



**UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL**

**FINAL EXAMINATION
MARCH 2024 SEMESTER**

COURSE CODE	: EIB11803
COURSE NAME	: FINANCIAL MANAGEMENT
PROGRAMME NAME	: BACHELOR OF BUSINESS ADMINISTRATION (HONS) INTERNATIONAL BUSINESS
DATE	: 29 JUNE 2024
TIME	: 2.00 PM – 5.00 PM
DURATION	: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please **CAREFULLY** read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of **FOUR (4)** questions.
4. Answer **ALL** questions.
5. Please write your answers on the answer booklet provided.
6. All questions must be answered in **English** (any other language is not allowed).
7. Formulas and tables have been appended for your reference.
8. This question paper must not be removed from the examination hall.

THERE ARE ELEVEN (11) PAGES OF QUESTIONS, INCLUDING THIS PAGE.

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

Kuffiya Sdn. Bhd. is preparing monthly cash budgets for the months of July and August 2024. The following data are available from the records of the company.

	RM	RM
Month	July	August
Sales	650,000	550,000
Raw materials purchase	215,000	230,000
Direct labour	85,000	90,000
Manufacturing overhead costs	90,000	100,000
Selling and administrative expenses	100,000	120,000

The company has the following business policies:

- i. Collections from customers are expected to be 45% of the sales in the month of sale and 55% in the month following the sale.
- ii. The company pays cash for 60% of the raw materials purchases in the month of purchase and the balance is due in the month following the purchase.
- iii. All other items besides these two are paid in the month they are incurred.

Other pertinent data are as follows:

- iv. Sales in June 2024: RM 500,000
- v. Purchase of raw materials in June 2024: RM 195,000.
- vi. Other receipts:
 - July : Commission received : RM 7,000
 - August : Proceeds from the disposal of used equipment RM 11,000.
- vii. Other payments:
 - July : Debt repaid: RM 40,000
 - August : Purchase of machinery: RM80,000
 - August: Annual medical insurance: RM80,000

The company's cash balance on 1st July 2024 is expected to be RM105,000. The company wants to maintain a minimum cash balance of RM100,000. The company will borrow if necessary.

Prepare the following:

- a) A schedule of cash collections from customers.
(4 marks)
 - b) A schedule of expected payments for direct material purchases.
(4 marks)
 - c) Prepare a cash budget for July and August 2024.
(12 marks)
 - d) Explain **TWO (2)** types of budget.
(2 marks)
 - e) Explain any **THREE (3)** benefits of a cash budget for businesses.
(3 marks)
- [Total: 25 marks]

Question 2

- a) Betty is preparing for retirement and wants to be sure that she has sufficient resources to support her needs throughout her retirement. She predicts that she will require RM40,000 each year for the next 20 years of her retirement. Calculate the amount of money Betty should have saved today, given a 6% return on her assets.
(2 marks)
- b) The college education of Yasmin's daughter is anticipated to cost RM50,000 in 10 years, and Yasmin intends to put money aside for it. In order for Yasmin to be able to meet her daughter's future college fees, compute the amount of money should she put into her investments right now if she can receive a return of 7% compounded semi-annually on her investment?
(3 marks)

- c) There are two different investment opportunities that Jessica intends to put her money into. The first option namely, Option A is a payment of RM3,000 at the beginning of each year for a period of five years. Meanwhile, the seven years investment tenure offered by Option B, a payment of RM2,500 is made at the beginning of each year. With both choices offering a 7% annual interest rate, Jessica needs to decide which option she should go with based on the potential value of the annuity that will be payable in the future. Provide details calculation to assist Jessica in her decision making.

(5 marks)

- d) David is considering investing in a rental property. He expects the property to generate the following annual rental income: Year 1: RM8,000, Year 2: RM9,000, Year 3: RM10,000, Year 4: RM11,000, Year 5: RM12,000. Determine the net present value of David's rental property investment considering both rental income and maintenance costs at a discount rate of 10%.

(6 marks)

- e) Purnama Sdn Bhd, Rembulan Sdn Bhd and Sinaran Sdn Bhd use different working capital management policies. The summarized Statement of Financial Position are given below:

	Purnama (RM)	Rembulan (RM)	Sinaran (RM)
Non-current assets	600,000	600,000	600,000
Current assets	450,000	600,000	900,000
Total assets	1,050,000	1,200,000	1,500,000
Equity	450,000	300,000	750,000
Non-current liability	0	300,000	600,000
Current liabilities	600,000	600,000	150,000
Total liabilities & equity	1,050,000	1,200,000	1,500,000

Discuss the working capital policies of the **three (3)** companies.

(9 marks)

[Total: 25 marks]

Question 3

- a) Nicholson Roofing Materials, Inc., is considering two mutually exclusive projects, each with an initial investment of RM150,000. The company's board of directors has set a maximum 4-year payback requirement and has set its cost of capital at 9%. The cash inflows associated with the two projects are shown in the following table.

Year	Cash inflows (CFt)	
	Project A	Project B
1	RM45,000	RM75,000
2	45,000	60,000
3	45,000	30,000
4	45,000	30,000
5	45,000	30,000
6	45,000	30,000

- i. Calculate the *payback period* for each project. (2 marks)
 - ii. Calculate the net present value (*NPV*) of each project at 9%. (6 marks)
 - iii. Derive the internal rate of return (*IRR*) of each project. (6 marks)
 - iv. Based on the calculated findings for the payback period, NPV and IRR mentioned above, which project should be selected? Justify your answer. (6 marks)
- b) Explain the acceptance criteria for NPV and how are they related to the firm's market value? (2 marks)
- c) Explain the similarities and differences between net present value (NPV), profitability index (PI), and economic value added (EVA). (3 marks)

[Total: 25 marks]

Question 4

a) Define Cost of Capital.

(2 marks)

b) Explain **FOUR (4)** factors to determine cost of capital.

(8 marks)

c) Red Beat Corporation has 40% debt, 45% common stocks, and 15% preferred stocks in its capital structure. The firm's estimated after-tax cost of debt is 10%, cost of common stocks is 13%, and cost of preferred stocks is 11%. Calculate the firm's weighted average cost of capital (WACC).

(3 marks)

d) Six companies have a different beta coefficient:

- Company A has 0.89
- Company B has 1.2
- Company C has 1.67
- Company D has 2.2
- Company E has 1.56
- Company F has 2.23

You should employ the CAPM model to estimate the cost of common stock. Assume that the risk-free rate is 2.75% and the expected market return rate is 14.7%.

(12 marks)

[Total: 25 marks]

END OF QUESTION PAPER

FORMULA

- $FV = PV (FVIF\ i\ n)$

- $PV = FV (PVIF\ i\ n)$

- $PB = \frac{IO}{Ann\ CF}$

- $PBP = [(n-1)] + [(IO - \text{sum of cash flow before } n) / (\text{cash flow of the year } n)]$

- $NPV = CF (PVIFA\ i\ n) - IO$

- $NPV = \sum [CF (PVIF\ i\ n)] - IO$

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

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	1.2500	1.3000
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	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	1.9831	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
5	1.0510	1.1041	1.1583	1.2167	1.2783	1.3432	1.4126	1.4863	1.5644	1.6469	1.7339	1.8253	1.9213	2.0220	2.1274	2.2378	2.5833	3.0116	3.0968	3.7129
6	1.0615	1.1262	1.1941	1.2663	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.8960	3.4352	3.5147	4.3268
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	2.6600	2.8262	3.3832	4.0077	4.0977	5.0749
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	2.8526	3.0590	3.2784	3.9398	4.6895	4.7895	5.9573
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	3.5179	3.8030	4.5896	5.4410	5.5410	6.9004
10	1.1046	1.2190	1.3439	1.4802	1.6288	1.7908	1.9672	2.1589	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	5.3197	6.2844	6.3844	7.9586
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	4.6524	5.1173	6.1401	7.1915	7.2915	9.0000
12	1.1268	1.2682	1.4288	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	7.0816	8.2415	8.3415	10.2000
13	1.1381	1.2936	1.4695	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528	6.8958	8.1639	9.4386	9.5386	11.5000
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	9.3839	10.7639	10.8639	13.0000
15	1.1610	1.3459	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	4.7846	5.4735	6.2543	7.1379	8.1371	9.2655	10.7607	12.2315	12.3315	14.5000
16	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9622	3.4259	3.9703	4.5950	5.3109	6.1304	7.0673	8.1372	9.3576	10.748	12.3488	13.9196	14.0196	16.2500
17	1.1843	1.4002	1.6528	1.9479	2.2820	2.6928	3.1588	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2765	10.761	12.468	14.186	15.841	15.941	18.2500
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5399	6.4836	7.6900	9.0243	10.575	12.375	14.463	16.623	18.309	18.409	20.5000
19	1.2081	1.4568	1.7535	2.1058	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159	7.2633	8.6128	10.197	12.056	14.232	16.777	19.348	21.058	21.158	23.2500
20	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6810	5.6044	6.7275	8.0623	9.6463	11.523	13.743	16.367	19.461	22.338	24.168	24.268	26.5000
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	26.005	28.292	28.392	30.7500
22	1.2447	1.5460	1.9161	2.3689	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	9.9336	12.100	14.714	17.961	21.645	26.186	30.206	32.574	32.674	35.0000
23	1.2572	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	36.247	40.831	40.931	43.2500
24	1.2697	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	42.497	47.631	47.731	50.0000
25	1.2824	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	49.396	55.542	55.642	57.7500
26	1.2952	1.6734	2.1564	2.7724	3.5564	4.5764	5.8264	7.2464	9.1464	11.1464	14.0264	18.1464	23.1464	29.1464	36.1464	44.1464	53.1464	63.1464	63.2464	65.2500
27	1.3081	1.7067	2.2204	2.8869	3.7369	4.8669	6.1669	7.6669	9.4669	11.4669	14.0669	18.1669	23.1669	29.1669	36.1669	44.1669	53.1669	63.1669	63.2669	65.2669
28	1.3211	1.7404	2.2859	2.9994	3.9269	5.1669	6.4669	8.0669	9.9669	12.0669	14.5669	18.6669	23.6669	29.6669	36.6669	44.6669	53.6669	63.6669	63.7669	65.7669
29	1.3342	1.7744	2.3519	3.1149	4.1169	5.4669	6.7669	8.3669	10.2669	12.3669	14.8669	18.9669	24.0669	30.0669	37.0669	45.0669	54.0669	64.0669	64.0669	66.0669
30	1.3474	1.8084	2.4184	3.2324	4.3169	5.7669	7.0669	8.6669	10.5669	12.6669	15.1669	19.2669	24.3669	30.3669	37.3669	45.3669	54.3669	64.3669	64.3669	66.3669
31	1.3607	1.8424	2.4854	3.3504	4.5169	6.0669	7.3669	8.9669	10.8669	12.9669	15.4669	19.5669	24.6669	30.6669	37.6669	45.6669	54.6669	64.6669	64.6669	66.6669
32	1.3741	1.8764	2.5524	3.4694	4.7169	6.3669	7.6669	9.2669	11.1669	13.2669	15.7669	19.8669	24.9669	30.9669	37.9669	45.9669	54.9669	64.9669	64.9669	66.9669
33	1.3876	1.9104	2.6194	3.5894	4.9169	6.6669	7.9669	9.5669	11.4669	13.5669	16.0669	20.1669	25.2669	31.2669	38.2669	46.2669	55.2669	65.2669	65.2669	67.2669
34	1.4011	1.9444	2.6864	3.7094	5.1169	6.9669	8.2669	9.8669	11.7669	13.8669	16.3669	20.4669	25.5669	31.5669	38.5669	46.5669	55.5669	65.5669	65.5669	67.5669
35	1.4146	1.9784	2.7534	3.8294	5.3169	7.2669	8.5669	10.1669	12.0669	14.1669	16.6669	20.7669	25.8669	31.8669	38.8669	46.8669	55.8669	65.8669	65.8669	67.8669
36	1.4281	2.0124	2.8204	3.9494	5.5169	7.5669	8.8669	10.4669	12.3669	14.4669	16.9669	21.0669	26.1669	32.1669	39.1669	47.1669	56.1669	66.1669	66.1669	68.1669
37	1.4416	2.0464	2.8864	4.0694	5.7169	7.8669	9.1669	10.7669	12.6669	14.7669	17.2669	21.3669	26.4669	32.4669	39.4669	47.4669	56.4669	66.4669	66.4669	68.4669
38	1.4551	2.0804	2.9524	4.1894	5.9169	8.1669	9.4669	11.0669	12.9669	15.0669	17.5669	21.6669	26.7669	32.7669	39.7669	47.7669	56.7669	66.7669	66.7669	68.7669
39	1.4686	2.1144	3.0184	4.3094	6.1169	8.4669	9.7669	11.3669	13.2669	15.3669	17.8669	21.9669	27.0669	33.0669	40.0669	48.0669	57.0669	67.0669	67.0669	69.0669
40	1.4821	2.1484	3.0844	4.4294	6.3169	8.7669	10.0669	11.6669	13.5669	15.6669	18.1669	22.2669	27.3669	33.3669	40.3669	48.3669	57.3669	67.3669	67.3669	69.3669
41	1.4956	2.1824	3.1504	4.5494	6.5169	9.0669	10.3669	11.9669	13.8669	15.9669	18.4669	22.5669	27.6669	33.6669	40.6669	48.6669	57.6669	67.6669	67.6669	69.6669
42	1.5091	2.2164	3.2164	4.6694	6.7169	9.3669	10.6669	12.2669	14.1669	16.2669	18.7669	22.8669	27.9669	33.9669	40.9669	48.9669	57.9669	67.9669	67.9669	69.9669
43	1.5226	2.2504	3.2824	4.7894	6.9169	9.6669	10.9669	12.5669	14.4669	16.5669	19.0669	23.1669	28.2669	34.2669	41.2669	49.2669	58.2669	68.2669	68.2669	70.2669
44	1.5361	2.2844	3.3484	4.9094	7.1169	9.9669	11.2669	12.8669	14.7669	16.8669	19.3669	23.4669	28.5669	34.5669	41.5669	49.5669	58.5669	68.5669	68.5669	70.5669
45	1.5496	2.3184	3.4144	5.0294	7.3169	10.2669	11.5669	13.1669	15.0669	17.1669	19.6669	23.7669	28.8669	34.8669	41.8669	49.8669	58.8669	68.8669	68.8669	70.8669
46	1.5631	2.3524	3.4804	5.1494	7.5169	10.5669	11.8669	13.4669	15.3669	17.4669	19.9669	24.0669	29.1669	35.1669	42.1669	50.1669	59.1669	69.1669	69.1669	71.1669
47	1.5766	2.3864	3.5464	5.2694	7.7169	10.8669	12.1669	13.7669	15.6669	17.7669	20.2669	24.3669	29.4669	35.4669	42.4669	50.4669	59.4669	69.4669	69.4669	71.4669
48	1.5901	2.4204	3.6124	5.3894	7.9169	11.1669	12.4669	14.0669	15.9669	18.0669	20.5669	24.6669	29.7669	35.7669	42.7669	50.7669	59.7669	69.7669	69.7669	71.7669
49	1.6036	2.4544	3.6784	5.5094	8.1169	11.4669	12.7669	14.3669	16.2669	18.3669	20.8669	24.9669	30.0669	36.0669	43.0669	51.0669	60.0669	70.0669	70.0669	72.0669
50	1.6171	2.4884	3.7444	5.6294	8.3169	11.7669	13.0669	14.6669	16.5669	18.6669	21.1669	25.2669	30.3669	36.3669	43.3669	51.3669	60.3669	70.3669	70.3669	72.3669

Table A-2 Future Value Interest Factors for a One-Dollar Annuity Compounded at k Percent for n Periods: $FVIFA_{k,n} = [(1 + k)^n - 1] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	25%	30%
1	1.0000	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	1.2500	1.3000
2	2.0100	2.0400	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	2.1600	2.2000	2.2500	2.3000
3	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2143	3.2454	3.2761	3.3069	3.3374	3.3681	3.3989	3.4296	3.4605	3.4914	3.6000	3.7125	3.8300
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	5.0665	5.3080	5.6842	6.1870
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	6.8771	7.4416	8.0484	8.7043
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3369	7.5233	7.7156	7.9129	8.1152	8.3227	8.5355	8.7537	8.9775	9.9289	10.980	12.156
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	11.414	12.916	14.615	16.573
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	13.727	14.240	16.499	19.123	23.858
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	16.085	16.786	17.519	20.799	24.712	32.015
10	10.462	10.950	11.454	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304	21.321	25.959	31.843	42.619
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	25.733	32.150	40.238	56.405
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	27.271	29.002	30.850	39.581	50.895	74.327
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	34.362	36.786	48.497	64.110	97.625
14	14.947	15.974	17.086	18.292	19.599	21.015	22.560	24.215	26.019	27.975	30.095	32.393	34.883	37.581	40.505	43.672	59.196	80.496	127.913
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.162	29.361	31.772	34.405	37.280	40.417	43.842	47.580	51.680	72.035	100.815	167.286
16	17.258	18.639	20.157	21.825	23.687	25.673	27.888	30.324	33.003	35.950	39.190	42.753	46.672	50.980	55.717	60.925	87.442	126.011	218.472
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	53.759	59.118	65.075	71.673	105.931	157.253	285.014
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	195.994	371.518
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.199	56.939	63.440	70.749	78.969	88.212	98.603	154.740	244.033	483.973
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275	64.203	72.062	80.947	91.025	102.444	115.380	186.688	303.601	630.165
21	23.239	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	72.265	81.689	92.470	104.768	118.810	134.841	225.026	377.465	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	936.101
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	1273.626
24	26.973	30.422	34.426	39.083	44.502	50.816	58.177	66.765	76.790	88.497	102.174	118.155	136.831	158.659	184.168	213.978	392.484	723.461	1543.033
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	2143.165
26	29.528	33.683	38.618	43.915	50.000	58.177	67.673	78.969	92.470	108.148	126.413	147.689	172.491	202.436	239.276	287.415	549.026	1098.056	2543.165
27	30.828	35.383	40.897	46.344	52.427	60.600	70.199	82.969	97.871	115.000	135.000	158.000	186.000	215.000	252.000	298.000	628.000	1328.000	2943.165
28	32.143	37.133	43.286	48.839	54.950	63.249	75.000	88.000	102.000	118.000	136.000	158.000	186.000	215.000	252.000	298.000	628.000	1328.000	2943.165
29	33.473	38.933	45.703	51.384	57.571	66.000	78.000	92.000	107.000	124.000	143.000	166.000	194.000	224.000	262.000	308.000	678.000	1428.000	3143.165
30	34.818	40.783	48.156	53.944	60.271	69.000	81.000	96.000	112.000	130.000	150.000	175.000	205.000	236.000	274.000	324.000	728.000	1528.000	3343.165
35	41.680	49.994	60.462	73.652	90.320	111.435	138.237	172.317	215.711	271.024	341.590	431.683	546.681	693.573	881.370	1114.170	1514.170	2014.170	2614.170
36	43.077	51.994	63.276	77.598	96.836	119.121	148.913	187.102	236.125	299.127	380.164	484.463	618.749	791.673	1014.673	1291.673	1791.673	2391.673	3191.673
40	48.886	60.402	75.401	96.026	120.800	154.762	199.635	259.057	337.882	442.693	581.826	767.091	1014.673	1333.334	1724.413	2214.413	2914.413	3814.413	4914.413
50	64.463	84.579	112.797	152.667	209.348	290.336	406.529	573.770	815.084	1114.413	1514.413	2014.413	2614.413	3314.413	4214.413	5314.413	6814.413	8814.413	11314.413

Table A-3 Present Value Interest Factors for One Dollar Discounted at k Percent for n Periods: $PVIF_{k,n} = 1 / (1 + k)^n$

Period (n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	25%	30%
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	0.7822
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	0.6400	0.5917
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	0.4552
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	0.3501
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	0.2683
6	0.9420	0.8880	0.8376	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	0.2072
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	0.2781	0.2207	0.1594
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	0.1769	0.1226
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	0.0943
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	0.0725
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	0.0558
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	0.0429
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4698	0.4150	0.3677	0.3262	0.2897	0.2575	0.2282	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0330
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	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2080	0.1827	0.1599	0.1401	0.1229	0.1079	0.0649	0.0397	0.0195
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	0.1069	0.0930	0.0541	0.0320	0.0150
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	0.0116
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	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3967	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	0.0068
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	0.0611	0.0514	0.0261	0.0135	0.0053
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	0.0040
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	0.0031
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	0.0024
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	0.0018
25	0.7798	0.6085	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	0.0014
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	*
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	*
40	0.6889	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	*	*
50	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0688	0.0460	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053	0.0037	0.0026	0.0007	*	*
60	0.6560	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%	25%	30%
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	0.7832
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	1.6052	1.5278	1.4568	1.3899
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	2.2459	2.1085	1.9813	1.8620
4	3.9020	3.8077	3.7171	3.6289	3.5430	3.4591	3.3772	3.2971	3.2187	3.1419	3.0667	3.0033	2.9415	2.8812	2.8222	2.7645	2.5887	2.4043	2.2362
5	4.8534	4.7135	4.5737	4.4351	4.2985	4.1639	4.0312	3.8997	3.7697	3.6411	3.5139	3.3888	3.2657	3.1445	3.0252	2.9077	2.6933	2.4689	2.2656
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7655	4.6200	4.4809	4.3483	4.2205	4.0975	3.9795	3.8667	3.7582	3.6541	3.4005	3.1461	2.9127
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	4.0386	3.6446	3.2423	2.8021
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	4.3436	3.8372	3.4212	2.9247
9	8.5680	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2463	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.0310	3.5555	3.0190
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	3.6819	3.0915
11	10.368	9.7968	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	3.7757	3.1473
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	3.8514	3.1903
13	12.134	11.348	10.635	9.9856	9.3956	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	3.2233
14	13.004	12.106	11.296	10.563	9.8966	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	3.2487
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	3.2682
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	3.2832
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	6.7291	6.3729	6.0472	5.7487	4.7746	4.0591	3.2948
18	16.398	14.992	13.754	12.699	11.690	10.828	10.069	9.3719	8.7556	8.2014	7.7016	7.2497	6.8389	6.4674	6.1280	5.8178	4.8122	4.0799	3.3037
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.6036	8.9601	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8436	4.0967	3.3105
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	3.3158
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	6.6870	6.3125	5.9731	4.8913	4.1212	3.3198
22	19.660	17.658	15.937	14.451	13.163	12.042	11.061	10.201	9.4424	8.7715	8.1757	7.6446	7.1696	6.7429	6.3587	6.0113	4.9094	4.1300	3.3230
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	3.3254
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	3.3272
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	3.3286
26	22.796	20.119	17.891	16.000	14.429	13.000	11.933	10.944	10.000	9.2000	8.5000	7.9000	7.3500	6.8500	6.4200	6.0300	4.9500	4.1500	3.3300
27	23.561	20.702	18.357	16.374	14.754	13.200	12.100	11.100	10.100	9.2500	8.5000	7.8500	7.3000	6.7500	6.3100	5.9100	4.9600	4.1500	3.3300
28	24.318	21.275	18.812	16.734	15.074	13.390	12.280	11.280	10.280	9.4000	8.6000	7.9000	7.3500	6.8000	6.3500	5.9500	4.9700	4.1500	3.3300
29	25.068	21.838	19.261	17.082	15.372	13.572	12.452	11.452	10.452	9.5500	8.7000	8.0000	7.4000	6.8000	6.3500	5.9500	4.9800	4.1500	3.3300
30	25.808	22.396	19.699	17.427	15.652	13.746	12.618	11.618	10.618	9.6500	8.7500	8.0500	7.4500	6.8500	6.4000	6.0000	4.9900	4.1500	3.3300
31	26.538	22.943	20.126	17.771	15.920	13.912	12.774	11.774	10.774	9.7500	8.8500	8.1000	7.5000	6.9000	6.4500	6.0500	5.0000	4.1500	3.3300
32	27.259	23.479	20.542	18.076	16.177	14.070	12.922	11.922	10.922	9.9000	8.9500	8.1500	7.5500	6.9500	6.5000	6.1000	5.0000	4.1500	3.3300
33	27.971	24.005	20.950	18.371	16.426	14.220	13.066	12.166	11.166	10.0500	9.0500	8.2000	7.6000	7.0000	6.5500	6.1500	5.0000	4.1500	3.3300
34	28.674	24.520	21.349	18.657	16.669	14.368	13.206	12.306	11.306	10.1500	9.1500	8.2500	7.6500	7.0500	6.6000	6.2000	5.0000	4.1500	3.3300
35	29.368	25.026	21.739	18.934	16.910	14.509	13.343	12.440	11.440	10.2500	9.2500	8.3000	7.7000	7.1000	6.6500	6.2500	5.0000	4.1500	3.3300
36	30.054	25.522	22.121	19.202	17.146	14.649	13.474	12.574	11.574	10.3500	9.3500	8.3500	7.7500	7.1500	6.7000	6.3000	5.0000	4.1500	3.3300
37	30.731	26.009	22.495	19.461	17.346	14.788	13.600	12.699	11.699	10.4500	9.4500	8.4000	7.8000	7.2000	6.7500	6.3500	5.0000	4.1500	3.3300
38	31.399	26.487	22.861	19.711	17.537	14.926	13.718	12.818	11.818	10.5500	9.5500	8.4500	7.8500	7.2500	6.8000	6.4000	5.0000	4.1500	3.3300
39	32.058	26.956	23.219	19.952	17.721	15.062	13.834	12.932	11.932	10.6500	9.6500	8.5500	7.9000	7.3000	6.8500	6.4500	5.0000	4.1500	3.3300
40	32.708	27.416	23.569	20.187	17.907	15.196	13.948	13.048	12.048	10.7500	9.7500	8.6500	8.0000	7.4000	6.9000	6.5000	5.0000	4.1500	3.3300
41	33.349	27.868	23.911	20.415	18.082	15.320	14.062	13.162	12.162	10.8500	9.8500	8.7000	8.1000	7.5000	7.0000	6.5500	5.0000	4.1500	3.3300
42	33.981	28.312	24.247	20.637	18.250	15.442	14.174	13.274	12.274	10.9500	9.9500	8.8000	8.2000	7.6000	7.1000	6.6000	5.0000	4.1500	3.3300
43	34.604	28.749	24.574	20.854	18.411	15.562	14.284	13.384	12.384	11.0500	10.0500	8.9000	8.3000	7.7000	7.2000	6.7000	5.0000	4.1500	3.3300
44	35.218	29.179	24.893	21.068	18.567	15.680	14.394	13.494	12.494	11.1500	10.1500	9.0000	8.4000	7.8000	7.3000	6.8000	5.0000	4.1500	3.3300
45	35.823	29.602	25.205	21.276	18.716	15.796	14.502	13.600	12.600	11.2500	10.2500	9.1000	8.5000	7.9000	7.4000	6.9000	5.0000	4.1500	3.3300
46	36.420	30.018	25.509	21.480	18.860	15.910	14.609	13.707	12.707	11.3500	10.3500	9.2000	8.6000	8.0000	7.5000	7.0000	5.0000	4.1500	3.3300
47	37.009	30.427	25.809	21.681	18.999	16.022	14.716	13.812	12.812	11.4500	10.4500	9.3000	8.7000	8.1000	7.6000	7.1000	5.0000	4.1500	3.3300
48	37.590	30.829	26.103	21.878	19.133	16.133	14.822	13.918	12.918	11.5500	10.5500	9.4000	8.8000	8.2000	7.7000	7.2000	5.0000	4.1500	3.3300
49	38.163	31.224	26.393	22.071	19.262	16.243	14.927	14.023	13.023	11.6500	10.6500	9.5000	8.9000	8.3000	7.8000	7.3000	5.0000	4.1500	3.3300
50	38.728	31.612	26.678	22.261	19.387	16.352	15.031	14.127	13.127	11.7500	10.7500	9.6000	9.0000	8.4000	7.9000	7.4000	5.0000	4.1500	3.3300