



CMA INTERMEDIATE • PAPER 11 • FINANCIAL MANAGEMENT AND
BUSINESS DATA ANALYTICS

Student Notes

Chapter 1 • Fundamentals of Financial Management



3 Topics • 3 Examined • 42 Classified Questions

ICMAI Study Material, Syllabus 2022 • Shuchita Scanner, 2026 July Edition

How to use this booklet

For each topic, first read the Study Material paragraphs named in the “Read first” line. Then prepare level by level — each level tells you what kind of mastery the examiner expects, and lists the exact Scanner questions to practise at that level.

Question lines show: **label • source & exam • question reference • category • marks • Scanner page**, then the **category** again in the column beside it and the **difficulty** of the question.

The category — **OQ** objective, **SN** short note, **DB** distinguish between, **DESC** descriptive, **CSQ** case scenario — is the **Scanner’s own**, printed in the book. A **{C}** after the exam reference means the question was **compulsory** in that paper.

The heading above each group names the **skill the question calls for** — **OBJECTIVE, REMEMBERING, UNDERSTANDING, APPLYING, ANALYSING, EVALUATING, CREATING, and PRACTICE** for a model question set by the Scanner rather than taken from a past paper. It is assigned by the SITS rubric from the directive verb and the question type. **ICMAI publishes no skill-assessment grid** for the Intermediate papers, so no weighting is implied here on the Institute’s behalf.

STUDY PRIORITY GUIDE

Chapter 1 at a Glance

This chapter carries 42 classified Scanner questions across 3 declared topics, 3 of which the examiner has actually asked. The table below breaks the chapter down by the skill each question calls for, and by the marks that skill is worth.

SKILL REQUIRED Chapter 1 · share of the chapter's 93 marks

Recall — objective questions	51.6%	48 of 93 marks · 31 questions
Remembering	4.3%	4 of 93 marks · 1 question
Understanding	31.2%	29 of 93 marks · 6 questions
Applying	12.9%	12 of 93 marks · 4 questions

Recalling and explaining **87.1%** · applying, analysing and judging **12.9%** — this chapter reads **weighted towards recall and explanation**

87% of this chapter's marks are earned by recalling and explaining, and 13% by applying, analysing and judging. Across Paper 11 as a whole the split is 49% and 51%. More of this chapter's marks are earned by recalling and explaining than the paper's own balance would suggest. Reading carries further here than in most of the paper, but do not stop at reading — the application marks that remain are the ones students lose.

Every band is assigned by the SITS rubric v1-CMA and weighted on the marks printed in the Scanner. ICAI publishes no skill-assessment grid for the Intermediate papers, so the comparison is against this paper's own profile drawn from the Scanner, and no weighting is implied on the Institute's behalf.

SKILL REQUIRED	WHAT THE EXAMINER ASKS FOR	QUESTIONS
Recall — objective questions	recognise the right answer — Section A of the Scanner, 1 and 2 marks	31
Remembering	recall and reproduce	1
Understanding	explain with reasons	6
Applying	take the provision to the facts	4

The Scanner's own categories for this chapter: 31 objective, 7 practical, 3 descriptive, 1 short note.

The band on each question line is SITS-assigned by written rubric. ICMAI publishes no skill-assessment grid for the Intermediate papers, so no institute weighting is implied. The category beside it — OQ, SN, DB, DESC, PRAC — is the Scanner's own: OQ, SN, DB and DESC are printed in the book, and PRAC marks a question the Scanner sets under PRACTICAL QUESTIONS.

CHAPTER 1

Fundamentals of Financial Management

Topic 1: Introduction to Financial Management

CMAL2P11-C1-T01

Read first Read §1.1 Introduction to Financial Management, ICAI Study Material Module 1, pages 5 to 13 — the four definitions of financial management, the two objectives with the arguments for and against each, the three decisions, the twelve functions, and the responsibilities of the CFO.

NOTES

Finance and financial management defined: finance is “The science of money”, the study of the principles and methods of obtaining control of money from those who have saved it and of administering it. Howard and Upton define financial management “as an application of general managerial principles to the area of **financial decision-making**”; Weston and Brigham as “an area of financial decision making, **harmonizing individual motives and enterprise goal**”; Van Horne as “concerned with the **acquisition, financing and management of assets** with some overall goal in mind”. Two aspects run through all of them — **procurement of funds** and **effective utilisation of funds**.

The two objectives: profit maximisation (minimisation of loss) and value/wealth maximisation. The market value of the firm is $MV = MVE + MVD$, where **MVE** is the market value of equity shares and **MVD** the market value of debt, if any; where the book and market values of debt are the same, wealth maximisation reduces to maximising the **market value per equity share**. A further objective is the **trade-off between risk and return**, for which the firm must make efficient use of its economic resources, mainly capital.

Shareholders' wealth: $\text{Shareholder's value/wealth} = \text{No. of shares owned} \times \text{Current market price per equity share}$. The higher the share price per share, the greater the shareholders' wealth.

Profit maximisation — the four arguments in favour: profit earning being the main aim of business, the ultimate objective should be profit maximisation; the future is uncertain and a firm should earn more and more to meet contingencies; profit is the **main source of finance for growth**; and it is justified on the ground of **rationality**, profit acting as a measure of efficiency and economic prosperity. It is defended on two further grounds — profit **acts as a measure of efficiency** and **serves as a protection against risk**.

Profit maximisation — the four arguments against: it leads to the **exploitation of workers and consumers**; it **ignores the risk factors** associated with profit; **profit in itself is a vague concept** and means differently to different people; and it is a **narrow concept, at the cost of social and moral obligations**. Being a short-run concept, it exerts no pressure on management to raise the firm's

future growth rate.

The eight things wealth maximisation considers and profit maximisation does not: it considers **cash inflows and not the profit figure**; it is a **long-term** objective; it considers the **risk factor**; it considers the **time value of money**, discounting inflows at different points of time to present value; it takes in both the **quantitative** aspect, the cash inflows, and the **qualitative** aspect, the net present value; a firm pursuing it **pays regular dividends**; it is **preferred by shareholders**; and it takes account of **all the factors influencing the market value of shares**.

Wealth maximisation, for and against: in favour — short-term money lenders are paid in time, long-term lenders get a fixed rate of interest on their investments, the **employees' share in the wealth increases**, and resources are put to economical and efficient use. Against — it is **socially undesirable**; it is **not a descriptive idea**; stockholders' wealth maximisation alone does not lead to the firm's wealth maximisation; and the objective is **endangered when ownership and management are separated**.

The three decisions: the **investment decision** — where to invest and how much, settled by evaluating alternative avenues to select the best and then monitoring and implementing the option selected, and covering capital budgeting for the long term and working capital for the short. The **financing decision** — the optimum **debt-equity combination** at which the cost of capital is minimum and the return maximum, internal sources being the owned funds and external sources the borrowed, borrowed funds carrying the higher risk because they entail a **fixed payment commitment** while equity does not. The **dividend decision** — how much to distribute and how much to retain for future expansion, its objective being to maximise the market value of the equity shares, and its balance struck between **shareholders' expectations and reinvestment opportunities**.

The twelve functions of financial management: determining financial needs; determining sources of fund; **financial analysis**; optimal capital structure; **cost-volume-profit analysis**; profit planning and control; fixed assets management; **capital budgeting**; corporate taxation; **working capital management**; dividend policies; and mergers and acquisitions.

Working capital: the **excess of current assets over current liabilities**, current assets being cash, inventory and receivables and current liabilities payables and bank overdraft. The policy must hold a balance between **profitability and liquidity**.

The CFO, and the frame he works in: his responsibilities run from estimating the total requirement of funds for a period, raising them from national and international sources cost-effectively, investing in both long-term and short-term needs, funding day-to-day working capital, collecting from debtors and paying creditors on time, managing treasury operations, ensuring a satisfactory return to all stakeholders, paying interest and repaying lenders on due dates, and **maximising the wealth of the shareholders over the long term**, to interfacing with the capital markets and **adhering to the requirements of corporate governance**. The external factors pressing on him are **heightened corporate competition, technological change, volatility in inflation and interest rates, worldwide economic uncertainty, fluctuating exchange, tax law changes, environmental issues**

and ethical issues. The regulatory framework is the **Companies Act, 2013**, the **Securities and Exchange Board of India Act, 1992** and the **Foreign Exchange Management Act, 1999**.

OBJECTIVE recognise the right answer — Section A of the Scanner, 1 and 2 marks · 11 questions

- Eleven of the thirty-one objectives in the chapter sit on this topic, more than on either of the other two. Three ask what shareholders' wealth is, two ask what the objective of financial management is, and three are true-or-false statements — two on the profit-against-wealth pair and one on what finance is called. Eight of the eleven are one- or two-mark recall answered from the two definitions on pages 6 and 11 of the Study Material; the other three sit outside those definitions and are taken in the last bullet of this band.
- The shareholders' wealth question has been keyed two ways and the difference is in the options, not in the doctrine. In 2017-Dec and 2019-Dec the marked answer is **the market price per share of the firm**; in 2025-Dec, where a fuller option is on the paper, it is **the number of equity shares owned multiplied by the current market price per equity share**. Read all four options before choosing — the fuller formula wins whenever it appears.
- The three true-or-false statements are worth memorising as they stand. **Finance is called the "Chemistry of money" is False** — it is called the science of money. **In Financial Management, the objective of Financial Manager is profit maximization is False**. **Wealth maximization goal is only an extension of profit maximization goal of the organization is True**, and students who have learned that the two objectives conflict get this one wrong.
- Three questions here are outside the run of definitions. The 2017-Jun objective asking which activity is **outside the purview of the financing decision** is answered **deciding on the utilization of the funds** — that is the investment decision, while the other three options are all steps in raising the funds. The 2021-Dec objective on an MNC consciously manipulating its transfer price is answered **Corporate Goals**. The 2025-Jun two-mark question giving a 9% return on total assets of ₹50,00,000 and a net profit ratio of 5% wants sales of **₹90,00,000** — net profit of ₹4,50,000 divided by 5% — and is worked with the ratio set of Chapter 3, not with anything in this module.

OQ · PYQ 2017-Jun [6] (a) (i) · 1M · Pg 6	OQ Objective	Easy
OQ · PYQ 2017-Jun [6] (a) (ii) · 1M · Pg 6	OQ Objective	Easy
OQ · PYQ 2017-Dec [6] (a) (v) · 1M · Pg 6	OQ Objective	Easy
OQ · PYQ 2018-Jun [6] (c) (iii) · 1M · Pg 7	OQ Objective	Easy
OQ · PYQ 2019-Jun [6] (a) (i) · 1M · Pg 7	OQ Objective	Easy
OQ · PYQ 2019-Jun [6] (c) (i) · 1M · Pg 7	OQ Objective	Easy
OQ · PYQ 2019-Dec [6] (a) (ii) · 1M · Pg 7	OQ	Easy

	Objective	
OQ • PYQ 2019-Dec [6] (c) (i) • 1M • Pg 8	OQ Objective	Easy
OQ • PYQ 2021-Dec [2] • 1M • Pg 8	OQ Objective	Easy
OQ • PYQ 2025-Jun [1] (ix) {C} • 2M • Pg 11	OQ Objective	Easy
OQ • PYQ 2025-Dec [1] (i) {C} • 2M • Pg 11	OQ Objective	Easy

UNDERSTANDING explain with reasons • 2 questions

- Both questions here carry five marks and both are the profit-against-wealth comparison. The 2023-Jun question asks three separate things — what wealth maximisation is, why profit maximisation is not an operationally feasible criterion, and the interrelationship between the investment, financing and dividend decisions — so head the answer in three parts and give each its share. A long first part that crowds out the third loses the marks on the third.
- Define wealth maximisation as the **maximisation of the market price of the equity shares of the company in the long run**, the long run being a period long enough to reflect the normal market price irrespective of short-term fluctuations, and then give the two factors that price is a function of — the likely **earnings per share** and the **capitalisation rate** reflecting the liking of the investors. Those two lines are the definition the marks are on.
- The “not operationally feasible” half is a list and the list is what is marked: profit is **vague** — it is not clear whether the term means economic profit, accounting profit, profit after tax or before tax; it **ignores the timing of returns**; it **ignores the risk factor**; and it **assumes perfect competition**. Close with the modern objection that profit maximisation is regarded as unrealistic, difficult, inappropriate and immoral.
- The MQP question asking you to **relate** the two objectives is not asking for the contrast. Say that they are **not mutually exclusive**, that profit maximisation **complements** wealth maximisation and that wealth maximisation **depends on** it, and close by saying that when the firm maximises shareholders' wealth the individual shareholder can use that wealth to maximise his own utility.

TQ 1.1 • PYQ 2023-Jun [2] (a) • 5M • Pg 14	DESC Descriptive	Medium
TQ 1.2 • MQP 2023-Jun S1 [2] (a) • 5M • Pg 16	DESC Descriptive	Medium

Topic 2: Time Value of Money

CMAL2P11-C1-T02

Read first Read §1.2 Time Value of Money, ICAI Study Material Module 1, pages 14 to 25 — the three reasons for time preference, the compounding and discounting formulae with every symbol defined, the annuity and perpetuity formulae, the two doubling rules, CAGR, and Illustrations 1 to 11.

NOTES

Three reasons money has time value: **risk**, since future cash receipts are not certain and in an inflationary period a rupee today represents greater real purchasing power than a rupee a year hence; **preference for consumption**, individuals in general preferring current to future consumption; and **investment opportunities**, capital being employable productively so that one rupee today grows to $(1 + r)$ a year hence.

The two techniques, and what each covers: **compounding** finds future values and applies to a **single flow, multiple flows and an annuity**; **discounting** finds present values and applies to a **single flow, uneven multiple flows, an annuity and a perpetuity**. Discounting is simply the reverse of compounding, and the compound interest rate used for discounting is called the **discount rate**.

Single cash flow, both directions: $FV = PV(1 + r)^n = PV \times FVIF(r, n)$ and $PV = FV(1 + r)^{-n} = FV \times PVIF(r, n)$, where **PV** is the amount invested today, **FV** the value n years hence, **r** the interest or discount rate per period and **n** the number of periods. Where compounding is done **m** times a year the rate becomes $r \div m$ and the number of periods $m \times n$ — quarterly compounding is $m = 4$.

Effective against nominal: where the frequency of compounding is more than one the **effective rate is greater than the nominal rate**, and it rises with the frequency. A nominal 10% compounded quarterly gives an effective **10.38%**; a nominal 12% compounded quarterly gives **12.55%**; and an effective 10.25% against a nominal 10% means the frequency of compounding is **2**, that is, half-yearly.

The two doubling rules: **Rule of 72** — **doubling period** = $72 \div \text{rate of interest}$; **Rule of 69** — **doubling period** = $0.35 + (69 \div \text{rate of interest})$. At 12% they give **6 years and 6.1 years** respectively; at 8% the rule of 72 gives **9 years**.

Annuity: a series of **equal** payments or receipts occurring over a specified number of periods, the interval between two of them being the payment or rent period. In an **ordinary annuity** the flows fall at the **end** of each period. $FVA_n = A[\{(1 + r)^n - 1\} \div r]$ and $PVA_n = A[1 - (1 \div (1 + r))^n] \div r$, where **A** is the amount of each instalment or constant periodic flow. The bracketed terms are the **FVIFA** and the **PVIFA** for r and n .

Flows falling at the beginning of each period: each instalment compounds for one period more, so the ordinary-annuity factor is multiplied by $(1 + r)$. Six deposits of ₹25,000 at 9% accumulate to **₹2,05,025** — a factor of 8.20 against the ordinary-annuity 7.523 — because the first deposit runs 1.677 and the last 1.090.

Perpetuity: an annuity that occurs indefinitely, the fixed coupon on an irredeemable sum and the scholarship paid from an endowment being the examples. Its value is finite because receipts far in the future have extremely low present value. **Present value of a perpetuity = constant annual payment $\div$ interest rate**, the present value interest factor of a perpetuity being simply $1 \div r$. ₹5,000 a year at 10% is worth **₹50,000**; ₹10,000 a year at 15% is worth **₹66,667**.

A growing perpetuity payable at the beginning of each period: ₹10,000 growing at 5% with interest at 10% is valued at **₹2,20,000** — $₹10,000 \div (0.10 - 0.05)$ gives ₹2,00,000 for an end-of-

period stream, and the whole stream is carried forward one period at 10% because the first receipt is immediate.

CAGR: the **annual growth of an investment over a specific period of time**. $CAGR = [(EV \div BV)^{(1/n)} - 1] \times 100$, where **EV** is the value at the end of the period, **BV** the value at the beginning and **n** the number of years invested. In four steps: divide the ending value by the beginning value; raise the result to an exponent of one divided by the number of years; subtract one; multiply by 100. It is used to communicate the average return of a fund, to compare the performance of advisers, to compare stocks against bonds, to forecast from a data series, and to analyse the behaviour of sales, market share, costs and customer satisfaction over a run of years.

The position of the reference date inside the stream: a flow falling **before** the reference date is **compounded forward** and a flow falling **after** it is **discounted back**. Valued at the end of year 3, ₹1,00,000 deposited at the beginning of year 1 is multiplied by $(1.1)^3 = 1.331$, a deposit at the end of year 4 by $1 \div 1.1 = 0.909$ and one at the end of year 5 by $1 \div (1.1)^2 = 0.826$.

The uses of the annuity formulae: the future value of an annuity answers what a Public Provident Fund or a sinking fund will accumulate to, and how much must be saved each year at a compound return to reach a target. The present value of an annuity answers **loan amortisation** — the instalment-type loan repaid in equal periodic payments that include both interest and principal, prevalent in mortgage, auto, consumer and certain business loans.

OBJECTIVE recognise the right answer — Section A of the Scanner, 1 and 2 marks · 10 questions

- Ten of the thirty-one objectives in the chapter sit here, and only two of them — a relation and a definition — are not computational. Four turn on **compounding frequency** alone: a nominal 10% compounded quarterly gives an effective **10.38%**; a nominal 12% compounded quarterly gives **12.55%**; an effective 10.25% against a nominal 10% means a frequency of **2**; and where the frequency exceeds one, **effective rate is greater than nominal rate**. Learn the arithmetic once and all four are a line each.
- Two are doubling questions and they want different rules. **₹1,00,000 at 12% doubles in about six years** by the rule of 72; and at 12% the rule of 72 and the rule of 69 give **6 years and 6.1 years** respectively. A question has been set that wants the two figures side by side, so carry the 0.35 in the rule of 69 rather than rounding it away.
- Two are perpetuities. ₹10,000 a year at 15% is **₹66,667**; ₹10,000 growing at 5% with interest at 10% and payable at the **beginning** of each period is **₹2,20,000**. Read whether the flow is level or growing and whether it starts now or in a year: the arithmetic is one line either way and the mark is lost on the reading, not on the sum.
- The remaining two are a definition and a factor sum. **CAGR** is the annual growth of an investment over a specific period of time — not perpetuity and not annuity. Five year-end annuities of ₹15,000 at 12% with $PVIFA(12\%, 5) = 3.6048$ come to **₹54,072**; multiply by the given factor rather than discounting each of the five flows separately.

OQ • MQP 2023-Dec S1 [1] (i) • 2M • Pg 9	OQ Objective	Easy
OQ • PYQ 2023-Dec [1] (xii) {C} • 2M • Pg 9	OQ Objective	Easy
OQ • PYQ 2024-Jun [1] (vi) {C} • 2M • Pg 9	OQ Objective	Easy
OQ • MQP 2024-Dec S1 [1] (ii) • 2M • Pg 10	OQ Objective	Easy
OQ • MQP 2024-Dec S2 [1] (i) • 2M • Pg 10	OQ Objective	Easy
OQ • MQP 2024-Dec S2 [1] (ii) • 2M • Pg 10	OQ Objective	Easy
OQ • PYQ 2025-Jun [1] (viii) {C} • 2M • Pg 11	OQ Objective	Easy
OQ • PYQ 2025-Dec [1] (iii) {C} • 2M • Pg 12	OQ Objective	Easy
OQ • PYQ 2026-Jun [1] (iii) {C} • 2M • Pg 13	OQ Objective	Easy

UNDERSTANDING explain with reasons • 4 questions

- Four questions sit here, and the 2014-Jun two-marker — one of the two smallest, both at two marks — carries the instruction that **no credit will be given for an answer without the reasoning**. Set the working as a table — year, amount, factor, product — and put the reference date at the head of it. In the 2014-Jun question the value is taken at the **end of year 3**, so the year-1 and year-2 deposits are compounded forward and the year-4 and year-5 deposits are discounted back; the five come to **₹5,26,600**.
- The two-mark present value of ₹2,00,000 receivable at the end of three years at 10% is **₹1,50,263**. Where the paper prints a factor table, use the printed factor and say which one you used; where it does not, carry three decimals, as the Scanner's own answers do.
- The ten-mark question comparing Machine X with Machine Y and the five-mark question on HONEY Ltd.'s limited funds are **capital-budgeting** questions printed under this topic. Work the first by the cash-flow ladder — profit before tax, tax, profit after tax, add back depreciation for the annual CFAT, then the terminal year separately with the **release of working capital**, the **actual salvage value** and the tax on the profit or the saving on the loss — before discounting at the annuity factor given.
- In the capital-rationing question take the **profitability-index ranking** where the projects are **divisible** and the **net present value of the best feasible combination** where they are **indivisible**; the unutilised balance in the indivisible case earns 5% for ten years and is brought back at the given 0.386. Two selections, each with its reason, is what the five marks are for.

PQ 2.1 • PYQ 2014-Jun [6] (a) {C} • 2M • Pg 17	PRAC Practical	Easy
PQ 2.4 • PYQ 2015-Jun [I] (h) • 2M • Pg 18	PRAC Practical	Easy

PQ 2.6 · PYQ 2023-Jun [6] (b) · 5M · Pg 20

PRAC
Practical

Medium

PQ 2.5 · PYQ 2023-Jun [6] (a) · 10M · Pg 19

PRAC
Practical

Hard

APPLYING take the provision to the facts · 2 questions

- Both questions here are two-mark sums done in three lines. Ascertaining the discounted value at the end of year 1 of ₹2,00,000 payable at the end of year 2 together with ₹30,000 paid immediately means **compounding the ₹30,000 forward** one year to ₹33,000 and **discounting the ₹2,00,000 back** one year to ₹1,81,818, a total of **₹2,14,818**. Show both directions on the page; an answer that discounts everything scores nothing.
- The future value of ₹25,000 deposited at the **beginning** of each of six years at 9% is **₹2,05,025**. The printed answer labels the 8.20 factor it uses “PVIFA”; that factor is a **future-value** factor for an **annuity due** — the ordinary FVIFA(9%, 6) of 7.523 multiplied by 1.09 — so write it as FVIFA and say in one line that the annuity is due.
- Neither question offers part marks for a bare figure. Name the formula, define its symbols in one line, substitute, and give the answer with the rupee sign and the unit.

PQ 2.2 · PYQ 2014-Dec [1] (h) · 2M · Pg 17

PRAC
Practical

Medium

PQ 2.3 · PYQ 2015-Jun [I] (c) · 2M · Pg 18

PRAC
Practical

Medium

Topic 3: Risk and Return

CMAL2P11-C1-T03

Read first Read §1.3 Risk and Return, ICAI Study Material Module 1, pages 26 to 36 — the connotations of return, the two classes of risk with their three components each, the measures of return and of risk, the beta formula and the beta inference table, and the CAPM equation with its features and assumptions.

NOTES

Return, and its two components: the basic component is the **periodic cash receipt** on the investment, interest or dividend; the second is the change in price, the **capital gain or loss**.

Realised return is after the fact — the return that was earned or could have been earned, also called **historical return**; **expected return** is what investors anticipate over a future period and may or may not occur; **yield** is the income component in relation to some price for the security. **Ex-ante** refers to future events and is the **prediction** of return; **ex-post** means after the event and is the return **already obtained**.

Risk, defined: according to **Horne and Wachowicz**, risk is the **variability of returns from those that are expected** — the greater the variability, the **riskier** the security is said to be.

Systematic risk: that portion of total risk **attributable to factors that affect the market as a whole**. It arises out of **external and uncontrollable factors** not specific to a security or industry, it **cannot be eliminated by diversification**, and it is measured by **beta**. Its three components are **market risk** — triggered by social, political and economic events and by changes in demand and supply, investor expectations, information flow and risk perception; **interest rate risk** — uncertainty of future market values and of income from fluctuations in the general level of interest and in the cost of corporate debt; and **purchasing power risk** — the erosion in the value of money through inflation.

Unsystematic risk: risk emanating from **known and controllable factors unique to a particular security or industry**, and therefore **eliminable by diversification of the portfolio**. Its three components are **business risk** — volatility in a company's revenues and profits from its market conditions, product mix and competition, arising externally from government policy or internally from labour efficiency and management; **financial risk** — associated with the capital structure, so that a company with **no debt financing has no financial risk** and the higher the financial leverage the higher the financial risk; and **default risk** — default in meeting financial obligations on time, which increases insolvency and bankruptcy costs.

Total return: $\text{Total Return} = (\text{Cash payments received} + \text{Price change over the period}) \div \text{Purchase price of the asset}$, or in symbols $[D_1 + (P_1 - P_0)] \div P_0$ — the dividend yield plus the capital gain, where P_0 is the initial price, D_1 the dividend of the period and P_1 the closing price. A share bought at ₹600, sold at ₹720 with a dividend of ₹30 returns **25%**.

Expected return: $E(R) = R_1P_1 + R_2P_2 + \dots + R_nP_n$, the weighted average of the possible returns with the **probabilities of occurrence** as weights. For a two-security portfolio $E(R_p) = wA E(RA) + (1 - wA) E(RB)$ and generally $E(R_p) = \sum w_n E(R_n)$, the weights being the proportions of the portfolio invested in each security.

Measuring risk: $\text{variance} = \sum [R_i - E(R)]^2 p_i$ and **standard deviation** = $\sqrt{\text{variance}}$, where p_i is the probability of the i th rate of return. Standard deviation measures risk in **absolute** terms and is generally taken as the **total risk** of a security or portfolio. **Coefficient of variation** = $\text{standard deviation} \div \text{expected value}$ is the **relative** measure — risk per unit of expected return — and the **larger the CV the larger the relative risk**. Where two securities have **different expected returns** it is the coefficient of variation, not the standard deviation, that compares them.

Beta: the **sensitivity of a security to market movements**, and the proper measure of risk when money is invested in a portfolio. $\beta = \text{Cov}(A, M) \div \sigma^2 M = [r(A, M) \times \sigma A \times \sigma M] \div \sigma^2 M = r(A, M) \times \sigma A \div \sigma M$, where $\text{Cov}(A, M)$ is the covariance of the returns on the security with the returns on the market as a whole, $r(A, M)$ the coefficient of correlation between them, σA the standard deviation of the security's returns and σM that of the market's. Beta depends on those three quantities and on nothing else. On $\sigma X = 12\%$, $\sigma M = 9\%$ and $r = +0.72$, **$\beta = 0.96$** .

Beta value is	The security is
Less than 1	Less risky than the market portfolio

Equal to 1	As risky as the market portfolio — a normal beta security; a 10% move in the market moves the security 10%
More than 1	More risky than the market portfolio — an aggressive or high beta security; a beta of 2 moves twice as much as the market
Less than 0	Negative beta — an inverse relationship with the market; gold is normally supposed to have one
Equal to 0	No systematic risk; the share price has no relationship with the market, and a risk-free security is assumed to be zero

CAPM: developed by **William F. Sharpe** and **John Linter** on the portfolio theory of **Harry Markowitz**. The required rate of return is the **risk-free return plus a risk premium**, and that premium is proportional to systematic risk as measured by beta: $E(R_s) = R_F + \beta_s (R_M - R_F)$, where R_F is the risk-free rate of return, β_s the security's beta and R_M the expected return on the market portfolio. On a beta of 1.2 with a risk-free rate of 4% and an expected market return of 12%, $E(R_s) = 4\% + 1.20 \times (12\% - 4\%) = 13.6\%$. It rests on four propositions: that it explains the relationship between **expected return, non-diversifiable risk and the valuation of securities**; that the **diversifiable risk of a security is eliminated** as more securities are added to the portfolio; that securities do not all carry the same systematic risk, so the **required rate of return goes with the level of systematic risk**; and that risk is measured by **beta**, itself a function of the total risk of the market return, the total risk of the individual security's return and the correlation between the two.

The assumptions CAPM rests on. Of investors: their goals are **rational**, they seek higher return for any acceptable level of risk and lower risk for any desired level of return; their object is to **maximise the utility of terminal wealth**; their choice rests on the **risk and return** of a security; and their expectations are **homogeneous over an identical time horizon**. Of the market: information is **freely and simultaneously available** to all investors; the market is **not dominated by any individual investor**; investors can **borrow and lend unlimited amounts at the risk-free rate**; there are **no taxes, transaction costs, restrictions on short-term rates or other market imperfections**; and the total asset quantity is fixed, all assets being **marketable and divisible**.

An efficient portfolio offers the **maximum return for a given level of risk**. Where two securities are **perfectly negatively correlated** a portfolio of them can be made riskless.

OBJECTIVE recognise the right answer — Section A of the Scanner, 1 and 2 marks · 10 questions

- Ten of the thirty-one objectives in the chapter sit here, and five of them turn on **beta** alone: beta measures **market risk**; beta is the measure of **systematic risk**; the **sensitivity of a security to market**

movement is measured by beta; where $\beta = 0$ the security is not risky, and that statement is keyed **True**; and one question asks for beta to be computed.

- That computation gives $\sigma_x = 15\%$, $\sigma_m = 12\%$ and a regression coefficient between the returns of 0.80 and is answered **1.00** — $\beta = r \times \sigma_x \div \sigma_m = 0.80 \times 15 \div 12$. Do not divide by the variance when the question hands you two standard deviations and a correlation; one σ_m has already cancelled.
- Three questions sort risks into the two classes, and all three are answered from the same figure. **Market risk is not an unsystematic risk; business risk is not a systematic risk**; and systematic risk is the portion of total risk **attributable to factors that affect the market as a whole**. Learn the two triples — market, interest rate and purchasing power against business, financial and default — and the three fall out without thought.
- The last two are single lines worth carrying verbatim. According to **Horne and Wachowicz** the greater the variability in returns, the **riskier** the security is said to be; and **efficient portfolios** are those that offer the **maximum return** for a given level of risk.

OQ • PYQ 2018-Jun [6] (a) (iii) • 1M • Pg 6	OQ Objective	Easy
OQ • PYQ 2022-Dec [6] (c) (iv) • 1M • Pg 8	OQ Objective	Easy
OQ • PYQ 2023-Jun [1] (a) (iii) • 1M • Pg 8	OQ Objective	Easy
OQ • MQP 2023-Jun S2 [1] (c) (iv) • 1M • Pg 9	OQ Objective	Easy
OQ • MQP 2023-Dec S2 [1] (i) • 2M • Pg 9	OQ Objective	Easy
OQ • MQP 2024-Dec S1 [1] (i) • 2M • Pg 9	OQ Objective	Easy
OQ • PYQ 2025-Jun [1] (i) {C} • 2M • Pg 11	OQ Objective	Easy
OQ • PYQ 2025-Dec [1] (ii) {C} • 2M • Pg 12	OQ Objective	Easy
OQ • PYQ 2026-Jun [1] (i) {C} • 2M • Pg 12	OQ Objective	Easy
OQ • PYQ 2026-Jun [1] (ii) {C} • 2M • Pg 13	OQ Objective	Easy

REMEMBERING recall and reproduce • 1 question

- One question sits here, a four-mark short note on **Systematic and Unsystematic Risk**, and four marks means four things about each: what it is, whether diversification removes it, what measures it, and an example. The printed answer opens with unsystematic risk as **company specific** and **diversifiable** and then systematic risk as **macro-economic or market specific** and **non-diversifiable**, giving inflation, government policy and interest rate as its examples.

- Do not let the note become two definitions. Name the three components on each side — market, interest rate and purchasing power risk against business, financial and default risk — and add that beta measures the systematic half. That is the difference between a two-mark answer and a four-mark one.

TQ 3.1 • PYQ 2022-Dec [10] (b) • 4M • Pg 22

SN
Short note

Easy

APPLYING take the provision to the facts • 2 questions

- The six-mark question asks for a **list of the different types of systematic risk**, and the printed answer gives three — market risk, interest rate risk and purchasing power risk — each with a clause of substance under it. Open with the one-sentence definition of systematic risk as the portion of total risk attributable to factors affecting the market as a whole, arising from external and uncontrollable factors not specific to a security or industry, then take the three in order. Three bare words will not carry six marks.
- The two-mark CAPM sum runs the model backwards to the risk-free rate. Where the variance of the market portfolio is four-ninths of the variance of the security, $\sigma_M \div \sigma_A = 2 \div 3$, so $\beta = 0.8 \times 3 \div 2 = 1.2$; substituting in $20\% = RF + 1.2 (17.5\% - RF)$ gives $RF = 5\%$. Write the CAPM equation and define its symbols before substituting — the printed answer does, and on a two-mark question the working is the answer.

TQ 3.2 • MQP 2023-Jun S2 [2] (a) • 6M • Pg 22

DESC
Descriptive

Medium

PQ 3.1 • PYQ 2023-Jun [4] (a) (ii) • 2M • Pg 23

PRAC
Practical

Medium