	0.0329	0.0151	0.0071	0.0059
24	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	0.0284	0.0126	0.0057	0.0047
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	0.0304	0.0245	0.0105	0.0046	0.0038
Constants All																			
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	0.0151	0.0116	0.0042	0.0016	0.0012
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	0.0075	0.0055	0.0017	0.0005	*
36	0.6989	0.4902	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0234	0.0169	0.0123	0.0089	0.0065	0.0048	0.0014	*	
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	0.0037	0.0026	0.0007		
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	0.0009	0.0006	*	*	

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at k Percent for n Periods: PVIFA = [1 - 1/(1 + k)ⁿ] / k

Period 1% 2% 3% 4% 5% 6% 7% 8% 9% 10% 11% 12% 13% 14% 15% 16% 20% 1 0.9901 0.9804 0.9709 0.9815 0.9624 0.9344 0.9346 0.9259 0.9174 0.9009 0.8829 0.8829 0.8820 0.8722 0.8650 0.8722 0.8650 0.8722 0.8650 0.8521 0.8533 2 1.9704 1.9416 1.9135 1.8684 1.8334 1.8080 1.7833 1.7591 1.7255 1.7125 1.6001 1.6681 1.647 1.5277 1.6227 1.6527 1.6527 1.6527 1.6527 1.6527 1.6527 1.5278 3 2.9410 2.8383 2.8286 2.7751 2.7232 2.6730 2.6243 2.3171 2.3313 2.4669 2.4437 2.4018 2.3017 2.4313 2.8560 2.7982 2.7587 2.5687 5 4.8534 4.7135	24% 25%
1 0.9901 0.9804 0.9709 0.9615 0.9624 0.9344 0.9346 0.9259 0.8174 0.9009 0.8929 0.8820 0.8772 0.8656 0.8621 0.8333 2 1.9704 1.9416 1.9136 1.8861 1.8594 1.8334 1.0080 1.7833 1.7551 1.7125 1.6901 1.6681 1.6467 1.6257 1.6052 1.6257 3 2.9410 2.8839 2.8286 2.7751 2.7232 2.6730 2.6243 2.6771 2.5313 2.4685 2.4437 2.4018 2.3612 2.3216 2.2832 2.5786 4 3.9020 3.8077 3.7171 3.5899 3.3872 3.3121 3.2937 3.1699 3.1024 3.0373 2.9745 2.9137 2.5856 5 4.8554 4.7135 4.4777 4.4518 4.3256 4.2124 4.1002 3.9927 3.8897 3.7908 3.6948 3.5172 3.4331 3.3522 3.2743 3.6947 <t< td=""><td>0.0005 0.00</td></t<>	0.0005 0.00
2 1.9704 1.9416 1.9315 1.8861 1.8894 1.8334 1.8080 1.7333 1.7551 1.7355 1.7125 1.6901 1.6681 1.6467 1.6257 ⁴ 1.6052 1.5278 3 2.9410 2.8839 2.8286 2.7751 2.7232 2.6730 2.5243 2.8771 2.5313 2.4869 2.4437 2.4018 2.3612 2.3216 2.2322 2.2459 2.1055 4 3.9020 3.8077 3.7171 3.6299 3.4660 3.4651 3.3872 3.1599 3.1699 3.0024 3.0373 2.9745 2.9137 2.8580 2.7982 2.5887 4 3.9020 3.8077 3.7171 3.2699 4.2124 4.1002 3.8927 3.8897 3.7908 3.6048 3.5172 3.4331 3.522 3.2743 2.9906 6 5.7955 5.6014 5.4172 5.2241 5.3893 5.2624 5.383 5.2465 4.3534 4.7122 4.5638 4.4164 4.7	0.0005 0.00
3 2.9410 2.8839 2.8286 2.7751 2.732 2.6730 2.6243 2.6771 2.5313 2.4669 2.4437 2.4018 2.3612 2.3215 2.2325 2.2459 2.1065 4 3.9020 3.8077 3.7171 3.8289 3.6460 3.4651 3.3872 3.3121 3.2397 3.1993 3.1024 3.0373 2.9745 2.9137 2.8550 2.7882 2.5887 5 4.8534 4.7135 4.5797 4.4518 4.3296 4.1002 3.9927 3.8897 3.7908 3.6048 3.5172 3.4331 3.3622 3.2784 2.9906 6 5.7955 5.6014 5.4172 5.2421 5.0757 4.9173 4.7665 4.6229 4.4859 4.3553 4.2205 4.114 3.9975 3.8887 3.7845 3.6647 3.3278 6 5.7955 5.6014 5.4172 5.7864 5.8248 5.1803 5.2646 5.3304 5.1461 4.95676 4.2883 4.160	1.4568 1.44
4 3.9020 3.8077 3.7171 3.6299 3.6460 3.4651 3.3872 3.3121 3.297 3.1699 3.1024 3.0373 2.9745 2.9137 2.8550 2.7982 2.5867 5 4.8534 4.7135 4.7077 4.4518 4.3295 4.2124 4.1002 3.9927 3.8897 3.7908 3.6959 3.6048 3.5172 3.4331 3.522 3.2743 2.9906 6 5.7955 5.6014 5.4172 5.2421 5.0757 4.9173 4.7665 4.659 4.3553 4.2124 4.1002 3.9927 3.8897 3.7908 3.6959 3.6048 3.5172 3.4331 3.522 3.2743 2.9906 6 5.7955 5.6014 5.4172 5.2421 5.0757 4.9173 4.7665 4.659 4.3553 4.2124 4.114 3.9975 3.8887 3.8867 3.2826 6 5.7955 5.019 6.7327 6.4632 6.2098 5.913 5.7646 5.334 5.1461 4.976 4.978 4.6399 4.4373 4.343 3.8372	1.9813 1.95
6 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 3.431 3.3222 3.2743 2.9906 6 5.7965 5.6014 5.4172 5.2421 5.0757 4.9173 4.7665 4.6229 4.8853 4.2305 4.114 3.9976 3.8887 3.7845 3.6847 3.7845 3.6847 3.3227 3.2743 2.9906 7 5.7282 6.4702 6.2303 6.0021 5.7664 5.5843 5.2064 6.0330 4.8684 4.7122 4.5538 4.4226 4.2883 4.4004 4.0386 3.6048 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 4.7888 4.4873 4.3362 3.6372 9 8.5660 8.1622 7.7861 7.4353 7.1078 6.8017 6.5152 6.2498 5.9590	2.4043 2.36
6 5.795 5.6014 5.4172 5.2421 5.0757 4.9173 4.7655 4.4659 4.3853 4.2306 4.111 3.9976 3.887 3.7845 3.6847 3.3245 7 5.7282 6.4720 6.2303 6.0021 5.7864 5.584 5.3893 5.2064 5.0330 4.8684 4.7122 4.5638 4.4226 4.2883 4.1604 4.0386 3.8047 3 7.5782 6.4720 5.7307 6.4822 6.208 5.9713 5.7464 5.5348 5.3493 5.1461 4.9676 4.7388 4.6389 4.433 3.8372 9 8.5660 8.1622 7.7861 7.4353 7.1078 6.8017 6.512 6.2489 5.9952 5.7590 5.6370 5.3282 5.1317 4.9464 4.7716 4.6065 4.0310 10 9.4713 8.9826 8.5302 8.1109 7.7217 7.3601 7.0236 6.7101 6.4177 6.1446 5.8892 5.8602 5.4262 <td>2.7454 2.68</td>	2.7454 2.68
6 5.7955 5.6014 5.4172 5.2421 5.077 4.9173 4.7665 4.629 4.4859 4.3553 4.2305 4.114 3.9975 3.8877 3.7845 3.6847 3.3237 7 6.7282 6.4720 6.2303 6.0215 5.7684 5.5824 5.3893 5.2064 5.0300 4.8684 4.7122 4.5538 4.4226 4.2883 4.1604 4.0386 3.8047 3.3247 8 7.6517 7.3255 7.0197 6.7327 6.4032 6.2088 5.9713 5.7466 5.9352 5.7395 5.3349 5.1461 4.9676 4.7988 4.6389 4.4873 4.3436 3.8372 9 8.5650 8.1622 7.7861 7.4353 7.1078 6.2017 6.5134 5.9952 5.7599 5.3270 5.3171 5.9464 4.7716 4.6056 4.0310 10 9.4713 8.9826 8.5002 8.429 5.4662 5.4262 5.2161 5.0188 4.8332 4.1925<	
7 6.7282 6.4720 6.2303 6.0021 5.764 5.824 5.3893 5.2064 5.0300 4.8684 4.7122 4.5638 4.4226 4.2883 4.1604 4.0386 3.604 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 3.4346 3.8322 9 8.5660 8.1622 7.7861 7.4353 7.1078 6.8017 6.5152 5.2469 5.9952 5.7990 5.3370 5.3282 5.1317 4.9464 4.7776 4.6065 4.0310 10 9.4713 8.9802 8.5102 5.117 7.3617 7.2076 7.7237 6.8017 6.4146 5.8892 5.6502 5.4262 5.2161 5.0188 4.832 4.192 10 9.4713 8.9268 8.7006 8.3064 7.8869 7.4987 7.1390 6.8052 6.4951 6.2065 5.9377 5.8689 5.4227 5.2337 5.0286 4.3271 10	3.0205 2.95
8 7.6517 7.3255 7.0197 6.7327 6.4632 6.2098 5.9713 5.7466 5.3348 5.1341 4.9676 4.7988 4.6389 4.4873 4.3436 3.8322 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 4.6065 4.0310 10 9.4713 5.8626 8.3022 8.1109 7.7277 7.3601 7.0236 6.7101 6.4147 6.1446 5.8892 5.6502 5.4262 5.2161 5.0188 4.8332 4.1925	3.2423 3.16
9 8.5660 8.1622 7.7861 7.4353 7.1078 6.8017 6.5152 6.2469 5.9952 5.7590 5.3282 5.1317 4.9464 4.7716 4.6065 4.0310 10 9.4713 8.9826 8.5302 8.1109 7.7217 7.3601 7.0236 6.7101 6.4177 6.1446 5.8892 5.6602 5.4262 5.2161 5.0188 4.8332 4.1925	3.4212 3.32
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 4.8332 4.1925 11 10.368 9.7868 9.2556 8.7605 8.3064 7.8869 7.4987 7.1390 6.8052 6.4951 6.2065 5.9377 5.6869 5.4527 6.2337 6.0236 4.3271 12 11.255 10.575 9.9540 9.3851 8.633 8.3838 7.9427 7.5361 7.1607 6.8137 6.4924 6.1944 5.9176 5.6600 5.4206 5.1971 4.4392	3.5655 3.46
11 10.368 9.7868 9.2526 8.7605 8.3064 7.4987 7.1390 6.8052 6.4951 6.2065 5.9377 5.6869 5.4527 5.2337 5.0286 4.3271 12 11.255 10.575 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 5.1971 4.4392	3.6819 3.57
11 10.368 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 5.0286 4.3271 12 11.255 10.575 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 5.1971 4.4392	
12 11.255 10.575 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 5.1971 4.4392	3.7757 3.65
	3.8514 3.72
13 12.134 11.348 10.635 9.9856 9.3936 8.8527 8.3577 7.9038 7.4869 7.1034 6.7499 6.4235 6.1218 5.8424 5.5831 5.3423 4.5327	3.9124 3.78
14 13.004 12.106 11.296 10.563 9.8986 9.2950 8.7455 8.2442 7.7862 7.3667 6.9819 6.6282 6.3025 6.0021 5.7245 5.4675 4.6106	3.9616 3.82
15 13.865 12.849 11.938 11.118 10.380 9.7122 9.1079 8.5595 8.0607 7.6061 7.1909 6.8109 6.4624 6.1422 5.8474 5.5755 4.6755	4.0013 3.85
16 14.718 13.578 12.561 11.652 10.838 10.106 9.4466 8.8514 8.3126 7.8237 7.3792 6.9740 6.6039 6.2651 5.9542 5.6685 4.7296	4.0333 3.88
17 15.562 14.292 13.166 12.166 11.274 10.477 9.7632 9.1216 8.5436 8.0216 7.5488 7.1196 6.7251 6.3729 6.0472 5.7487 4.7746	4.0591 3.90
18 16.398 14.992 13.754 12.659 11.690 10.828 10.059 9.3719 8.7556 8.2014 7.7016 7.2497 6.8399 6.4674 6.1280 5.8178 4.8122	4.0799 3.92
19 17.226 15.678 14.324 13.134 12.035 11.158 10.336 9.6036 8.9501 8.3649 7.8393 7.3658 6.9380 6.5604 6.1982 5.8775 4.8435	4.0967 3.94
20 18.046 16.351 14.877 13.590 12.462 11.470 10.594 9.8181 9.1285 8.5136 7.9633 7.4694 7.0248 6.6231 6.2593 5.9288 4.8696	4.1103 3.95
21 18.857 17.011 15.415 14.029 12.821 11.764 10.836 10.017 9.2922 8.6487 8.0751 7.5620 7.1016 6.5870 6.3126 5.9731 4.8913	4.1212 3.96
22 19.660 17.658 15.937 14.451 13.163 12.042 11.061 10.201 9.4424 8.7715 8.1757 7.6445 7.1695 6.7429 6.3587 6.0113 4.9094	4.1300 3.97
23 20.456 18.292 16.444 14.857 13.489 12.303 11.272 10.371 9.5802 8.8832 8.2664 7.7184 7.2297 6.7921 6.3988 6.0442 4.9245	4.1371 3.97
24 21.243 18.914 16.936 15.247 13.799 12.550 11.469 10.529 9.7066 8.9847 8.3481 7.7843 7.2829 6.8351 6.4338 6.0726 4.9371	4.1428 3.98
25 22.023 19.523 17.413 15.622 14.094 12.783 11.654 10.675 9.8226 9.0770 8.4217 7.8431 7.3300 6.8729 6.4641 6.0971 4.9476	4.1474 3.98
30 25.808 22.396 19.600 17.292 15.372 13.765 12.409 11.258 10.274 9.4269 8.6938 8.0552 7.4957 7.0027 6.5660 6.1772 4.9789	4.1601 3.99
35 29.409 24.999 21.487 18.665 16.374 14.498 12.948 11.655 10.567 9.6442 8.8652 8.1755 7.5856 7.0700 6.5166 6.2153 4.9915	4.1644 3.99
36 30.108 25.489 21.832 18.908 16.547 14.621 13.035 11.717 10.612 9.6765 8.8786 8.1924 7.5979 7.0790 6.6231 6.2201 4.9929	4.1649 3.99
40 32.835 27.355 23.115 19.793 17.159 15.046 13.332 11.925 10.757 9.7791 8.9511 8.2438 7.5344 7.1050 6.6418 6.2335 4.9966	4.1659 3.99
50 39.196 31.424 25.730 21.482 18.256 15.762 13.801 12.233 10.952 9.9148 9.0417 8.3045 7.6752 7.1327 5.6605 6.2463 4.9995	