



**UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL**

**FINAL EXAMINATION
FEBRUARY 2024 SEMESTER**

COURSE CODE : EBP00404
COURSE NAME : INTRODUCTION TO FINANCE
PROGRAMME NAME : FOUNDATION IN BUSINESS
DATE : 26 JUNE 2024
TIME : 09.00 AM – 12.00 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 **TWO (2)** sections; **Section A and Section B**.
4. Answer **ALL** questions in Section A and Section B.
5. Please write your answers on the OMR answer script and answer booklet provided.
6. All questions must be answered in **English** (any other language is not allowed).
7. This question paper must not be removed from the examination hall.
8. Present and future values tables and formulas has been appended for your reference.

THERE ARE THIRTEEN (13) PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 Marks)**INSTRUCTION: Answer ALL questions.****Please use the objective answer sheet provided.**

1. Helena Furnishings wants to reduce its cash conversion cycle. Which of the following actions should it take?
 - A. Increases average inventory without increasing sales.
 - B. Take steps to reduce the DSO.
 - C. Start paying its bills sooner, which would reduce the average accounts payable but not affect sales.
 - D. Sell common stock to retire long-term bonds.
2. Which of the following is NOT a capital component when calculating the weighted average cost of capital (WACC) for use in capital budgeting?
 - A. Accounts payable.
 - B. Retained earnings.
 - C. Common stock.
 - D. Preferred stock.
3. Which of the following statements is CORRECT?
 - A. The discounted payback method recognizes all cash flows over a project's life, and it also adjusts these cash flows to account for the time value of money.
 - B. The regular payback method was, years ago, widely used, but virtually no companies even calculate the payback today.
 - C. The regular payback is useful as an indicator of a project's liquidity because it gives managers an idea of how long it will take to recover the funds invested in a project.
 - D. The regular payback does not consider cash flows beyond the payback year, but the discounted payback overcomes this defect.
4. Which of the following assumptions is embodied in the AFN formula?
 - A. Accounts payable and accruals are tied directly to sales.
 - B. Common stock and long-term debt are tied directly to sales.
 - C. Fixed assets, but not current assets, are tied directly to sales.
 - D. Last year's total assets were not optimal for last year's sales.

5. Your bank account pays a 6% nominal rate of interest. The interest is compounded quarterly. Which of the following statements is CORRECT?
- A. The periodic rate of interest is 1.5% and the effective rate of interest is 3%.
 - B. The periodic rate of interest is 6% and the effective rate of interest is greater than 6%.
 - C. The periodic rate of interest is 1.5% and the effective rate of interest is greater than 6%.
 - D. The periodic rate of interest is 3% and the effective rate of interest is 6%.
6. Which of the following is NOT one of the steps taken in the financial planning process?
- A. The entire financial plan is reexamined, assumptions are reviewed, and the management team considers how additional changes in operations might improve results.
 - B. Projected ratios are calculated and analyzed.
 - C. Develop a set of projected financial statements.
 - D. Consult with key competitors about the optimal set of prices to charge, i.e., the prices that will maximize profits for our firm and its competitors.
7. Why do firms need liquidity?
- I. to meet compensating balance requirements
 - II. for speculative purposes
 - III. to conduct daily business activities
 - IV. as a precautionary financial reserve
- A. III and IV only
 - B. I, III, and IV only
 - C. II, III, and IV only
 - D. I, II, III, and IV
8. The basic factors to be evaluated in the credit evaluation process, the five Cs of credit, are:
- A. character, capacity, control, cessation, and collateral.
 - B. character, capacity, capital, collateral, and conditions.
 - C. capital, collateral, control, character, and capacity.
 - D. conditions, character, capital, control, and capacity.

9. Mimi has decided to invest RM100 in a savings account that earns 12% interest. She invested for two years. How much would she earn at the end of year 2?
- A. RM125.44 C. RM135.76
B. RM138.90 D. RM128.86
10. Which of the following statements is CORRECT?
- A. The internal rate of return method (IRR) is generally regarded by academics as being the best single method for evaluating capital budgeting projects.
- B. The payback method is generally regarded by academics as being the best single method for evaluating capital budgeting projects.
- C. The discounted payback method is generally regarded by academics as being the best single method for evaluating capital budgeting projects.
- D. The net present value method (NPV) is generally regarded by academics as being the best single method for evaluating capital budgeting projects.
11. Which one of the following is a system for managing demand-dependent inventories that minimizes the inventory holdings of a firm?
- A. just-in-time inventory
B. net working capital planning
C. turnover planning
D. inventory scoring
12. When working with the CAPM, which of the following factors can be determined with the most precision?
- A. The beta coefficient of "the market," which is the same as the beta of an average stock.
- B. The market risk premium (RPM).
- C. The beta coefficient, b_i , of a relatively safe stock.
- D. The most appropriate risk-free rate, r_{RF} .
13. Which of the following is NOT commonly regarded as being a credit policy variable?
- A. Credit period.
B. Collection policy.
C. Credit standards.
D. Payment's deferral period.

14. A company expects sales to increase during the coming year, and it is using the AFN equation to forecast the additional capital that it must raise. Which of the following conditions would cause the AFN to increase?
- A. The company previously thought its fixed assets were being operated at full capacity, but now it learns that it actually has excess capacity.
 - B. The company increases its dividend payout ratio.
 - C. The company's profit margin increases.
 - D. The company decides to stop taking discounts on purchased materials.
15. Which of the following statements is CORRECT?
- A. One defect of the IRR method is that it does not take account of the time value of money.
 - B. One defect of the IRR method is that it does not take account of the cost of capital.
 - C. One defect of the IRR method is that it values a dollar received today the same as a dollar that will not be received until sometime in the future.
 - D. One defect of the IRR method is that it assumes that the cash flows to be received from a project can be reinvested at the IRR itself, and that assumption is often not valid.
16. Which of the following statements is CORRECT?
- A. A time line is not meaningful unless all cash flows occur annually.
 - B. Time lines are useful for visualizing complex problems prior to doing actual calculations.
 - C. Time lines cannot be constructed in situations where some of the cash flows occur annually but others occur quarterly.
 - D. Time lines cannot be constructed for annuities where the payments occur at the beginning of the periods.
17. The statements listed below are NOT TRUE except
- A. To maximize shareholders wealth is to maximize the market value of the firms' total debt.
 - B. To maximize shareholders' wealth, is to maximize the dividend per share
 - C. To maximize shareholders' wealth is to maximize the net cash inflows.
 - D. To maximize the shareholders' wealth, is more maximize the market value of the firm's common stock.

18. Which of the following is the motive that prompts a company with an unpredictable cash flow to hold a larger minimum cash balance because of things that might happen due to this uncertainty?
- A. Transaction
 - B. Precautionary
 - C. Speculative
 - D. Common sense
19. The financial manager is concerned with
- A. Striking a balance between holding too much and too little cash
 - B. Maintaining high levels of profitability
 - C. Minimizing the chance of insolvency
 - D. All the above
20. The management of inventory is important because
- A. Carrying excessive inventory can result in a loss of demand
 - B. Carrying too much inventory can result in a loss of efficiency and profitability
 - C. Decisions related to inventory are risky since inventory is acquired in anticipation of sales
 - D. All the above
21. _____ is a computerized system that breaks down the bill of materials for each product in order to determine what to order, when to order and what priorities to assign to ordering.
- A. The EOQ model
 - B. The JIT system
 - C. The ABC system
 - D. The MRP system
22. Maximizing the market price per share is preferred than maximizing earnings per share because
- A. Earnings per share ignores the time value of money; market price per share does not.
 - B. Market price per share does not consider risk; earnings per share takes risk into consideration.
 - C. Earnings per share takes dividends into consideration; market price per share does not.
 - D. The shareholders can get new information on price per share every business day, but information on new earnings per share is available only once a year.

23. A goal that a company should strive for is
- A. Maximization of sales revenues
 - B. Maximization of employee's' benefit
 - C. Maximization of current earnings
 - D. Maximization of shareholders' wealth
24. The true statement regarding maximization of profit is
- A. Maximization of profit is not an adequate goal.
 - B. Maximization of profit is the true goal of a firm.
 - C. Maximization of profit considers uncertainty.
 - D. Maximization of profit takes into consideration the timing of cash flows.
25. How much are you willing to invest annually in order to have RM5,000 accumulated in four years considering the interest rate is 8%. Given:
- | | | |
|-------------------|---|--------|
| FVIF 8%, 4 years | = | 1.3605 |
| FVIFA 8%, 4 years | = | 4.5061 |
| PVIF 8%, 4 years | = | 0.7350 |
| PVIFA 8%, 4 years | = | 3.3121 |
- A. RM3,675.12
 - B. RM1,109.61
 - C. RM6,802.72
 - D. RM1,509.62
26. The stand-alone principle advocates that project analysis should focus on _____ costs
- | | |
|-------------|----------------|
| A. total | C. fixed |
| B. variable | D. incremental |
27. The following statements about NPV are true except
- A. It does not allow for projects to be ranked
 - B. It has an inadequate reinvestment assumption
 - C. It is likely that there will be more than one NPV for a project
 - D. All the above

28. What is the restocking quantity that minimizes a firm's total inventory cost called?
- A. Short order quantity
 - B. Refill unit quantity
 - C. Economic order quantity
 - D. Minimum stock level
29. A forecast of cash receipts and disbursements for the next planning period is called a:
- A. Pro forma income statement.
 - B. Statement of cash flows.
 - C. Cash budget.
 - D. Receivables analysis.
30. Which of the following is not a limitation that might be encountered in interpreting financial ratios?
- A. Difficulty in identifying an appropriate industry category
 - B. Differences in accounting practices among firms
 - C. Seasonality
 - D. Differences in financial year end among companies
31. A company is considering a trend analysis over the years and discovers that its inventory turnover ratios have been increasing. This may be due to
- A. A decrease in sales
 - B. A decrease in COGS
 - C. A decrease in inventory purchase
 - D. An increase in inventory purchase
32. An inventory turnover ratio of 3.5 of a company compared to an industry average of 4.5 indicates that
- A. The firm has sales that are lower than the industry average
 - B. The firm is investing more into inventory in terms of per dollar of sales than the industry average
 - C. The firm is more efficient in selling its good.
 - D. The firm keeps lesser inventories causing their average to be lower than the industry's
33. If the total assets turnover increases, the ROE
- A. Increase
 - B. Decrease
 - C. Remain unchanged
 - D. Changes indeterminable

34. Assume that a firm has determined that its trade debtors' balance is getting too large relative to its sales volume. Which of the following courses of action would be best for it to take in order to improve the collection of accounts receivable in future period.
- A. Allow customers a longer time to pay for the products.
 - B. Improve product quality control requirements
 - C. Sell more products on credit
 - D. Raise the firm's credit standard
35. Debt ratios tend to deal with matters concerning
- A. A firm's ability to pay short-term liabilities
 - B. The speed with which various accounts are converted into cash inflows or outflows
 - C. The use of other people's money to finance assets owned by the stockholders
 - D. The amount of retained earnings left at the end of the period in question
36. Megah Holdings has an annual interest expense of RM10,000 and pays income tax equal to 28% of earnings before tax. Megah Holdings' times interest earn is 5. How much is the company net income?
- A. RM48,000
 - B. RM28,000
 - C. RM63,000
 - D. RM28,800
37. Which of the following statements is CORRECT, other things held constant?
- A. If companies have fewer good investment opportunities, interest rates are likely to increase.
 - B. If individuals increase their savings rate, interest rates are likely to increase.
 - C. If expected inflation increases, interest rates are likely to increase.
 - D. Interest rates on all debt securities tend to rise during recessions because recessions increase the possibility of bankruptcy, hence the riskiness of all debt securities.
38. Stock Excel Bhd has beta of 2, expected market return is 17% and risk-free rate is 9%. What is the required rate of return?
- A. 25%
 - B. 19%
 - C. 16%
 - D. Cannot be determined

39. Which of the following statements is CORRECT?
- A. Although short-term interest rates have historically averaged less than long-term rates, the heavy use of short-term debt is considered to be an aggressive strategy because of the inherent risks associated with using short-term financing.
 - B. If a company follows a policy of "matching maturities," this means that it matches its use of common stock with its use of long-term debt as opposed to short-term debt.
 - C. Net working capital is defined as current assets minus the sum of payables and accruals, and any decrease in the current ratio automatically indicates that net working capital has decreased.
 - D. If a company follows a policy of "matching maturities," this means that it matches its use of short-term debt with its use of long-term debt.
40. The transactions that affect the acid-test ratio is
- A. A building is purchased and financed by a non-current loan
 - B. Inventories are sold on a credit basis
 - C. Debtors pay their accounts by cash
 - D. None of the above

SECTION B (Total: 60 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

QUESTION 1

- (a) Differentiate between line of credit and transaction loan?

(4 marks)

- (b) A production company, Lisa Creative Studios, is having financial problem and wishes to borrow RM 500,000 for 5 months. The below alternatives have been identified to overcome their problems:

Alternative 1:

A loan from Pertiwi Bank has an interest rate of 15%. The bank requires 5% of compensating balance. Interest needs to be paid in advance.

Alternative 2:

Perwira Bank offers a loan with an interest of 12%. A compensating balance of 10 % is required. The company already have RM 20 000 in their current account with the bank.

Required:

Calculate the effective annual cost of financing for these alternatives. Which alternative should the company take if they are very cost conscious?

(11 marks)

QUESTION 2

Fitch Berhad is in the process of choosing the better of two equal-risk, mutually exclusive capital expenditure projects, M and N. The relevant cash flows for each projects are shown in the following table. The company's cost of capital is 9%.

	Project M (RM)	Project N (RM)
Initial investment (CF_0)	-40,000	-40,000
Year (t)	Cash inflows (CF_t)	
1	14,000	23,000
2	14,000	12,000
3	14,000	10,000
4	14,000	9,000

Required:

- Calculate each project's payback period
(3 marks)
- Calculate the net present value (NPV) for each project
(10 marks)
- From the findings (a) and (b) above, which project should the company choose? State your reason.
(2 marks)

QUESTION 3

- (a) Ashira planned to take out a student loan to pay for her final year of college. The loan amount is RM30,000.00. What are the equal end-of-year payments required to fully amortise the loan amount if the interest rate is 6% over five years?
(Prepare loan ammortization schedule for five years.)

(9 marks)

- (b) The Star Equipment Company estimates its carrying cost at 15% of cost per unit and its ordering cost at RM100 per order. The estimated monthly requirement is 5,250 units at a price of RM140 per unit.

Calculate:

- i. Economic order quantity (EOQ)

(4 marks)

- ii. Number of orders to place in a year

(2 marks)

QUESTION 4

(a) State 4 factors affecting cost of capital? (4 marks)

(b) Megah Holding's capital structure is as per below:

Source of financing	Amount (RM)	Capital Structure (%)
Bonds	600,000	30
Preferred Stock	200,000	10
Common Stock	1,200,000	60
Total	2,000,000	100

An investment opportunity of RM 500,000 with an expected internal rate of return (IRR) of 15% has been discussed by the management.

The current cost of the firm's capital or the required rate of return of the firm for each source of financing is stated below:

Cost of debt capital	12%
Cost of preferred stock	15%
Cost of common stock	13%

Required:

i. As the firm's financial manager, advise the management team on whether the firm should proceed with the investment.

(9 marks)

ii. The firm is also considering the below capital budgeting projects to invest. The IRR and the projects costs are given below:

Project	IRR (%)	Cost (RM)
1	15	700,000
2	13	590,000
3	10	850,000

Which project should Megah Holding accept?

(2 marks)

END OF EXAMINATION PAPER

Table of Formulas

- 1) Future value = present value $(1 + r)^n$
- 2) Present value = future value $\left[\frac{1}{(1+r)^n} \right]$
- 3) Present value ordinary annuity = $\left[\frac{PMT}{r} \right] \times \left[1 - \frac{1}{(1+r)^n} \right]$
- 4) Future value ordinary annuity = $PMT \left[\frac{(1+r)^n - 1}{r} \right]$
- 5) Present value annuity due = $\left[\frac{PMT}{r} \right] \times \left[1 - \frac{1}{(1+r)^n} \right] (1 + r)$
- 6) Future value annuity due = $PMT \left[\frac{(1+r)^n - 1}{r} \right] (1 + r)$
- 7) Present value of a perpetuity = $PMT \times \frac{1}{r}$
- 8) $AAI = \frac{\text{Avg Inventory}}{\text{Annual COGS}} \times \text{No. of days in a year}$
- 9) $ACP = \frac{\text{Avg Acc Receivables}}{\text{Annual Sales}} \times \text{No. of days in a year}$
- 10) $APP = \frac{\text{Avg Acc Payables}}{\text{Annual COGS}} \times \text{No. of days in a year}$
- 11) $EOQ = \sqrt{\frac{2SO}{C}}$
- 12) $R_s = r_{RF} + (r_M - r_{RF}) b_{\text{Firm}}$
- 13) $IRR = r_a + \frac{NPV_a}{NPV_a - NPV_b} (r_b - r_a)$
- 14) $R_d = I + \frac{FV - N_d}{n} \times \frac{N_d + FV}{2}$
- 15) $R_s = (D_1 / P_0) + g$
- 16) $R_n = (D_1 / N_n) + g$
- 17) $WACC = (w_l \times r_l) + (w_p \times r_p) + (w_s \times r_{s \text{ or } n})$

Future Value Interest Factors

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	1.9531	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
5	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
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	2.3131	2.4364	2.9860	3.6352	3.8147	4.8268
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	3.5832	4.5077	4.7684	6.2749
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	2.6594	2.8526	3.0590	3.2784	4.2998	5.5895	5.9605	8.1573
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	5.1598	6.9310	7.4506	10.504
10	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	4.4114	6.1917	8.5944	9.3132	13.786
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	7.4301	10.657	11.642	17.922
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	5.3503	5.9360	8.9161	13.215	14.552	23.298
13	1.1381	1.2936	1.4685	1.6651	1.8856	2.1329	2.4088	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
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	8.1371	9.2655	15.407	25.196	28.422	51.186
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	9.3576	10.748	18.488	31.243	35.527	66.542
17	1.1843	1.4002	1.6528	1.9479	2.2920	2.6828	3.1588	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2765	10.761	12.468	22.486	38.741	44.409	86.504
18	1.1961	1.4282	1.7024	2.0268	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	112.456
19	1.2081	1.4568	1.7535	2.1068	2.5270	3.0256	3.6185	4.3157	5.1417	6.1159	7.2833	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	4.6810	5.6044	6.7275	8.0623	9.6463	11.523	13.743	16.367	19.461	38.338	73.864	86.736	190.050
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	1.2447	1.5460	1.9161	2.3699	2.9263	3.6035	4.4304	5.4365	6.5586	8.1403	9.9336	12.100	14.714	17.861	21.645	26.186	55.206	113.574	135.525	321.184
23	1.2572	1.5769	1.9736	2.4647	3.0716	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	1.2697	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	79.497	174.631	211.768	542.801
25	1.2824	1.6406	2.0938	2.6658	3.3864	4.2819	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
30	1.3478	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	*
35	1.4166	1.9999	2.8139	3.9461	5.5160	7.6861	10.677	14.786	20.414	28.102	38.575	52.800	72.069	98.100	133.176	180.314	590.668	*	*	*
36	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	153.162	209.164	708.802	*	*	*
40	1.4899	2.2080	3.2620	4.8010	7.0400	10.286	14.974	21.726	31.409	45.259	65.001	93.051	132.782	188.894	267.864	376.721	*	*	*	*
50	1.6446	2.6916	4.3839	7.1067	11.467	18.420	29.457	46.902	74.358	117.391	184.555	289.002	450.736	700.233	*	*	*	*	*	*

Future Value Interest Factors Annuity

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	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	1.2400	1.2500	1.3000
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	2.1600	2.2000	2.2400	2.2500	2.3000
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	3.4396	3.4725	3.5056	3.6400	3.7776	3.8125	3.9900
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	5.3680	5.6842	5.7656	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	8.2070	9.0431
6	6.1520	6.3081	6.4694	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156	7.9129	8.1152	8.3227	8.5355	8.7537	8.9775	9.9299	10.980	11.259	12.756
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	15.073	17.583
8	8.2857	8.5330	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	19.423	19.842	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	25.802	32.015
10	10.462	10.950	11.464	12.006	12.576	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304	21.321	25.959	31.643	33.253	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	42.566	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	54.208	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	34.352	36.786	48.497	64.110	68.760	97.625
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	34.893	37.591	40.505	43.672	59.186	80.496	86.949	127.913
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	47.580	51.660	72.035	100.815	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	87.442	126.011	138.109	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	53.739	59.118	65.075	71.673	105.931	157.253	173.636	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	218.045	371.518
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	78.989	88.212	98.603	154.740	244.033	273.556	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	72.052	80.947	91.025	102.444	115.380	186.688	303.601	342.945	630.165
21	23.239	25.783	28.676	31.959	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	428.681	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	36.818	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	34.428	39.083	44.592	50.816	58.177	66.765	76.790	88.497	102.174	118.165	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	*	*
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	*	*	*	*
35	41.660	49.994	60.462	73.652	90.320	111.435	138.237	172.317	215.711	271.024	341.690	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	*	*	*	*	*	*
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	290.356	406.529	573.770	815.084	*	*	*	*	*	*	*	*	*	*	*

Present Value Interest Factors

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	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	0.8000	0.7692
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	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	0.5120	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	0.4096	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	0.3277	0.2693
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	0.2072
7	0.9327	0.8706	0.8131	0.7589	0.7070	0.6581	0.6227	0.5895	0.5570	0.5262	0.4971	0.4697	0.4451	0.4225	0.4009	0.3798	0.2791	0.2218	0.2097	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	0.1789	0.1678	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	0.1342	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	0.1074	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	0.0859	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	0.0687	0.0429
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	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	0.0440	0.0254
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	0.0362	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	0.0281	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	0.0225	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	0.0180	0.0089
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	0.0068
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1485	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0261	0.0135	0.0115	0.0053
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2416	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0217	0.0109	0.0092	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	0.0074	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	0.0059	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	0.0047	0.0018
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	0.0375	0.0304	0.0245	0.0105	0.0046	0.0038	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	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	*	*	*	*

Present Value Interest Factors Annuity

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	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	0.8000	0.7692
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	1.4400	1.3609
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	2.1065	1.9813	1.9520	1.8161
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	2.7982	2.5887	2.4043	2.3616	2.1662
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	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6239	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2054	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.6046	3.2423	3.1611	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	3.3289	2.9247
9	8.5680	8.1622	7.8661	7.4353	7.1076	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.0310	3.5655	3.4631	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	3.5705	3.0915
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	3.7757	3.6564	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	3.7251	3.1903
13	12.134	11.348	10.635	9.9856	9.3936	8.8227	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.004	12.106	11.296	10.563	9.8986	9.3500	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7246	5.4675	4.6106	3.9616	3.8241	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	3.8593	3.2692
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	3.8874	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	3.9099	3.2948
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	3.9279	3.3037
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9424	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	7.0246	6.6231	6.2593	5.9288	4.8696	4.1103	3.9539	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	3.9631	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	7.1695	6.7429	6.3587	6.0103	4.9094	4.1300	3.9705	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	3.9764	3.3264
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	3.9811	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	3.9849	3.3286
30	25.808	22.386	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	3.9950	3.3321
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.6442	8.8552	8.1755	7.5856	7.0700	6.6166	6.2153	4.9915	4.1644	3.9984	3.3330
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	7.0780	6.6231	6.2201	4.9929	4.1649	3.9987	3.3331
40	32.835	27.355	23.145	19.793	17.159	15.046	13.332	11.925	10.757	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2395	4.9966	4.1659	3.9995	3.3332
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	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333