CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL 2 EXAMINATIONS

A2.1: STRATEGIC CORPORATE FINANCE

DATE: WEDNEDAY 27, AUGUST 2025

INSTRUCTIONS:

1. Time Allowed: **3 hours 45 minutes** (15 minutes reading and 3 hours 30 minutes writing).
2. This examination has **Two** sections**; A & B.**
3. Section **A** has **One** Compulsory Question while Section B has **Three Optional questions** to choose any **Two.**
4. In summary attempt **three questions.**
5. Marks allocated to each question are shown at the end of the question.
6. The question paper should not be taken out of the examination room.

SECTION A

QUESTION ONE

a) Kiruhura & Brothers Investment Ltd, a well-known publicly listed manufacturing company, specializes in the production and marketing of high-quality residential standby (backup) multi-fuel electricity generators powered by liquid propane or natural gas.

Kiruhura & Brothers Investment Ltd: Strategic review amid business downturn

In recent times, the company has experienced a downturn in both its operations and overall business performance. In response, an extraordinary board meeting was convened to assess the situation and explore potential strategies for a business turnaround.

One of the key topics discussed during the meeting was the adoption of acquisition growth strategies. After thorough deliberation, the board resolved to engage a financial consultant. The consultant's mandate will be to identify suitable acquisition targets, estimate their market value, and conduct a comprehensive assessment of their financial health and viability.

This move is aimed at revitalizing the company's operations, enhancing profitability, and positioning Kiruhura & Brothers Investment Ltd for sustainable long-term growth.

Potential acquisition of Maranyundo Ltd

As part of its growth strategy, Kiruhura & Brothers Investment Ltd is considering the acquisition of Maranyundo Ltd, a privately-owned company operating in the same sector. Maranyundo Ltd specializes in the design and development of residential standby (backup) multi-fuel electricity generators powered by liquid propane or natural gas.

Maranyundo Ltd is a rapidly growing company and is widely regarded as a market leader in the sector. Its strong position is attributed to a high volume of awarded tenders, advanced technological capabilities, and significant investment in research and development.

The Board of Directors at Kiruhura & Brothers Investment Ltd has identified Maranyundo Ltd as an attractive acquisition target. The proposed acquisition is expected to not only enhance production capacity and increase market share but also deliver cost efficiencies in the foreseeable future.

To support the valuation of Maranyundo Ltd, the following financial projections have been provided for the next Four years following the merger.

Maranyundo Ltd Projected Cashflows, Production and Sales of four years ending 31st December

Description	Year 1	Year 2	Year 3	Year 4
Production and sales-Units	70,000	72,500	47,800	78,400
Selling Price per unit-FRW	14,500			
Other financial data				
	FRW'000	**FRW'000**	**FRW'000**	**FRW'000**
Selling and distribution expenses	10,050	10,260	10,510	10,740
Administration expenses	73,500	80,182	130,370	124,057
Depreciation and Amortization	22,000	22,000	22,000	22,000
Interests Expenses	1,000	1,200	1,300	1,500
Total	106,550	113,642	164,180	158,297

The following additional information should also be considered:

1. Selling price per unit is expected to grow at a rate of 5% in year 2, 3% in year 3, and 5% per year in year 4,
2. Cost of sales are expected to be 76% of total annual sales per annum,
3. Both companies operate in a 30% tax rate on operating profit and they are paid in the year in which profit arises,
4. Maranyundo Ltd expects the annual investment in capital expenditures of FRW 40 million per annum,
5. Maranyundo Ltd will need the investment in working capital of 10% of annual total sales.
6. After the fouth year the cashflows available to Kiruhura & Brothers Investment Ltd from Maranyundo Ltd is expected to grow by 4% per annum in perpetuity,
7. Maranyundo Ltd has long term debts with book and market value of FRW 300 million and FRW 360 million respectively in issue. It has no other debts.
8. Kiruhura & Brothers Investment Ltd believes that a weighted average cost of capital (WACC) from the following financial data would reflect the risk of the cashflows associated with the acquisition of Maranyundo Ltd. In its capital structure, Kiruhura & Brothers Investment Ltd has the following sources of finance:

- 7% , 2 million loan notes currently trading at FRW 95.45 each which will be redeemed at premium of 10% in 6 years ‘time with nominal Value of FRW 100. The company also has 5% irredeemable debts totalling FRW 200 million with nominal and market value of FRW 100 and FRW 115 respectively each in issue.
- In addition to this, the company has currently FRW 300 million of 10% bank loan in ABX commercial bank.
- Kiruhura & Brothers Investment Ltd has currently 3 million shares in issue whose nominal and market values are FRW 100 and FRW 150 respectively.
- Recently, the government has issued its 10 years treasury bills at a rate of 5% while the market risk premium was 6%. Kiruhura & Brothers Investment Ltd related business and financial risk can be estimated with a beta of 1.69.

In addition to the financial projections provided, Maranyundo Ltd should also be valued using the **Price-to-Earnings (P/E) ratio method**. For this purpose, **Muhima Ltd**, a publicly listed company operating in the same sector, with a similar size and capital structure has been selected as a suitable proxy. Muhima Ltd currently has a **market price per share of FRW 1,680** and **earnings per share (EPS) of FRW 134.4**, providing a relevant benchmark for the valuation.

Presented below are selected extracts from Maranyundo Ltd's annual financial statements, which will support its valuation analysis.

Statement of Profit or loss for the year ended 31st December 2024

Description	**FRW'000**
Sales revenues	256,000
Cost of sales	179,200
Gross Profit	**76,800**
Administrative expenses	24,000
Selling and Distribution expenses	12,850
Earnings Before Interests and Tax	**39,950**
Finance costs	6,000
Earnings Before Tax	**33,950**
Taxation @ 30%	10,185
Earnings After Tax	**23,765**

Statement of Financial Position as at 31st December 2024

Description	**FRW'000**
Assets	
Non-Current Assets	
Property, Plant and Equipment	700,650
Intangible Assets	460,000
Investment Property	240,000
Total Non-Current Assets	**1,400,650**
Current Assets	
Inventory	365,000
Accounts Receivable	85,600
Cash and Cash Equivalent	68,700
Total Current Assets	**519,300**
Total Assets	**1,919,950**
Equity & Liabilities	
Equity	
Share capital (Nominal value: FRW 185)	583,550
Share Premium	210,000

Revaluation Surplus	138,900
Retained Earnings	489,500
Total Equity	**1,421,950**
Liabilities	
Non-Current Liabilities	300,000
Current Liabilities	198,000
Total Liabilities	**498,000**
Total Equity and Liabilities	**1,919,950**

Note: The market value of equity is FRW 725,000,000

Required:

i) **Write a briefing paper for management making an evaluation of Maranyundo Ltd valuation using Discounted Cashflow and Price Earning (P/E) Ratio Methods.**

(27 marks)

ii) **Using Altman model for predicting bankruptcy, determine the Z-score index for Maranyundo Ltd and comment on likelihood of its potential failure.** (6 Marks)

iii) **Considering the fact that a negotiated merger failed, advise shareholders of Kiruhura & Brothers Investment Ltd on what to do to ensure the successful acquisition of the target.** (5 Marks)

b) Amahoro Corporation recently underwent a comprehensive organizational and financial assessment revealing deep-rooted structural and operational weaknesses. At the core, the company is led by a highly autocratic Chief Executive Officer who also serves as the Chairman of the Board. A dual role that has resulted in unchecked executive authority. The board of directors remains largely passive, providing minimal oversight or challenge to leadership decisions.

The company suffers from a critical imbalance in managerial skill sets. While it boasts a highly competent and experienced Finance Director, other key functions namely legal, marketing, and general operations lack depth and expertise. Furthermore, the organization lacks "management in depth," meaning succession planning and operational redundancy are virtually nonexistent. While the company demonstrates some effort to respond to market and internal changes, these efforts are reactive rather than strategic.

A major red flag identified was the lack of a formal budgetary control system. Individual departments create their own budgets with no overarching coordination, variance analysis, or accountability review. Notably, the company has not conducted comprehensive budget reviews for five years. Product costing errors both over and under-costing were detected, exacerbated by the absence of a functional Management Information System (MIS) to support cost accounting and operational decision-making. Despite these issues, the company prepares the cashflow plans which are approved by senior management.

Financially, Amahoro Corporation is under severe strain. It carries a high gearing ratio due to a FRW 2 billion loan from QBF Commercial Bank, used to fund large-scale projects with positive Net Present Value (NPV). Despite this, liquidity indicators such as the current and quick ratios are critically low. Sales have grown substantially since the last fiscal year, but this growth was entirely financed through working capital, further straining cash reserves.

Since May 2024, the company has faced a series of distress signals:

- Frozen management salaries
- Delayed capital expenditure
- Declining market share
- Rising employee turnover

The company has optimistic statements which have been made to the public and figures are altered by making inventory valued higher and depreciation lower to boost the profitability.

These symptoms have become so pronounced that even external observers now recognize the company's struggles. Operational costs can no longer be reliably covered, placing the company at a high risk of insolvency if corrective action is not urgently taken. Amahoro Corporation faces a governance and financial crisis. During the assessment no material findings of any misstatements in the financial statements.

Required:

As a financial consultant, prepare a report to be presented to the next board meeting including the following:

Using Argenti (A) Score Model, analyse the financial and non-financial performance of Amahoro Corporation. (12 Marks)

(Total: 50 Marks)

SECTION B

QUESTION TWO

a) Kimihurura Ltd Co. intends to raise FRW17 million through a rights issue, offering new shares at FRW 680 each on a 1-for-8 basis. The subscription price of FRW 680 per share represents a discount compared to the current market price of FRW850, making it an attractive opportunity for shareholders to increase their stake at a lower cost. This capital-raising initiative aims to strengthen the company's financial position while ensuring fairness to current investors by giving them priority in the share offering.

The capital structure of Kimihurura ltd Co is as follows:

Equity	
Ordinary shares (FRW1nominal)	200,000 Shares
Reserves	FRW 75 million
Non-current liabilities	
15% Loan notes	FRW 47 million

Additional information:

- The net cash raised by the rights issue will be used to redeem part of the loan note issue. Each loan note has a nominal value of FRW100 and an ex-interest market value of FRW104.
- Kimihurura Ltd Co to redeem the loan notes at a par but will pay higher charge on the remain part of the loan
- Current price/earnings ratio is **NOT** expected to change
- The earnings per share of Kimihurura Ltd Co is currently FRW42 per share
- Total earnings were FRW 8.4 million for the year.
- The company pays corporation tax of 30% per year.

Required:

Evaluate the effect on the wealth of the Kimihurura ltd Co's shareholders of using the net rights issue funds to redeem the loan notes. (8 Marks)

b) The investment literature has observed that financial management is concerned with investment decisions, dividend decisions and financing decisions. More academics and practitioners have claimed that only investment decisions are the most important of the three. ICPAR Organized a seminar and invited Martha Karangwa who is an investment specialist in one of the leading investment banks in Rwanda to speak about investment decisions. The following examples have been highlighted by Martha in Power Point Presentation (PPT) to participant:

1. Let us use Wilson Chemical Company, a manufacturer of specialty chemicals used in industrial manufacturing and increasingly in technology applications. Wilson Chemical is considering whether to recommend a special dividend of FRW70 million or a repurchase of 2

million shares of Wilson common stock in the open market. Wilson has a long-term record of gradually increasing earnings and dividends. Wilson's board of directors has also approved capital spending of FRW15 million to be entirely funded out according to the target capital structure.

Wilson Chemical Company Financial Information:

Book value of equity	FRW 50 million
Shares outstanding	25million
Current share price	FRW35
After-tax cost of borrowing	7%
Net Estimated full year earnings	FRW25 million
Last year's dividends	FRW9 million
Target capital Expenditure (market value)	35% debt, 65% equity

2. TABARO Peter is a financial adviser to an investment firm. He is currently reviewing the equity portfolio of a client and is considering adding new investment to it as the client has indicated a preference for more income-producing investments. With this in mind, Peter takes a closer look at Beta Company, a chain of Rwandan boutiques that has recently registered unusually high sales, resulting in large increases in the company's cash balance. Beta Company's current stock price is FRW47, Exhibit 2 shows EPS and DPS for the preceding four years.

Beta Company Earnings and Dividend History				
	2018	2019	2020	20121
EPS	FRW80	FRW82	FRW85	FRW86
DPS	FRW20	FRW22	FRW22	FRW22

3. RUBAVU Ltd is a company that produces both soft and hard drinks since 1988. The company has recorded steady growth over the past years. The board of directors has approved the new strategic plan of 10 years where it will grow in segments to achieve the targeted market share.

The CFO of RUBAVU Ltd has been invited to speak about the new strategic plan of RUBAVU Ltd at CNBC Africa. The interviewer at CN Africa asked the CFO whether RUBAVU Ltd will take advantage of the "Global Financial Integration" in terms of capital raising to finance Future expansion plans.

Martha Karangwa who is a guest speaker has asked participants the following questions. You are one of the participants to answer the following questions:

Required:

i) **With reference to the Residual theory principle, calculate the dividend amount and Dividend payout ratio for Wilson Chemical Company.** (5 Marks)

ii) **Advise the dividend policy applied by Beta company and discuss THREE (3) reasons to justify your answer.** (6 Marks)
Hint: Refer to residual, constant dividend payout ratio policy or stable dividend policies.

iii) **State FOUR (4) advantages of global Finance integration in capital raising that the Chief Finance Officer (CFO) is likely to provide.** (6 Marks)

(Total: 25 Marks)

QUESTION THREE

a) Irembo Co (IC) is a Rwandan listed company that imports pharmaceutical lab devices from Tanzania. The company's operating currency is Rwandan Francs (FRW) and has ordered supplies worth 30 million Tanzanian shillings. The devices will be delivered in the next three months and IC has agreed to pay for the devices after they have been delivered. IC has negotiated payment with its Tanzanian suppliers in three months' time. IC has entered into an agreement with its bank to borrow at 3.0% above the base rate and invest surplus funds at 0.35% below the base rate in both Rwanda and Tanzania.

Current base rates	
Tanzania	17.0%
Rwanda	15.5%

Current exchange rates	Tshs/FRW
Spot	2.1515 - 2.1525
3 months forward	2.1465 - 2.1485

Required:

i) **Using your calculations, evaluate THREE (3) ways in which IC might take action to hedge against foreign exchange exposure.** (9 Marks)

ii) **Discuss how foreign currency risks can be hedged against using financial futures market and foreign currency options.** (4 Marks)

iii) **Briefly explain with example what is meant by "currency swaps" to the management of IC.** (2 Marks)

iv) **Identify and explain to the Directors FIVE key financial risks facing IC from information provided above.** (5 Marks)

b) IC also has the following foreign currency receivables and payables due in three months:

Currency	Receivables	Payables
USD	500,000	350,000
Ksh	25 million	18 million
EUR	400,000	550,000

The FRW Exchange rates (per 1 unit of foreign currency) was tabulated below:

Currency	Spot Rate (FRW)	3-Month Forward Rate (FRW)
USD	1,181	1,190
Ksh	8.65	8.95
EUR	1,285	1,300

Required:

Use netting to determine the overall net inflow or outflow in Rwandan Francs (FRW) using the 3-month forward rates. (5 Marks)

(Total: 25 Marks)

QUESTION FOUR

Mataba Investment Co (MIC) Ltd, a brewery operating in Rwanda since 2000, has not replaced its production machines since its establishment. As a result, the company has experienced slower production processes and frequent disruptions.

In a recent management meeting, the decision was made to explore the possibility of leasing new machines, as purchasing them outright has become prohibitively expensive in the current market. Additionally, management requested the financial controller to assess the appropriate replacement cycle for the production machines in order to prevent future production shutdowns caused by aging equipment.

The financial controller has gathered all the necessary information to inform the decision-making process for both the leasing option and the replacement cycle.

Lease or Buy Decision,

MIC Ltd is considering an investment in new equipment that will reduce operating costs through the reduction of electricity and ensure energy efficiency as well as environmental conservation through the reduction of air pollution. The new equipment will require an initial investment of FRW 100 million and have a five-year life, at the end of which it will have a scrap value equivalent to FRW 20 million. A professional licensing fee in regards to the use of the new acquired equipment of FRW 22 million is payable at the end of the first year and is a tax allowable expense. This license fee will increase by 5% per year in each subsequent year. The new equipment is expected to reduce operating costs by FRW 580 per unit in real terms. This reduction in operating costs is before taking account of expected inflation of 5% per year.

Forecast production volumes over the life of the new technology are expected to be 60,000 units in year 1; 75,000 units in year 2; 95,000 units in year 3 ; 80,000 units in year 4 and 80,000 units in year 5. Once the new equipment is purchased, the company would finance it through a five-year bank loan paying an annual before tax rate of 12.85%.

Alternatively, MIC Ltd could lease the new technology. The company would pay five annual lease rentals of FRW 52 million per year, payable in advance at the start of each year. The annual lease rentals include the cost of the professional licensing fee.

If MIC Ltd buys the new technology, it can claim tax allowable depreciation on the investment on a 25% reducing balance method. The company pays taxation one year in arrears at an annual rate of 30%. MIC Ltd has a before and after-tax weighted average cost of capital of 12% and 8.4% per year respectively.

Asset replacement decision,

MIC Lts is also considering the replacement policy for its industrial size machines, which are used as part of a production line that makes non-alcoholic (soft) drinks. Given its heavy usage, each machine has to be replaced as much frequent as possible. The choice is between replacing the machine every two years or every three years. Only one type of machine is used, each of which costs FRW 490 million. Maintenance costs and resale values are as follows:

Years	Maintenance costs	Residual value
	FRW'million	FRW'million
Year 1	10	
Year 2	16	312
Year 3	30	224

Original cost, maintenance costs and resale values are expressed in current prices. It is expected that maintenance costs will increase at 9% per year and machine replacement cost and resale values at 5% per year. The money discount rate is 14%.

Required:

a) **Based on financing cash flows only, calculate and determine whether MIC Ltd should lease or buy the new equipment.** (13Marks)

b) **Using a nominal terms approach, calculate the Net Present Value of buying the new equipment and advise whether MIC Ltd should undertake the proposed investment.** (5 Marks)

c) **Calculate the preferred replacement policy for the machine in a choice between a two-year or three-year replacement cycle**. (7 Marks)

(Total: 25 Marks)

End of Question Paper

Present value interest factor of Frw1 per period at i% for n periods, PVIF(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092	0.074	0.059	0.047	0.038	0.030	0.024	0.020	0.016	0.013	0.010
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057	0.044	0.033	0.026	0.020	0.015	0.012	0.009	0.007	0.005	0.004
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036	0.026	0.019	0.014	0.010	0.008	0.006	0.004	0.003	0.002	0.002
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022	0.015	0.011	0.008	0.005	0.004	0.003	0.002	0.001	0.001	0.001
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009	0.005	0.003	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000

Present value interest factor of an (ordinary) annuity of Frw1 per period at i% for n periods, PVIFA(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077	8.422	7.843	7.330	6.873	6.464	6.097	5.766	5.467	5.195	4.948
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427	8.694	8.055	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.644	8.855	8.176	7.586	7.070	6.617	6.215	5.858	5.539	5.251	4.992
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779	8.951	8.244	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915	9.042	8.304	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999