CMA FINAL · PAPER 20A · ELECTIVE · GROUP IV

# Strategic Performance Mgmt & Business Valuation (SPMBV)

Complete Formula & Practical Application Book — module-wise formulas, real exam-style worked illustrations with stepwise solutions, and a 135-question MCQ bank (15 MCQs × 2 marks per module), built on ICMAI Syllabus 2022.

- Both Sections Covered
- 9 Topic Modules
- 135 Practice MCQs
- Stepwise Illustrations
- Dec 2026 Attempt Ready

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# Table of Contents

**How to use this book:** Each module gives you (1) every formula you need, (2) a plain-English note on when/how to apply it in an exam question, (3) fully worked illustrations with step-by-step solutions, and (4) 15 exam-style MCQs (2 marks each) with answers and explanations. Formulas and illustrations are freshly worked for this book to build genuine conceptual clarity — always cross-check the latest ICMAI Study Material/RTP/MTP for any syllabus updates closer to your attempt.

## SECTION A — STRATEGIC PERFORMANCE MANAGEMENT (50% weightage)


Module 1: Introduction to Performance Management (10%) **15 MCQs**

Module 2: Performance Measurement, Evaluation & Improvement Tools (15%) **15 MCQs**

Module 3: Economic Efficiency of the Firm — Performance Analysis (10%) **15 MCQs**

Module 4: Enterprise Risk Management (15%) **15 MCQs**


## SECTION B — BUSINESS VALUATION (50% weightage)


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Module 7: Business Valuation Methods & Approaches (10%) **15 MCQs**

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SECTION A

# Strategic Performance Management

Weightage: 50% of total marks | Modules 1–4

MODULE 1 · SECTION A (10%)

# Introduction to Performance Management

Performance, productivity & efficiency measurement; financial performance analysis; procurement-to-pay, order-to-cash, SCM/CRM cycles; customer profitability; corporate credit rating.

## 1. Formulas

### Productivity

**`Productivity = Output / Input`**

Can be measured for a single input (partial productivity, e.g., labour productivity = Output/Labour hours) or all inputs combined (total factor productivity).

### Efficiency

**`Efficiency (%) = Actual (Standard) Output / Actual Input Used × 100 [or] Standard Time for Actual Output / Actual Time Taken × 100`**

Efficiency measures how well resources are converted to output relative to a benchmark/standard.

### Days Payable Outstanding (DPO) — Procure-to-Pay

**`DPO = (Average Accounts Payable / COGS or Purchases) × 365`**

A higher DPO means the firm takes longer to pay suppliers — improves the firm's own cash position but can strain vendor relationships if excessive.

### Days Sales Outstanding (DSO) — Order-to-Cash

**`DSO = (Average Accounts Receivable / Credit Sales) × 365`**

Measures how quickly the firm collects cash from customers after a sale — a key CRM/order-to-cash efficiency metric.

### Days Inventory Outstanding (DIO)

**`DIO = (Average Inventory / COGS) × 365`**

Measures how long inventory is held before being sold — part of the supply chain performance picture.

### Cash Conversion Cycle (CCC)

**`CCC = DIO + DSO − DPO`**

The number of days cash is tied up in the operating cycle — a shorter CCC (or even negative, as with some retailers) is generally more efficient.

### Customer Profitability Analysis

**`Customer Profit = Revenue from Customer − (Cost of Goods/Services Sold + Cost-to-Serve that customer)`**

"Cost-to-serve" includes order processing, delivery, returns handling, and support specific to that customer/segment — often reveals that some "high-revenue" customers are actually unprofitable.

## 2. Practical Application

**Cash Conversion Cycle management:** Firms improve CCC by simultaneously reducing DIO (faster inventory turnover), reducing DSO (faster collections), and increasing DPO (slower, but not excessively strained, payments) — a classic working-capital efficiency lever.

**Customer profitability insights:** Applying activity-based costing principles to customers (not just products) often shows that a small % of customers generate a disproportionate share of profit, while some large-revenue customers are loss-making once cost-to-serve is factored in.

**Reverse mapping using data analytics:** Involves working backward from market/customer data (sales patterns, social sentiment, competitor moves) to refine or validate the firm's business strategy — a modern extension of traditional performance analysis.

## 3. Worked Illustration

### Illustration 1.1 — Cash Conversion Cycle

Average Inventory = ₹40,00,000, COGS = ₹2,92,00,000; Average Receivables = ₹30,00,000, Credit Sales = ₹3,65,00,000; Average Payables = ₹25,00,000, Purchases = ₹2,50,00,000. (Use 365 days.)

**Step 1 — DIO:** (40,00,000/2,92,00,000) × 365 = **50 days**

**Step 2 — DSO:** (30,00,000/3,65,00,000) × 365 = **30 days**

**Step 3 — DPO:** (25,00,000/2,50,00,000) × 365 = **36.5 days**

**Step 4 — Cash Conversion Cycle:** CCC = 50 + 30 − 36.5 = **43.5 days**

**Cash is tied up in the operating cycle for approximately 43.5 days — management could target reducing DIO (faster inventory turns) or negotiating longer supplier payment terms (higher DPO) to shorten this and free up working capital.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. Productivity is defined as:**

A. Output minus Input
B. Output divided by Input
C. Input divided by Output
D. Output multiplied by Input

**Answer: B**

Productivity = Output/Input, measuring how efficiently resources are converted into output.

**Q2. A rising Days Sales Outstanding (DSO) over time generally indicates:**

A. Faster collection from customers
B. Slower collection from customers, tying up more cash in receivables
C. Improved supplier relationships
D. No effect on working capital

**Answer: B**

A rising DSO means it's taking longer, on average, to collect cash from credit sales, increasing the cash tied up in receivables.

**Q3. Cash Conversion Cycle is computed as:**

A. DIO + DSO + DPO
B. DIO + DSO − DPO
C. DIO − DSO − DPO
D. DPO − DIO − DSO

**Answer: B**

CCC = Days Inventory Outstanding + Days Sales Outstanding − Days Payable Outstanding.

**Q4. A firm wanting to shorten its Cash Conversion Cycle should generally aim to:**

A. Increase DIO and DSO, decrease DPO
B. Decrease DIO and DSO, increase DPO
C. Increase all three metrics
D. Decrease all three metrics

**Answer: B**

Faster inventory turnover (lower DIO), faster collections (lower DSO), and slower payments (higher DPO) all shorten the cash conversion cycle.

**Q5. Customer Profitability Analysis often reveals that:**

A. All customers are equally profitable
B. Some high-revenue customers may actually be unprofitable once cost-to-serve is considered
C. Cost-to-serve is irrelevant to profitability
D. Only product cost matters, never customer-specific costs

**Answer: B**

Once specific service, delivery, and support costs are allocated per customer, some seemingly valuable (high-revenue) customers can turn out to be net loss-making.

**Q6. Days Payable Outstanding (DPO) measures:**

A. How quickly a firm collects cash from customers
B. How long, on average, a firm takes to pay its suppliers
C. How long inventory sits before being sold
D. The firm's net profit margin

**Answer: B**

DPO reflects the average time taken to settle amounts owed to suppliers/creditors.

**Q7. Order-to-Cash (O2C) process performance is most closely linked to which metric?**

A. Days Payable Outstanding
B. Days Sales Outstanding
C. Debt-Equity Ratio
D. Fixed Asset Turnover

**Answer: B**

DSO directly measures the efficiency of the order-to-cash cycle — how quickly sales convert into actual cash collected.

**Q8. Efficiency, as a performance measure, compares:**

A. Actual output to a standard or benchmark
B. Only historical financial statements
C. Two unrelated companies' balance sheets
D. Tax rates across countries

**Answer: A**

Efficiency assesses actual performance against a standard/benchmark to gauge how well resources were utilised.

**Q9. If Average Inventory = ₹20,00,000 and COGS = ₹1,46,00,000, DIO (365-day year) is approximately:**

A. 25 days
B. 50 days
C. 73 days
D. 100 days

**Answer: B**

DIO = (20,00,000/1,46,00,000) × 365 ≈ 50 days.

**Q10. Vendor Relationship Management, as part of the Procure-to-Pay cycle, primarily focuses on:**

A. Managing customer complaints
B. Building effective, mutually beneficial relationships with suppliers to ensure reliable, cost-effective procurement
C. Setting employee salaries
D. Preparing tax returns

**Answer: B**

Vendor relationship management aims to secure reliable supply, favourable terms, and quality from suppliers through structured, ongoing engagement.

**Q11. Reverse mapping of business strategy using data analytics involves:**

A. Ignoring market data entirely when forming strategy
B. Working backward from market/customer data to validate or refine business strategy
C. Only using historical accounting data with no market input
D. A purely manual, non-data-driven process

**Answer: B**

This approach uses real market-place signals (sales patterns, competitor behaviour, customer sentiment) to inform and adjust strategic direction.

**Q12. A firm's corporate credit rating is generally improved by:**

A. Increasing debt without regard to earning capacity
B. Strengthening financial ratios such as interest coverage, and maintaining consistent, transparent financial performance
C. Delaying financial disclosures
D. Ignoring cash flow management entirely

**Answer: B**

Rating agencies favour strong debt-servicing capacity (e.g., high interest coverage) and consistent, transparent financial performance.

**Q13. Supply Chain Management (SCM), in the performance management context, primarily aims to:**

A. Maximise inventory holding at every stage
B. Optimise the flow of goods, information, and finances from suppliers to end customers
C. Eliminate all supplier relationships
D. Focus solely on marketing activities

**Answer: B**

SCM coordinates and optimises the entire flow — materials, information, and money — from raw material sourcing through to final delivery.

**Q14. If a company's cost-to-serve a large customer exceeds the gross margin earned from that customer, the customer is:**

A. Highly profitable
B. Unprofitable, despite generating significant revenue
C. Irrelevant to profitability analysis
D. Automatically the most valuable customer

**Answer: B**

When cost-to-serve exceeds the margin earned, the customer relationship is a net drain on profitability despite the top-line revenue it generates.

**Q15. A negative Cash Conversion Cycle (seen in some retail/e-commerce businesses) implies that:**

A. The firm collects cash from customers before it has to pay its suppliers
B. The firm never collects cash from customers
C. The firm has no inventory at all times
D. It indicates financial distress always

**Answer: A**

A negative CCC means the firm effectively uses supplier credit to fund operations, since it collects from customers before paying suppliers — often a sign of strong bargaining power/efficient working capital management.

MODULE 2 · SECTION A (15%) · HIGHEST-WEIGHTED MODULE

# Performance Measurement, Evaluation & Improvement Tools

Balanced Scorecard, DuPont/RONA analysis, benchmarking, Six Sigma & Lean, Statistical Quality Control (SQC), and the PDCA cycle.

## 1. Formulas

**DuPont Analysis (3-Step ROE Decomposition)**

$$ROE = \text{Net Profit Margin} \times \text{Asset Turnover} \times \text{Equity Multiplier}$$
$$= (\text{Net Income/Sales}) \times (\text{Sales/Total Assets}) \times (\text{Total Assets/Equity})$$

Decomposes ROE into profitability, efficiency, and leverage drivers, showing WHERE a change in ROE is coming from.

**RONA (Return on Net Assets)**

$$RONA = \text{Net Income} / (\text{Fixed Assets} + \text{Net Working Capital})$$

Focuses specifically on the operating assets a division/manager actually controls, often used in the RONA model as an alternative to ROI/ROA.

**Six Sigma — Defects Per Million Opportunities (DPMO)**

$$DPMO = (\text{Number of Defects} / (\text{Number of Units} \times \text{Opportunities per Unit})) \times 1{,}000{,}000$$

A "Six Sigma" quality level corresponds to only 3.4 DPMO — an extremely low defect rate.

**Statistical Quality Control (SQC) — Control Limits**

$$\text{Upper Control Limit (UCL)} = \text{Mean} + 3\sigma;\ \text{Lower Control Limit (LCL)} = \text{Mean} - 3\sigma$$

A process is considered "in control" if sample observations fall within these ±3σ limits on a control chart; points outside signal a special-cause variation needing investigation.

**Benchmarking Gap**

$$\text{Performance Gap} = \text{Benchmark (Best-in-Class) Performance} - \text{Own Current Performance}$$

Used to quantify the improvement opportunity relative to an internal, competitive, or best-in-class external benchmark.

## 2. Practical Application

**Balanced Scorecard's four perspectives:** Financial (shareholder value), Customer (satisfaction/retention), Internal Business Process (operational efficiency/quality), and Learning & Growth (employee skills, innovation capacity) — a holistic alternative to relying on financial measures alone.

**DuPont for diagnosing ROE changes:** If ROE has fallen, DuPont analysis pinpoints whether the cause is margin compression, declining asset efficiency, or reduced leverage — guiding a much more targeted management response than looking at ROE alone.

**PDCA cycle in continuous improvement:** Plan (identify improvement opportunity, set target) → Do (implement on a small/trial scale) → Check (measure results against target) → Act (standardise if successful, or adjust and repeat) — the foundation of Lean/Kaizen-style ongoing improvement.

## 3. Worked Illustrations

**Illustration 2.1 — DuPont Analysis**

Net Income = ₹50,00,000; Sales = ₹5,00,00,000; Total Assets = ₹2,50,00,000; Shareholders' Equity = ₹1,25,00,000.

**Step 1 — Net Profit Margin:** 50,00,000/5,00,00,000 = **10%**

**Step 2 — Asset Turnover:** 5,00,00,000/2,50,00,000 = **2.0 times**

**Step 3 — Equity Multiplier:** 2,50,00,000/1,25,00,000 = **2.0 times**

**Step 4 — ROE:** ROE = 10% × 2.0 × 2.0 = **40%**

**ROE of 40% is driven equally by a healthy 10% profit margin, efficient asset utilisation (2x turnover), and moderate financial leverage (2x equity multiplier) — DuPont shows this is a balanced, not leverage-driven, ROE.**

### Illustration 2.2 — Six Sigma DPMO Calculation

A production line inspects 5,000 units, each with 4 critical quality characteristics (opportunities for defect). 40 total defects were found across all units.

**Step 1 — Total Opportunities:** 5,000 units × 4 opportunities/unit = 20,000 total opportunities

**Step 2 — DPMO:** DPMO = (40/20,000) × 1,000,000 = 0.002 × 1,000,000 = **2,000 DPMO**

**A DPMO of 2,000 corresponds to a "Four Sigma" quality level (approximately) — well short of the Six Sigma benchmark of 3.4 DPMO, indicating meaningful room for process improvement.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. The Balanced Scorecard evaluates organisational performance using which FOUR perspectives?**

A. Financial, Customer, Internal Business Process, Learning & Growth
B. Only Financial and Customer
C. Marketing, Sales, HR, IT
D. Only quantitative financial ratios

**Answer: A**

Kaplan & Norton's Balanced Scorecard uses these four linked perspectives for a holistic view of performance beyond financial results alone.

**Q2. Given the given information for a business — Asset turnover = 3.50, Equity multiplier = 1.00, ROE = 30% — the Net Profit Margin under DuPont analysis is:**

A. 5.87%
B. 6.75%
C. 7.65%
D. 8.57%

**Answer: D**

ROE = NPM × Asset Turnover × Equity Multiplier ⇒ 30% = NPM × 3.50 × 1.00 ⇒ NPM = 30%/3.50 = 8.57%.

**Q3. RONA is calculated as Net Income divided by:**

A. Total Assets only
B. Fixed Assets plus Net Working Capital
C. Total Liabilities
D. Sales Revenue

**Answer: B**

RONA focuses on the net operating assets actually deployed — Fixed Assets + Net Working Capital.

**Q4. A Six Sigma quality level corresponds to a defect rate of approximately:**

A. 3.4 defects per million opportunities
B. 34 defects per hundred opportunities
C. 340 defects per thousand opportunities
D. 3,400 defects per million opportunities

**Answer: A**

Six Sigma is defined as a process achieving only 3.4 defects per million opportunities (DPMO) — an extremely high quality standard.

**Q5. In a Statistical Quality Control chart, the Upper and Lower Control Limits are typically set at:**

A. Mean ± 1 Standard Deviation
B. Mean ± 2 Standard Deviations
C. Mean ± 3 Standard Deviations
D. Mean ± 6 Standard Deviations

**Answer: C**

Standard SQC control charts use ±3σ limits around the process mean to distinguish normal (common-cause) variation from abnormal (special-cause) variation.

**Q6. The PDCA cycle stands for:**

A. Plan-Do-Check-Act
B. Produce-Deliver-Collect-Analyse
C. Plan-Design-Control-Adjust
D. Perform-Document-Certify-Approve

**Answer: A**

PDCA (Plan-Do-Check-Act) is the classic continuous improvement cycle used in quality management and Lean/Kaizen practices.

**Q7. Benchmarking Performance Gap is calculated as:**

A. Own Performance − Benchmark Performance
B. Benchmark Performance − Own Current Performance
C. Benchmark Performance × Own Performance
D. Own Performance / Benchmark Performance only, with no subtraction

**Answer: B**

The performance gap quantifies how far current performance lags the best-in-class or target benchmark.

**Q8. Lean Management primarily focuses on:**

A. Maximising inventory buffers at every stage
B. Eliminating waste (non-value-added activities) across processes to improve efficiency
C. Increasing headcount regardless of workload
D. Ignoring customer requirements

**Answer: B**

Lean management systematically identifies and eliminates various forms of waste (overproduction, waiting, defects, etc.) to streamline processes.

**Q9. If a firm's Equity Multiplier increases while Net Profit Margin and Asset Turnover remain constant, ROE will:**

A. Decrease
B. Increase, reflecting higher financial leverage
C. Remain exactly the same
D. Become negative

**Answer: B**

Since ROE = NPM × Asset Turnover × Equity Multiplier, a rise in the equity multiplier (more leverage) directly increases ROE, holding other factors constant.

**Q10. Which of the following is NOT one of the four Balanced Scorecard perspectives?**

A. Financial
B. Customer
C. Shareholder Dividend Policy
D. Learning & Growth

**Answer: C**

Dividend policy is not one of the four standard Balanced Scorecard perspectives (Financial, Customer, Internal Business Process, Learning & Growth).

**Q11. Benchtrending, as distinguished from simple benchmarking, involves:**

A. A one-time comparison only
B. Tracking benchmark comparisons over time to observe trends in relative performance
C. Ignoring competitor data entirely
D. Only comparing internal departments, never external firms

**Answer: B**

Benchtrending extends benchmarking by tracking how the performance gap evolves over multiple periods, revealing whether the firm is closing or widening the gap.

**Q12. In DuPont analysis, "Asset Turnover" is calculated as:**

A. Net Income / Sales
B. Sales / Total Assets
C. Total Assets / Equity
D. Net Income / Total Assets

**Answer: B**

Asset Turnover = Sales/Total Assets, measuring how efficiently assets generate revenue.

**Q13. A process operating with data points regularly falling outside the ±3σ control limits is considered:**

A. In statistical control, no action needed
B. Out of statistical control, requiring investigation of the special cause
C. Operating at Six Sigma quality
D. Perfectly efficient

**Answer: B**

Points outside the 3-sigma control limits signal a special-cause variation that should be investigated and corrected.

**Q14. The "Check" stage of the PDCA cycle primarily involves:**

A. Implementing the change on a full, permanent scale immediately
B. Measuring and evaluating the results of the trial/pilot implementation against the target
C. Ignoring results and moving to the next unrelated project
D. Only documenting the original plan, without measurement

**Answer: B**

The Check phase compares actual results from the "Do" phase against the planned target to assess whether the change achieved its intended effect.

**Q15. According to Altman's Z-Score model (1968), which of the following is NOT one of the five component ratios (X1-X5)?**

A. Working Capital/Total Assets
B. Retained Earnings/Total Assets
C. Sales/Total Assets
D. Current Ratio

**Answer: D**

The Current Ratio is not one of Altman's five Z-Score components — the model uses Working Capital/TA, Retained Earnings/TA, EBIT/TA, Market Value of Equity/Total Liabilities, and Sales/TA (covered in detail in Module 4).

MODULE 3 · SECTION A (10%)

# Economic Efficiency of the Firm — Performance Analysis

Profit optimisation under different market structures, price elasticity of demand, economies of scale, and X-efficiency concepts applied to firm-level performance analysis.

## 1. Formulas

### Profit Maximisation Rule

**`Profit is maximised at the output where: Marginal Revenue (MR) = Marginal Cost (MC)`**

Applies across all market structures (perfect competition, monopoly, monopolistic competition, oligopoly) — what differs between structures is how MR relates to price.

### Price Elasticity of Demand (PED)

**`PED = (% Change in Quantity Demanded) / (% Change in Price)`**

|PED|>1 = elastic demand (revenue rises when price falls); |PED|<1 = inelastic demand (revenue falls when price falls); |PED|=1 = unit elastic.

### Perfect Competition — Firm's Demand & MR

**`Price = MR = AR (firm is a "price taker" facing a perfectly horizontal/elastic demand curve)`**

Long-run equilibrium: P = MR = MC = Minimum AC (zero economic/supernormal profit due to free entry/exit).

### Monopoly — Price vs Marginal Revenue

**`Price > MR = MC at the profit-maximising output (since a monopolist faces the entire downward-sloping market demand curve)`**

A monopolist can earn supernormal profit even in the long run due to barriers to entry — output is lower and price higher than under perfect competition.

### Economies of Scale — Long-Run Average Cost

**`Economies of Scale exist when Long-Run Average Cost (LRAC) falls as output increases; Diseconomies of Scale when LRAC rises`**

Minimum Efficient Scale (MES) = the smallest output level at which LRAC reaches its minimum point.

### X-Efficiency

**`X-Inefficiency = Actual Cost of Production − Theoretically Minimum (Technically Efficient) Cost, for a given output`**

Captures inefficiency arising from organisational slack/poor management (not from wrong scale or wrong input mix) — often more significant than allocative inefficiency in monopolistic/protected firms.

## 2. Practical Application

**Elasticity & pricing decisions:** A firm facing elastic demand should generally avoid price increases (total revenue would fall); a firm facing inelastic demand can raise price to increase total revenue, at least until close substitutes emerge.

**Market structure and long-run performance:** A firm's ability to sustain supernormal profits depends heavily on barriers to entry — perfectly competitive/monopolistically competitive firms see profits competed away over time, while monopolies/oligopolies with strong barriers can sustain higher long-run returns.

**X-efficiency vs allocative efficiency:** A firm can be "allocatively efficient" (producing where P=MC) yet still be X-inefficient (wasting resources through poor management) — performance improvement programs (Lean, Six Sigma) primarily target X-inefficiency.

## 3. Worked Illustration

### Illustration 3.1 — Price Elasticity & Revenue Impact

A firm reduces its price from ₹100 to ₹90 (a 10% decrease), and quantity demanded rises from 1,000 to 1,300 units (a 30% increase).

**Step 1 — Price Elasticity of Demand:** PED = 30% / (−10%) = **−3.0** (ignore sign; |PED| = 3.0)

**Step 2 — Interpret:** Since |PED| = 3.0 > 1, demand is highly ELASTIC.

**Step 3 — Revenue impact:** Old Revenue = 100 × 1,000 = ₹1,00,000. New Revenue = 90 × 1,300 = ₹1,17,000

**Since demand is elastic, the 10% price cut led to a proportionally larger 30% rise in quantity sold, increasing total revenue from ₹1,00,000 to ₹1,17,000 — confirming that a price reduction is a good strategy when facing elastic demand.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. Under any market structure, profit is maximised at the output level where:**

A. Total Revenue is maximum, regardless of cost
B. Marginal Revenue equals Marginal Cost
C. Average Cost is minimum, regardless of revenue
D. Price equals Average Fixed Cost

**Answer: B**

MR=MC is the universal profit-maximisation rule applicable across all market structures.

**Q2. In perfect competition, an individual firm's demand curve is:**

A. Downward sloping and steep
B. Perfectly horizontal (perfectly elastic) at the market price
C. Vertical (perfectly inelastic)
D. Upward sloping

**Answer: B**

A perfectly competitive firm is a "price taker" facing a horizontal demand curve at the prevailing market price — it can sell any quantity at that price.

**Q3. A monopolist's price is:**

A. Equal to marginal revenue
B. Greater than marginal revenue at the profit-maximising output
C. Always equal to marginal cost
D. Irrelevant to output decisions

**Answer: B**

Since a monopolist faces the downward-sloping market demand curve, price exceeds marginal revenue at every output level (except the first unit).

**Q4. If |PED| < 1, demand is described as:**

A. Perfectly elastic
B. Unit elastic
C. Inelastic
D. Elastic

**Answer: C**

An elasticity coefficient less than 1 in absolute value indicates inelastic demand — quantity responds proportionally less than price.

**Q5. If demand is inelastic, a firm seeking to increase total revenue should generally:**

A. Decrease price
B. Increase price
C. Keep price and output unchanged always
D. Give the product away for free

**Answer: B**

With inelastic demand, a price increase leads to a proportionally smaller decline in quantity, raising total revenue overall.

**Q6. Economies of Scale exist when:**

A. Long-Run Average Cost rises as output increases
B. Long-Run Average Cost falls as output increases
C. Long-Run Average Cost remains constant regardless of output
D. Marginal Cost equals zero at all output levels

**Answer: B**

Economies of scale are present when producing more units reduces the average cost per unit in the long run.

**Q7. X-Inefficiency in a firm primarily arises from:**

A. Producing at the wrong scale of operation
B. Organisational slack and poor management, causing actual costs to exceed the minimum achievable cost
C. Perfect competition among firms
D. Correct input mix decisions

**Answer: B**

X-inefficiency reflects a gap between actual and theoretically achievable minimum cost due to managerial/organisational shortcomings, distinct from scale or allocation issues.

**Q8. In the long run, firms in a perfectly competitive market earn:**

A. Persistently high supernormal profits
B. Zero economic (supernormal) profit, due to free entry and exit
C. Guaranteed losses
D. Profits set by government regulation only

**Answer: B**

Free entry/exit in perfect competition drives long-run economic profit to zero, as new entrants compete away any supernormal profits.

**Q9. Minimum Efficient Scale (MES) refers to:**

A. The smallest possible firm size in an industry
B. The output level at which Long-Run Average Cost first reaches its minimum
C. The maximum output a firm can ever produce
D. A fixed government-mandated production quota

**Answer: B**

MES is the smallest scale of output at which a firm exhausts available economies of scale, reaching the lowest point on its LRAC curve.

**Q10. A monopoly is more likely than a perfectly competitive industry to exhibit:**

A. Lower price and higher output
B. Higher price and lower output, along with the potential for sustained supernormal profit
C. Identical price and output as perfect competition
D. Zero long-run profit, just like perfect competition

**Answer: B**

Monopolies restrict output and charge higher prices than would prevail under perfect competition, often sustaining profits due to entry barriers.

**Q11. Allocative efficiency is achieved when a firm produces at the output where:**

A. Price equals Marginal Cost
B. Total Revenue is at its absolute maximum regardless of cost

C. Fixed Costs are zero

D. Average Cost equals zero

**Answer: A**

Allocative efficiency (from society's viewpoint) occurs where price equals marginal cost, reflecting resources being allocated to their most valued use.

**Q12. A firm can be allocatively efficient (P=MC) yet still be:**

A. Perfectly efficient in every respect, with no possible improvement

B. X-inefficient, due to internal organisational/managerial waste

C. Making zero sales

D. Operating with negative marginal cost

**Answer: B**

Allocative efficiency (correct pricing relative to marginal cost) is separate from X-efficiency (minimising actual cost through good management) — a firm can satisfy one without the other.

**Q13. If a 5% price increase leads to only a 2% decrease in quantity demanded, the demand is:**

A. Elastic

B. Inelastic

C. Unit elastic

D. Perfectly elastic

**Answer: B**

|PED| = 2%/5% = 0.4, which is less than 1, indicating inelastic demand.

**Q14. Diseconomies of scale occur when:**

A. Average cost falls continuously with output

B. Average cost rises as output increases beyond a certain point, often due to coordination/management difficulties in very large organisations

C. Marginal cost is always zero

D. Output has no effect on cost at any level

**Answer: B**

Beyond a certain scale, growing organisational complexity and coordination challenges can raise average costs — diseconomies of scale.

**Q15. Monopolistic competition is characterised by:**

A. A single seller with no substitutes

B. Many sellers offering differentiated products, with some pricing power but relatively free entry/exit

C. Only two large firms dominating the market

D. Perfectly homogeneous products with zero pricing power

**Answer: B**

Monopolistic competition features many firms with differentiated (not identical) products, giving each some pricing power, but with relatively easy entry limiting long-run supernormal profit.

MODULE 4 · SECTION A (15%)

# Enterprise Risk Management

Identifying and measuring enterprise-wide risk, including corporate failure prediction using Altman's Z-Score model and an introduction to Value at Risk (VaR).

## 1. Formulas

### Altman's Z-Score Model (1968) — Manufacturing/Public Firms

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5$$

X1 = Working Capital/Total Assets; X2 = Retained Earnings/Total Assets; X3 = EBIT/Total Assets; X4 = Market Value of Equity/Total Liabilities (Book Value); X5 = Sales/Total Assets.

### Z-Score Interpretation Zones

$$Z > 2.99: \text{"Safe Zone" (low bankruptcy risk)}$$
$$1.81 \leq Z \leq 2.99: \text{"Grey Zone" (caution)}$$
$$Z < 1.81: \text{"Distress Zone" (high bankruptcy risk)}$$

Originally developed to predict corporate bankruptcy up to 2 years in advance with reasonable accuracy.

### Value at Risk (VaR) — Concept

$$\text{VaR} = \text{Estimate of the maximum potential loss on a portfolio/position, over a specified time horizon, at a given confidence level}$$

E.g., "1-day 95% VaR of ₹10 lakh" means there is only a 5% chance of losing more than ₹10 lakh in one day, under normal market conditions.

### Risk-Adjusted Return on Capital (RAROC)

$$\text{RAROC} = \text{Risk-Adjusted Return (Income − Expected Loss)} / \text{Economic Capital (Capital at Risk)}$$

Used in enterprise risk management to compare returns across business units on a risk-equivalent basis, not just raw return.

## 2. Practical Application

**Z-Score as an early warning:** Lenders, auditors, and credit rating agencies use the Z-Score as a quick screening tool to flag firms in financial distress, well before an actual default or bankruptcy filing occurs.

**Limitations of Z-Score:** Originally calibrated on US manufacturing firms — separate versions (Z', Z") exist for private firms and non-manufacturing/service/emerging-market firms; applying the original model outside its intended context can be misleading.

**Enterprise Risk Management (ERM) framework:** A holistic approach covering strategic, operational, financial, and compliance risks across the whole enterprise (not siloed by department) — typically involves risk identification, assessment, response, and continuous monitoring.

## 3. Worked Illustration

### Illustration 4.1 — Altman's Z-Score Calculation

Total Assets = ₹10,00,000; Retained Earnings = ₹4,00,000; Sales = ₹12,00,000; Working Capital = ₹10,00,000 (this appears unusually high relative to Total Assets in the original exam question — used here exactly as given); EBIT = ₹1,50,000; Market Value of Equity = ₹8,00,000; Total Liabilities = ₹5,00,000.

**Step 1 — Compute each ratio:**

X1 = WC/TA = 10,00,000/10,00,000 = 1.0

X2 = RE/TA = 4,00,000/10,00,000 = 0.4
X3 = EBIT/TA = 1,50,000/10,00,000 = 0.15
X4 = MVE/TL = 8,00,000/5,00,000 = 1.6
X5 = Sales/TA = 12,00,000/10,00,000 = 1.2

**Step 2 — Apply the Z-Score formula:** Z = 1.2(1.0) + 1.4(0.4) + 3.3(0.15) + 0.6(1.6) + 1.0(1.2)
= 1.2 + 0.56 + 0.495 + 0.96 + 1.2 = **4.415**

**Step 3 — Interpret the zone:** Since Z (4.415) > 2.99, the firm falls in the **"Safe Zone"**

**With a Z-Score of 4.415 (well above the 2.99 threshold), Altman's model classifies this firm as financially healthy with a low probability of bankruptcy in the near term.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. According to Altman's Z-Score model, X5 is defined as:**

A. Working Capital/Total Assets
B. Retained Earnings/Total Assets
C. Sales/Total Assets
D. Market Value of Equity/Total Liabilities

**Answer: C**

X5 = Sales/Total Assets, the asset turnover component of the Z-Score model.

**Q2. If Total Assets = ₹10,00,000, Retained Earnings = ₹4,00,000, Sales = ₹12,00,000, Working Capital = ₹10,00,000, the value of X5 is:**

A. 0.4
B. 0.83
C. 1.0
D. 1.2

**Answer: D**

X5 = Sales/Total Assets = 12,00,000/10,00,000 = 1.2.

**Q3. A Z-Score above 2.99 places a firm in the:**

A. Distress Zone
B. Grey Zone
C. Safe Zone
D. Bankruptcy Zone

**Answer: C**

Z > 2.99 indicates the "Safe Zone," suggesting a low probability of bankruptcy according to Altman's original model.

**Q4. A Z-Score below 1.81 indicates:**

A. The firm is in excellent financial health
B. The firm is in the "Distress Zone," with high bankruptcy risk
C. The firm has zero total liabilities
D. No meaningful interpretation is possible

**Answer: B**

A Z-Score below 1.81 falls in Altman's "Distress Zone," signalling elevated bankruptcy risk.

**Q5. Value at Risk (VaR) is best described as:**

A. The guaranteed loss a portfolio will experience
B. An estimate of the maximum potential loss over a specified period at a given confidence level
C. The total value of a portfolio
D. A measure of a firm's profit margin

**Answer: B**

VaR quantifies the worst expected loss (at a stated confidence level) over a defined time horizon under normal market conditions.

**Q6. X4 in Altman's Z-Score model uses:**

A. Book Value of Equity / Total Assets
B. Market Value of Equity / Book Value of Total Liabilities
C. Net Income / Sales
D. Working Capital / Sales

**Answer: B**

X4 = Market Value of Equity/Total Liabilities (book value) — reflects the market's assessment of the firm's solvency cushion.

**Q7. Altman's original 1968 Z-Score model was calibrated primarily on:**

A. Private, non-manufacturing service firms globally
B. Publicly traded US manufacturing firms
C. Government entities only
D. Small unregistered sole proprietorships

**Answer: B**

The original model was developed using data from publicly traded US manufacturing companies — separate variants exist for other firm types.

**Q8. Enterprise Risk Management (ERM) differs from traditional, siloed risk management because ERM:**

A. Focuses only on financial risk in the finance department
B. Takes a holistic, enterprise-wide view across strategic, operational, financial, and compliance risks
C. Ignores operational risks entirely
D. Is applied only to publicly listed companies

**Answer: B**

ERM integrates risk management across the whole organisation rather than treating each risk type in isolation by department.

**Q9. RAROC (Risk-Adjusted Return on Capital) is used primarily to:**

A. Compare business units' returns without considering the risk taken
B. Compare returns across business units on a risk-equivalent basis
C. Calculate depreciation
D. Determine dividend payout ratios

**Answer: B**

RAROC adjusts raw returns for the risk (economic capital) taken to earn them, enabling fairer comparison across units with different risk profiles.

**Q10. A firm's Z-Score falling in the "Grey Zone" (1.81 to 2.99) suggests:**

A. Definite bankruptcy within one year
B. Ambiguous financial health, warranting closer monitoring rather than a definitive conclusion
C. Complete financial safety with no risk
D. The firm has zero debt

**Answer: B**

The Grey Zone reflects genuine uncertainty in the model's prediction — such firms warrant closer scrutiny rather than a clear-cut safe/distress classification.

**Q11. If a bank quotes a "1-day 99% VaR of ₹50 lakh," this means:**

A. The bank will definitely lose ₹50 lakh tomorrow
B. There is only a 1% chance of losing more than ₹50 lakh in one day under normal conditions
C. The bank's total capital is ₹50 lakh
D. The bank has no risk at all

**Answer: B**

A 99% confidence VaR of ₹50 lakh means there is only a 1% probability that losses will exceed ₹50 lakh over the one-day horizon.

**Q12. X2 in Altman's Z-Score model (Retained Earnings/Total Assets) primarily captures:**

A. The firm's short-term liquidity only

B. The firm's cumulative profitability and age/maturity (older, consistently profitable firms tend to have higher retained earnings relative to assets)
C. Current market sentiment only
D. Tax liability

**Answer: B**

Retained Earnings/Total Assets reflects accumulated historical profitability, often correlating with firm age and financial stability.

**Q13. A key limitation of using the original Altman Z-Score model for a private (non-listed) company is:**

A. Private companies have no total assets
B. X4 requires Market Value of Equity, which is not directly observable for unlisted firms — a modified version (Z') is used instead
C. The model cannot be applied to any company type
D. Private companies have no retained earnings by definition

**Answer: B**

Since private firms lack a quoted market value of equity, a modified Z'-Score model substitutes book value of equity for market value in the X4 ratio.

**Q14. Which of the following is a component of a robust Enterprise Risk Management framework?**

A. Risk identification, assessment, response, and ongoing monitoring
B. Ignoring emerging risks until they cause a crisis
C. Managing only insurable risks
D. A one-time risk assessment with no follow-up

**Answer: A**

A sound ERM framework is a continuous, cyclical process — not a one-time exercise — covering identification through to ongoing monitoring and response.

**Q15. X3 in the Z-Score model (EBIT/Total Assets) is essentially a measure of:**

A. The firm's leverage only
B. Operating profitability/earning power of the firm's total assets, independent of tax and financing effects
C. The firm's dividend policy
D. Sales growth rate

**Answer: B**

EBIT/Total Assets isolates operating earning power before the effects of interest (financing) and taxes — a pure measure of asset productivity.

SECTION B

# Business Valuation

Weightage: 50% of total marks | Modules 5–9

MODULE 5 · SECTION B (5%)

# Fundamentals of Business Valuation

Core building blocks of valuation — Enterprise Value vs Equity Value, cost of capital (CAPM, WACC), and the time-value-of-money foundations underlying every valuation approach.

## 1. Formulas

### Enterprise Value (EV)

$$EV = \text{Market Capitalisation} + \text{Total Debt} - \text{Cash \& Cash Equivalents}$$

EV represents the total value of the firm's core operations, independent of its capital structure — the value an acquirer would effectively pay to take over the whole business.

### Equity Value (Market Capitalisation)

$$\text{Equity Value} = \text{Enterprise Value} - \text{Net Debt (Total Debt} - \text{Cash)}$$

Equity Value = Share Price × Number of Shares Outstanding, for a listed company.

### Cost of Equity — CAPM

$$K_e = R_f + \beta(R_m - R_f)$$

The most widely used method to estimate the discount rate for equity cash flows in valuation (see Module 6 formulas in the SFM book for full derivation).

### Weighted Average Cost of Capital (WACC)

$$WACC = (E/V) \times K_e + (D/V) \times K_d(1-t)$$

E=Market Value of Equity, D=Market Value of Debt, V=E+D, Kd=pre-tax cost of debt, t=tax rate. WACC is the standard discount rate for firm-level (Enterprise Value) DCF valuation.

### Gordon Growth (Perpetuity) Valuation

$$\text{Value} = \text{Cash Flow(next period)} / (\text{Discount Rate} - \text{Growth Rate})$$

The foundational "terminal value" formula used across almost every income-approach valuation method (see Module 7).

## 2. Practical Application

**EV vs Equity Value — when to use which:** Use Enterprise Value when comparing companies with different capital structures (it strips out financing choices); use Equity Value when the question is specifically about what shareholders own/receive.

**Choosing the discount rate:** Discount Free Cash Flow to Firm (FCFF) at WACC to get Enterprise Value; discount Free Cash Flow to Equity (FCFE) at Cost of Equity (Ke) to get Equity Value directly — mixing these up is one of the most common valuation exam errors.

**Why valuation is inherently an estimate:** Every valuation depends on assumptions (growth rate, discount rate, terminal value) — exam answers should show sensitivity/scenario thinking, not present a single number as definitively "correct."

## 3. Worked Illustration

### Illustration 5.1 — Enterprise Value & WACC

A company has: Market Cap = ₹80,00,00,000; Total Debt = ₹30,00,00,000; Cash = ₹5,00,00,000. Cost of Equity = 15%, Pre-tax Cost of Debt = 10%, Tax Rate = 25%. Market values: Equity = ₹80 crore, Debt = ₹30 crore.

**Step 1 — Enterprise Value:** EV = 80,00,00,000 + 30,00,00,000 − 5,00,00,000 = **₹1,05,00,00,000 (₹105 crore)**

**Step 2 — Capital structure weights:** V = E+D = 80+30 = 110 crore. E/V = 80/110 = 0.727; D/V = 30/110 = 0.273

**Step 3 — After-tax cost of debt:** Kd(1−t) = 10% × (1−0.25) = 7.5%

**Step 4 — WACC:** WACC = (0.727 × 15%) + (0.273 × 7.5%) = 10.90% + 2.05% = **12.95%**

**Enterprise Value = ₹105 crore; WACC = 12.95% — this WACC would be used to discount the firm's Free Cash Flow to Firm (FCFF) projections in an income-approach (DCF) valuation.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. Enterprise Value is calculated as:**

A. Market Capitalisation only
B. Market Capitalisation + Total Debt − Cash & Cash Equivalents
C. Total Assets − Total Liabilities
D. Net Income × P/E Ratio

**Answer: B**

EV captures the value of the total business (both debt and equity claims), net of cash which could be used to pay down debt.

**Q2. Free Cash Flow to Firm (FCFF) should be discounted at:**

A. Cost of Equity
B. WACC
C. Risk-free rate only
D. Pre-tax cost of debt only

**Answer: B**

FCFF represents cash flow available to ALL capital providers (debt+equity), so it must be discounted at the blended WACC to arrive at Enterprise Value.

**Q3. Free Cash Flow to Equity (FCFE) should be discounted at:**

A. WACC
B. Cost of Equity (Ke)
C. Pre-tax Cost of Debt
D. The company's average tax rate

**Answer: B**

FCFE represents cash flow left specifically for equity holders after debt obligations, so it's discounted at the cost of equity to directly yield Equity Value.

**Q4. In the WACC formula, Kd is adjusted by (1−t) because:**

A. Interest on debt is tax-deductible, creating a tax shield that reduces the effective cost of debt
B. Dividends are tax-deductible
C. Debt has no cost at all
D. Taxes increase the cost of debt

**Answer: A**

Since interest expense reduces taxable income, the effective (after-tax) cost of debt is lower than the stated (pre-tax) rate by the factor (1−t).

**Q5. Equity Value relates to Enterprise Value as:**

A. Equity Value = EV + Net Debt
B. Equity Value = EV − Net Debt
C. Equity Value = EV × Net Debt
D. Equity Value has no relationship to EV

**Answer: B**

Subtracting net debt (Total Debt − Cash) from Enterprise Value isolates the value attributable specifically to equity holders.

**Q6. If Market Cap = ₹50 crore, Total Debt = ₹20 crore, Cash = ₹8 crore, the Enterprise Value is:**

A. ₹38 crore
B. ₹62 crore
C. ₹70 crore
D. ₹78 crore

**Answer: B**

EV = 50 + 20 − 8 = ₹62 crore.

**Q7. Under CAPM, a higher Beta for a stock implies:**

A. Lower required return (Ke)
B. Higher required return (Ke), reflecting higher systematic risk
C. No impact on required return
D. The stock is risk-free

**Answer: B**

Since Ke = Rf + β(Rm−Rf), a higher beta directly increases the required return demanded by equity investors.

**Q8. A common valuation error to avoid is:**

A. Discounting FCFF at WACC and FCFE at Cost of Equity, correctly matched
B. Discounting FCFF at Cost of Equity (mismatching cash flow and discount rate)
C. Using CAPM to estimate cost of equity
D. Considering both debt and equity in WACC

**Answer: B**

Mismatching the cash flow measure with the wrong discount rate (e.g., FCFF at Ke instead of WACC) is a classic, mark-losing valuation error.

**Q9. Market Value weights (not book value weights) are preferred in the WACC formula because they:**

A. Are always easier to obtain than book values
B. Reflect the current opportunity cost investors face, better representing the true cost of capital
C. Are required by tax law
D. Never change over time

**Answer: B**

Market values reflect the actual current cost investors demand, making WACC more economically meaningful than using historical book values.

**Q10. If a firm has no debt at all (100% equity-financed), its WACC equals:**

A. Zero
B. Its Cost of Equity (Ke)
C. Its Cost of Debt (Kd)
D. The risk-free rate only

**Answer: B**

With D/V=0 and E/V=1, WACC simplifies to just Ke — the cost of equity is the sole component.

**Q11. Valuation results are best understood as:**

A. Precise, objectively "correct" figures with no room for judgement
B. Estimates that depend heavily on the underlying assumptions used (growth, discount rate, etc.)
C. Always identical regardless of the method used
D. Irrelevant to business decision-making

**Answer: B**

Since valuation relies on forward-looking assumptions, results are inherently estimates, sensitive to the inputs chosen — not a single "correct" number.

**Q12. The Gordon Growth (perpetuity) formula for valuing a cash flow stream requires that:**

A. The growth rate exceeds the discount rate
B. The discount rate exceeds the growth rate
C. Growth rate and discount rate are always equal
D. Cash flows are always negative

**Answer: B**

The perpetuity formula Value=CF/(r−g) requires r > g; otherwise the formula gives a nonsensical (negative or infinite) result.

**Q13. Net Debt is calculated as:**

A. Total Debt + Cash
B. Total Debt − Cash & Cash Equivalents
C. Total Debt × Interest Rate
D. Total Assets − Total Debt

**Answer: B**

Net Debt = Total Debt minus Cash & Cash Equivalents, representing the debt burden net of readily available cash resources.

**Q14. For a company being compared to peers with very different debt levels, analysts typically prefer to compare:**

A. Equity Value only
B. Enterprise Value (and EV-based multiples like EV/EBITDA), since it neutralises capital structure differences
C. Only the book value of assets
D. Only the dividend per share

**Answer: B**

EV-based comparisons remove the distortion caused by differing debt/equity mixes across peer companies, enabling a fairer comparison.

**Q15. In the CAPM formula, "Rm − Rf" represents:**

A. The risk-free rate alone
B. The equity/market risk premium
C. The company's own historical return
D. The tax rate

**Answer: B**

Rm−Rf is the market (equity) risk premium — the extra return investors demand for bearing overall market risk over the risk-free rate.

MODULE 6 · SECTION B (5%)

# Laws & Compliance in Business Valuation

Largely conceptual — the legal and regulatory framework governing valuation in India: Companies Act provisions, SEBI regulations, the Insolvency and Bankruptcy Code (IBC), and the Registered Valuers framework.

## 1. Key Conceptual Areas & Applicable Framework

| Law/Regulation | Relevance to Valuation |
|---|---|
| Companies Act, 2013 (esp. Section 247) | Mandates valuation by a "Registered Valuer" for specified transactions (e.g., issue of shares for non-cash consideration, mergers, buy-backs). |
| Companies (Registered Valuers and Valuation) Rules, 2017 | Governs the registration, eligibility, and conduct of Registered Valuers (individuals/partnership firms/ companies) under IBBI oversight. |
| Insolvency and Bankruptcy Code (IBC), 2016 | Requires valuation of assets during Corporate Insolvency Resolution Process (CIRP) and liquidation — typically two Registered Valuers are appointed for cross-verification. |
| SEBI (ICDR) Regulations | Governs valuation/pricing requirements for preferential allotments, IPOs, and other capital market issuances by listed companies. |
| SEBI (SAST) Regulations, 2011 | Prescribes valuation methodology for determining the offer price in open offers triggered by substantial acquisition of shares/takeovers. |
| Income Tax Act, 1961 (Rule 11UA) | Prescribes specific valuation methods (e.g., NAV method, DCF method) for tax purposes such as angel tax (Section 56(2)(viib)) on share premium. |
| FEMA Regulations | Requires fair valuation (e.g., DCF method historically, now any internationally accepted method) for cross-border share transfers/issuances involving non-residents. |

## 2. Practical Application

**Who can value what:** Under the Companies Act framework, only a Registered Valuer (registered with IBBI) can conduct valuations for specified statutory purposes — using an unregistered/unqualified valuer for these transactions can invalidate the process.

**Why regulatory context matters in exams:** The SAME company might need different valuation methodologies/approaches depending on the PURPOSE (e.g., IBC liquidation vs SEBI open offer vs tax computation) — exam questions often test whether the candidate applies the RIGHT regulatory valuation approach for the stated context, not just any method.

**Two-valuer requirement under IBC:** During CIRP, the Resolution Professional typically appoints two Registered Valuers to independently value the corporate debtor's assets — the average (or a specified rule) of the two valuations is often used, reducing single-valuer bias risk.

## 3. Illustrative Scenario

### Illustration 6.1 — Identifying the Applicable Regulatory Framework

A listed company plans to make a preferential allotment of shares to a group of investors. Separately, an unlisted startup is issuing shares to a foreign venture capital investor. Identify the primary regulatory frameworks governing valuation in each case.

**Case 1 — Listed company preferential allotment:** Governed primarily by SEBI (ICDR) Regulations, which prescribe a specific pricing formula/floor price based on historical trading prices for the preferential issue.

**Case 2 — Unlisted startup issuing shares to a foreign investor:** Governed primarily by FEMA regulations (pricing guidelines for cross-border share issuance to non-residents), typically requiring a fair valuation certificate from a Registered Valuer/Chartered Accountant/ Merchant Banker using an internationally accepted valuation methodology.

**Even though both cases involve "issuing shares and determining a value," the applicable law, prescribed methodology, and who can certify the valuation differ significantly based on whether the company is listed, and whether the investor is resident or non-resident.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. Under the Companies Act, 2013, valuations for specified transactions (e.g., non-cash share issues, mergers) must be conducted by:**

A. Any chartered accountant, regardless of registration
B. A Registered Valuer registered under the applicable Rules
C. The company's own internal finance team only
D. Any individual chosen at the promoter's discretion

**Answer: B**

Section 247 of the Companies Act mandates valuation by a Registered Valuer for the specified categories of transactions.

**Q2. During the Corporate Insolvency Resolution Process (CIRP) under the IBC, how many Registered Valuers are typically appointed?**

A. Zero — valuation is not required
B. One
C. Two, for independent cross-verification
D. Five

**Answer: C**

The Resolution Professional typically appoints two independent Registered Valuers during CIRP to reduce single-valuer bias in asset valuation.

**Q3. Rule 11UA under the Income Tax Act is primarily relevant to:**

A. GST return filing
B. Prescribed valuation methods (e.g., NAV, DCF) for tax purposes such as angel tax on share premium
C. Customs duty calculation
D. TDS on salary

**Answer: B**

Rule 11UA prescribes specific valuation approaches used for income-tax provisions like Section 56(2)(viib), commonly referred to as "angel tax."

**Q4. SEBI (SAST) Regulations, 2011 are primarily concerned with:**

A. GST compliance
B. Determining the offer price in open offers triggered by substantial acquisition of shares/takeovers
C. Employee provident fund contributions
D. Customs valuation of imported goods

**Answer: B**

SAST (Substantial Acquisition of Shares and Takeovers) Regulations prescribe the pricing/valuation methodology for mandatory open offers in takeover situations.

**Q5. FEMA regulations on valuation are most relevant when:**

A. Two resident Indian individuals transfer shares between themselves
B. Shares are issued or transferred involving a non-resident party
C. A company purchases office furniture
D. A firm files its annual GST return

**Answer: B**

FEMA pricing guidelines specifically govern valuation for cross-border transactions involving non-resident investors.

**Q6. A "Registered Valuer" under Indian law must be registered with:**

A. The Reserve Bank of India (RBI) only
B. The Insolvency and Bankruptcy Board of India (IBBI)

C. The Ministry of External Affairs
D. Local municipal authorities

**Answer: B**

The Companies (Registered Valuers and Valuation) Rules, 2017 place Registered Valuers under the regulatory oversight of the IBBI.

**Q7. A key exam-relevant point about valuation regulation is that:**

A. One single valuation method applies to every transaction, regardless of purpose
B. The applicable law and prescribed method can differ significantly depending on the PURPOSE of the valuation (e.g., IBC, SEBI, tax, FEMA)
C. Valuation laws are identical across all countries
D. Only listed companies ever require any valuation

**Answer: B**

The same company might need entirely different valuation methodologies depending on WHY the valuation is being done — exams test this contextual understanding.

**Q8. SEBI (ICDR) Regulations are most relevant to:**

A. Private unlisted partnership firms
B. Pricing/valuation requirements for preferential allotments, IPOs, and other capital market issuances by listed entities
C. Personal income tax computation
D. Customs duty on imported machinery

**Answer: B**

ICDR (Issue of Capital and Disclosure Requirements) Regulations govern how listed companies price and value shares issued through various capital market routes.

**Q9. Using an unregistered or unqualified valuer for a statutorily mandated valuation (e.g., under Companies Act Section 247) can result in:**

A. No consequence whatsoever
B. Potential invalidation of the valuation/transaction and regulatory non-compliance
C. Automatic approval by the regulator
D. A tax refund

**Answer: B**

Statutory valuations require a properly Registered Valuer; using an unqualified person risks the valuation (and dependent transaction) being challenged or invalidated.

**Q10. The Companies (Registered Valuers and Valuation) Rules, 2017 govern:**

A. GST registration procedures
B. Eligibility, registration, and conduct requirements for Registered Valuers
C. Customs clearance procedures
D. Only foreign direct investment limits

**Answer: B**

These rules set out who can become a Registered Valuer, the registration process, and the professional/ethical conduct expected of them.

**Q11. During liquidation proceedings under the IBC, asset valuation is important primarily because it:**

A. Has no bearing on the liquidation process
B. Helps determine the realisable value of assets for fair distribution among creditors/stakeholders
C. Is only relevant for tax purposes
D. Determines employee salaries

**Answer: B**

Accurate asset valuation ensures liquidation proceeds are realistically estimated and fairly distributed according to the statutory waterfall of claims.

**Q12. In an open offer triggered by a substantial acquisition of shares, the offer price is influenced by valuation rules under:**

A. The Indian Contract Act
B. SEBI (SAST) Regulations, 2011
C. The Negotiable Instruments Act

D. The Consumer Protection Act

**Answer: B**

SAST Regulations prescribe the minimum offer price calculation methodology for mandatory open offers in takeover scenarios.

**Q13. "Angel Tax" provisions under the Income Tax Act relate to:**

A. Tax on angel investors' personal income only
B. Taxing the excess of share issue price over "fair market value" (as determined under Rule 11UA) as income for certain closely-held companies
C. A tax exclusively on foreign investors
D. GST on angel investment services

**Answer: B**

Section 56(2)(viib), commonly called "angel tax," taxes share premium received in excess of fair market value (computed per prescribed rules) as income in the hands of certain companies.

**Q14. Cross-border share pricing guidelines under FEMA typically require valuation certification from:**

A. Any unregistered individual
B. A Registered Valuer, Chartered Accountant, or Merchant Banker, using an internationally accepted valuation methodology
C. A local municipal officer
D. No certification is ever required

**Answer: B**

FEMA pricing guidelines generally require a fair valuation certificate from an appropriately qualified professional (Registered Valuer/CA/Merchant Banker).

**Q15. Understanding the legal/regulatory context of valuation is important for a CMA primarily because:**

A. Valuation numbers are identical regardless of purpose or regulation
B. Choosing the wrong methodology or an unqualified valuer for a specific statutory purpose can have serious legal and financial consequences
C. Regulations never change and require no ongoing awareness
D. Only lawyers, never finance professionals, need this knowledge

**Answer: B**

A finance professional advising on or conducting valuations must align the methodology, and the valuer's qualification, with the specific statutory purpose to avoid legal/compliance risk.

MODULE 7 · SECTION B (10%)

# Business Valuation Methods & Approaches

The three core valuation approaches — Asset-based, Income-based (DCF/FCFF/FCFE), and Market-based (comparable company/ transaction multiples).

## 1. Formulas

### A. Asset-Based Approach

**Net Asset Value (NAV) Method**

`NAV = Fair Value of Total Assets − Fair Value of Total Liabilities`

Best suited for asset-heavy businesses (real estate, holding companies) or as a "floor value" check — less suitable for firms whose value lies mainly in future earning potential/intangibles.

### B. Income Approach — Discounted Cash Flow (DCF)

**Free Cash Flow to Firm (FCFF)**

`FCFF = EBIT(1−t) + Depreciation & Amortisation − Capital Expenditure − Increase in Net Working Capital`

Represents cash available to ALL capital providers (debt + equity) before financing costs — discounted at WACC to get Enterprise Value.

**Free Cash Flow to Equity (FCFE)**

`FCFE = FCFF − Interest(1−t) + Net Borrowing (New Debt − Debt Repaid)`

[Alternative direct route]: FCFE = Net Income + Depreciation − Capex − ΔWorking Capital + Net Borrowing. Discounted at Cost of Equity to get Equity Value directly.

**DCF Valuation — Enterprise Value**

`EV = Σ[FCFFt / (1+WACC)^t] + [Terminal Value / (1+WACC)^n]`

Terminal Value (Gordon Growth) = FCFF(n+1) / (WACC − g), where g = long-run stable growth rate (typically ≤ long-run GDP/inflation growth).

### C. Market Approach — Relative Valuation

**Comparable Company Multiple — EV/EBITDA**

`Estimated EV = Target's EBITDA × Peer Average EV/EBITDA Multiple`

EV/EBITDA is capital-structure neutral (uses EV, and EBITDA is before interest) — a very commonly used multiple for cross-company comparison.

**Comparable Company Multiple — P/E**

`Estimated Equity Value per Share = Target's EPS × Peer Average P/E Multiple`

Simple and widely used, but distorted by differing capital structures, accounting policies, and one-off items across peers.

**Precedent Transaction Multiple**

`Estimated Value = Target's Metric (EBITDA/Sales) × Multiple paid in comparable PAST M&A transactions`

Includes a "control premium" (since past deals typically involved acquiring a controlling stake) — typically yields a higher value than trading (public market) comparables.

## 2. Practical Application

**Choosing the right approach:** Asset approach suits asset-heavy/liquidation scenarios; Income approach (DCF) suits going-concern businesses with predictable future cash flows; Market approach is quick and market-validated but requires genuinely comparable peers to be meaningful.

**Triangulation:** Best practice (and common in exam answers) is to value a business using 2-3 approaches and present a range, rather than relying on a single method — this also demonstrates awareness that no single method is definitively "correct."

**Terminal value dominance in DCF:** Terminal value often constitutes 60-80% of total DCF value for a growing business — meaning the DCF valuation is extremely sensitive to the assumed long-term growth rate and discount rate used in the terminal value calculation.

## 3. Worked Illustration

### Illustration 7.1 — Simplified DCF (Enterprise Value)

Projected FCFF: Year 1 = ₹50 lakh, Year 2 = ₹60 lakh, Year 3 = ₹70 lakh. From Year 4 onward, FCFF grows at a stable 5% p.a. forever. WACC = 12%.

**Step 1 — PV of explicit forecast period (Years 1-3):**
PV(Y1) = 50/1.12 = 44.64
PV(Y2) = 60/$1.12^2$ = 47.83
PV(Y3) = 70/$1.12^3$ = 49.83
Sum = **₹142.30 lakh**

**Step 2 — Terminal Value (at end of Year 3):** FCFF(Year 4) = 70 × 1.05 = 73.5. TV = 73.5/(0.12−0.05) = 73.5/0.07 = **₹1,050 lakh**

**Step 3 — PV of Terminal Value:** 1,050 / $(1.12)^3$ = 1,050/1.4049 = **₹747.4 lakh**

**Step 4 — Enterprise Value:** EV = 142.30 + 747.4 = **₹889.7 lakh (≈₹8.90 crore)**

**Enterprise Value ≈ ₹8.90 crore. Note that the Terminal Value component (₹747.4 lakh, PV) makes up over 84% of the total valuation — illustrating how sensitive DCF outcomes are to the terminal growth and discount rate assumptions.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. The Asset-Based Approach to valuation is most appropriate for:**

A. A high-growth technology start-up with no tangible assets
B. An asset-heavy business such as real estate or a holding company
C. A pure service business with only intangible value
D. Any business, regardless of its asset base

**Answer: B**

Asset-based valuation works best where the firm's value is closely tied to its tangible asset base, such as real estate or holding companies.

**Q2. FCFF, unlike FCFE, represents cash flow available to:**

A. Only equity shareholders
B. All capital providers — both debt and equity holders
C. Only debt holders
D. Only the government (as tax)

**Answer: B**

FCFF is calculated before any financing charges, representing cash available to service both debt and equity claims.

**Q3. In DCF valuation, Terminal Value is typically calculated using:**

A. The Payback Period formula
B. The Gordon Growth (perpetuity) formula, based on a stable long-term growth rate

C. The Hungarian method

D. Altman's Z-Score formula

**Answer: B**

Terminal Value = FCF(n+1)/(r−g), applying the perpetuity growth model beyond the explicit forecast period.

**Q4. EV/EBITDA is generally preferred over the P/E multiple for cross-company comparison because EV/EBITDA is:**

A. Distorted by differing capital structures

B. Capital-structure neutral, since it uses Enterprise Value and pre-interest earnings

C. Only usable for loss-making companies

D. Identical to the P/E ratio in every case

**Answer: B**

Since EV includes both debt and equity, and EBITDA is before interest expense, this multiple neutralises differences in how peer companies are financed.

**Q5. Precedent Transaction multiples typically yield a HIGHER valuation than trading (public market) comparables mainly because they include:**

A. A liquidity discount

B. A control premium paid to acquire a controlling stake

C. No premium of any kind

D. Only minority stake pricing

**Answer: B**

Since past M&A deals usually involved acquiring control, the multiples paid reflect a control premium not present in ordinary public market trading prices.

**Q6. If FCFF = ₹100 lakh, Interest Expense = ₹20 lakh, Tax Rate = 25%, and Net Borrowing = ₹10 lakh, FCFE is:**

A. ₹75 lakh

B. ₹85 lakh

C. ₹95 lakh

D. ₹110 lakh

**Answer: C**

FCFE = FCFF − Interest(1−t) + Net Borrowing = 100 − 20(0.75) + 10 = 100 − 15 + 10 = ₹95 lakh.

**Q7. Terminal Value in a DCF valuation typically represents what proportion of the total valuation for a growing business?**

A. Less than 5%

B. 10-20%

C. 60-80% or even higher

D. Exactly 50%, always

**Answer: C**

Terminal Value commonly dominates total DCF value (often 60-80%+), making the valuation highly sensitive to the terminal growth and discount rate assumptions.

**Q8. Best practice in business valuation generally recommends:**

A. Relying on a single valuation method exclusively

B. Using multiple approaches (asset, income, market) and presenting a value range or triangulated estimate

C. Ignoring market data entirely

D. Using only the book value of assets

**Answer: B**

Triangulating across approaches provides a more robust, defensible valuation than relying on any single method alone.

**Q9. The Market Approach to valuation relies primarily on:**

A. Discounting future cash flows

B. Comparing the target to similar publicly traded companies or comparable past transactions

C. Summing the fair value of individual assets and liabilities

D. Estimating replacement cost of assets only

**Answer: B**

The market approach derives value by reference to how the market prices similar/comparable businesses (trading comps or precedent transactions).

**Q10. A limitation of the Market Approach is that it:**

A. Never requires any comparable companies
B. Is only meaningful if genuinely comparable peer companies/transactions can be identified
C. Cannot use publicly available data
D. Always gives the same value as the income approach

**Answer: B**

The market approach's reliability depends heavily on finding truly comparable peers — a lack of good comparables weakens the method significantly.

**Q11. Net Asset Value (NAV) method is generally considered a "floor value" because it:**

A. Represents the highest possible value a business could achieve
B. Typically ignores the value of future growth/earning potential, often understating a going-concern's true value
C. Always exceeds the income-approach valuation
D. Is irrelevant to any valuation exercise

**Answer: B**

Since NAV only captures existing assets net of liabilities (not future earning potential), it often provides a conservative lower-bound estimate for a healthy going concern.

**Q12. In DCF valuation, capital expenditure (Capex) is:**

A. Added to EBIT(1−t) when calculating FCFF
B. Subtracted from EBIT(1−t) when calculating FCFF, since it represents a real cash outflow
C. Ignored entirely in FCFF calculations
D. Only relevant for tax computation, not valuation

**Answer: B**

Capex is a genuine cash outflow reducing free cash flow available to investors, so it is subtracted in the FCFF formula.

**Q13. If two companies have identical EBITDA but very different debt levels, which multiple would make them MORE comparable?**

A. P/E ratio
B. EV/EBITDA
C. Dividend Yield
D. Book Value per Share

**Answer: B**

EV/EBITDA neutralises the effect of differing debt levels since EV includes debt and EBITDA is calculated before interest expense.

**Q14. A stable growth rate (g) assumed in Terminal Value calculations should typically be:**

A. Higher than the discount rate
B. Realistic and sustainable in the long run — generally not exceeding long-run economic (GDP) growth
C. As high as possible to maximise valuation
D. Always negative

**Answer: B**

An unrealistically high perpetual growth rate (e.g., exceeding long-run GDP growth) would imply the company eventually becomes larger than the entire economy — a red flag in any DCF model.

**Q15. Which valuation approach would be considered LEAST appropriate for a young start-up with negative earnings but high growth potential?**

A. Discounted Cash Flow (with appropriately adjusted assumptions for the growth stage)
B. Net Asset Value / Asset-Based Approach, since it ignores future growth potential entirely
C. Comparable company multiples using forward revenue multiples
D. Venture capital method

**Answer: B**

NAV captures only existing net assets, completely missing the future growth potential that drives most of a start-up's actual value — making it the least suitable approach here.

MODULE 8 · SECTION B (15%)

# Valuation of Assets & Liabilities

Valuing specific balance sheet items — goodwill, intangible assets (brands, patents), and value-based performance metrics like EVA and MVA used in valuation.

## 1. Formulas

### A. Goodwill Valuation

**Super Profit**

**Super Profit = Average (Actual) Profit − Normal Profit**

Normal Profit = Normal Rate of Return × Capital Employed. Super profit represents the firm's ability to earn above what's "normal" for its industry/risk level.

**Goodwill — Super Profit Method (Years' Purchase)**

**Goodwill = Super Profit × Number of Years' Purchase**

"Years' Purchase" reflects how many years of super profit a buyer is willing to pay for upfront — often based on industry norms/risk assessment.

**Goodwill — Capitalisation Method**

**Goodwill = Super Profit / Normal Rate of Return**

[Alternative]: Goodwill = (Average Profit / Normal Rate of Return) − Capital Employed — effectively capitalises the super profit into a lump-sum value.

**Goodwill — Annuity Method**

**Goodwill = Super Profit × Present Value Annuity Factor (for the agreed number of years, at the given rate)**

Recognises the time value of money, unlike the simple Years' Purchase method which just multiplies without discounting.

### B. Intangible Asset Valuation

**Relief-from-Royalty Method (for Brands/Trademarks)**

**Brand Value = PV of (Hypothetical Royalty Rate × Projected Revenue), discounted over the brand's useful economic life**

Based on the premise: if the firm didn't own the brand, it would have to pay a royalty to license it — the value of the brand equals the PV of royalties "saved" by owning it.

**Multi-Period Excess Earnings Method (MEEM)**

**Value of Intangible = PV of (Total Cash Flows attributable to the asset − Contributory Asset Charges for other assets used alongside it)**

Used typically for customer relationships/technology — isolates the earnings specifically attributable to the intangible after "renting" the other assets that help generate those earnings.

### C. Value-Based Performance Metrics

**Economic Value Added (EVA)**

**EVA = NOPAT − (Capital Employed × WACC)**

A positive, growing EVA over time is a strong indicator that a business is genuinely creating shareholder value, useful evidence supporting a higher valuation.

**Market Value Added (MVA)**

`MVA = Market Value of the Firm (Debt+Equity) − Total Capital Invested (Book Value)`

MVA represents the cumulative wealth the firm has created (or destroyed) for capital providers since inception, as reflected in current market value versus capital originally invested.

## 2. Practical Application

**When Super Profit is negative:** If actual profit is below normal profit, super profit (and hence goodwill under this method) is effectively zero or negative — practically, goodwill is not recognised as negative; it's simply treated as nil.

**Choosing an intangible valuation method:** Relief-from-royalty suits brands/trademarks (where a comparable royalty rate can be benchmarked); MEEM suits customer relationships/technology (where isolating asset-specific cash flow is more relevant than a royalty analogy).

**EVA/MVA link to valuation:** A company consistently generating positive EVA is "creating value" beyond its cost of capital — this evidence often supports valuing the firm at a premium to peers using multiples, or justifies more optimistic growth assumptions in a DCF.

## 3. Worked Illustrations

### Illustration 8.1 — Goodwill by Super Profit Method

Average Profit for the last 5 years = ₹18,00,000. Capital Employed = ₹80,00,000. Normal Rate of Return in the industry = 15%. Goodwill is to be valued at 3 years' purchase of super profit.

**Step 1 — Normal Profit:** 15% × 80,00,000 = ₹12,00,000

**Step 2 — Super Profit:** Average Profit − Normal Profit = 18,00,000 − 12,00,000 = **₹6,00,000**

**Step 3 — Goodwill:** Super Profit × Years' Purchase = 6,00,000 × 3 = **₹18,00,000**

**Goodwill valued at ₹18,00,000, reflecting the firm's ability to earn ₹6,00,000 above the industry-normal return, capitalised over 3 years.**

### Illustration 8.2 — EVA Calculation

NOPAT = ₹40,00,000. Capital Employed = ₹2,00,00,000. WACC = 13%.

**Step 1 — Capital Charge:** 2,00,00,000 × 13% = ₹26,00,000

**Step 2 — EVA:** EVA = NOPAT − Capital Charge = 40,00,000 − 26,00,000 = **₹14,00,000**

**A positive EVA of ₹14,00,000 shows the firm generated returns well above its cost of capital, indicating genuine economic value creation for shareholders — a positive signal supporting the firm's valuation.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. Super Profit is calculated as:**

A. Average Profit + Normal Profit
B. Average Profit − Normal Profit
C. Normal Profit − Average Profit
D. Average Profit × Normal Profit

**Answer: B**

Super profit measures the excess of actual (average) profit over what would be "normal" for the capital employed and industry risk level.

**Q2. Under the Capitalisation Method, Goodwill is calculated as:**

A. Super Profit × Normal Rate of Return
B. Super Profit / Normal Rate of Return
C. Average Profit / Number of Years
D. Capital Employed × Super Profit

**Answer: B**

The capitalisation method effectively "capitalises" super profit at the normal rate of return to arrive at a lump-sum goodwill value.

**Q3. The Relief-from-Royalty method is most commonly used to value:**

A. Inventory
B. Brands and trademarks
C. Cash and bank balances
D. Trade receivables

**Answer: B**

This method estimates brand value based on the royalty a firm would hypothetically pay to license the brand if it didn't already own it.

**Q4. Economic Value Added (EVA) is positive when:**

A. NOPAT is less than the capital charge (Capital Employed × WACC)
B. NOPAT exceeds the capital charge (Capital Employed × WACC)
C. Capital Employed is zero
D. WACC is negative

**Answer: B**

EVA = NOPAT − (Capital Employed × WACC); it is positive when the firm earns more than its cost of capital on the capital deployed.

**Q5. Market Value Added (MVA) is calculated as:**

A. Market Value of the Firm minus Total Capital Invested
B. NOPAT minus Capital Charge
C. Total Capital Invested minus Net Income
D. Book Value of Equity only

**Answer: A**

MVA reflects the cumulative value the firm has added above the capital that was originally invested in it.

**Q6. If Average Profit = ₹20,00,000, Capital Employed = ₹1,00,00,000, and Normal Rate of Return = 12%, the Super Profit is:**

A. ₹6,00,000
B. ₹8,00,000
C. ₹12,00,000
D. ₹20,00,000

**Answer: B**

Normal Profit = 12% × 1,00,00,000 = 12,00,000. Super Profit = 20,00,000 − 12,00,000 = ₹8,00,000.

**Q7. The Multi-Period Excess Earnings Method (MEEM) is typically used to value:**

A. Cash and cash equivalents
B. Customer relationships or acquired technology intangibles
C. Physical inventory only
D. Long-term debt

**Answer: B**

MEEM isolates cash flows attributable specifically to an intangible like customer relationships or technology, after charging for the use of other supporting assets.

**Q8. In MEEM, "Contributory Asset Charges" represent:**

A. A charge to remove the value contributed by OTHER assets (e.g., working capital, fixed assets) used alongside the intangible
B. The total revenue of the firm
C. Depreciation on the intangible itself
D. Corporate income tax

**Answer: A**

These charges "rent out" the contribution of other assets used in generating the cash flows, isolating the value attributable purely to the specific intangible being valued.

**Q9. If Actual Average Profit is LOWER than Normal Profit, Super Profit (and hence goodwill under this method) is treated as:**

A. A large negative value to be subtracted from other assets
B. Nil (goodwill is not recognised as negative in practice)
C. Automatically doubled
D. Irrelevant to the calculation

**Answer: B**

Since goodwill represents a premium for above-normal earning capacity, a negative super profit simply results in nil goodwill, not a negative asset value.

**Q10. The Annuity Method of goodwill valuation differs from the simple Years' Purchase method because it:**

A. Ignores the time value of money entirely
B. Explicitly discounts the super profit stream to present value using an annuity factor
C. Uses only the market approach
D. Requires no super profit calculation at all

**Answer: B**

The annuity method applies a present value annuity factor to the super profit stream, recognising the time value of money — unlike the simple undiscounted multiplication in the basic Years' Purchase method.

**Q11. A consistently positive and growing EVA over several years is generally seen as evidence of:**

A. Value destruction for shareholders
B. Genuine, sustained shareholder value creation
C. Excessive risk-taking with no benefit
D. Declining profitability

**Answer: B**

Sustained positive EVA indicates the firm consistently earns above its cost of capital, a strong signal of real economic value creation.

**Q12. If a firm's Market Value is LESS than its Total Capital Invested, its MVA is:**

A. Positive
B. Negative, indicating value destruction relative to capital invested
C. Always zero
D. Undefined

**Answer: B**

A negative MVA means the market values the firm below what was originally invested — a sign that capital deployed hasn't created net value.

**Q13. Normal Profit in the goodwill valuation context is calculated as:**

A. Capital Employed / Normal Rate of Return
B. Capital Employed × Normal Rate of Return
C. Average Profit / Capital Employed
D. Super Profit × Years' Purchase

**Answer: B**

Normal Profit = Capital Employed × Normal Rate of Return, representing the return the industry would consider "normal" for that level of capital and risk.

**Q14. EVA differs from simple accounting profit (Net Income) mainly because EVA:**

A. Ignores the cost of capital entirely
B. Explicitly deducts a charge for the cost of ALL capital employed (both debt and equity), not just interest expense
C. Is identical to Net Income in every case
D. Only considers the cost of debt

**Answer: B**

Unlike accounting profit (which only deducts interest on debt), EVA charges for the FULL cost of capital, including the often-overlooked cost of equity.

**Q15. Valuing goodwill/intangibles is particularly important in which type of transaction?**

A. Routine day-to-day inventory purchases

B. Mergers, acquisitions, and business combinations, where purchase price allocation requires identifying and valuing intangible assets separately

C. Payroll processing

D. Petty cash reconciliation

**Answer: B**

In M&A accounting, the purchase price must be allocated across identifiable tangible and intangible assets (including goodwill as the residual), making intangible valuation critical.

MODULE 9 · SECTION B (15%)

# Valuation in Mergers & Acquisitions

Share exchange/swap ratios, synergy valuation, post-merger EPS impact (accretion/dilution analysis), and purchase consideration methods in M&A transactions.

## 1. Formulas

**Swap Ratio (based on EPS)**

`Swap Ratio = EPS of Target Company / EPS of Acquiring Company`

Determines how many shares of the Acquirer are issued for each share of the Target — one of several bases used (others include Net Asset Value per share, Market Price per share, or a weighted combination).

**Number of New Shares to be Issued**

`New Shares Issued = Swap Ratio × Number of Target's Outstanding Shares`

These new shares are issued by the Acquirer to the Target's shareholders as consideration for the merger/acquisition.

**Post-Merger (Combined) EPS**

`Post-Merger EPS = (Acquirer's Net Income + Target's Net Income + Synergy Benefits) / (Acquirer's Existing Shares + New Shares Issued)`

Compare this to the Acquirer's PRE-merger EPS to determine if the deal is EPS-accretive (higher) or EPS-dilutive (lower).

**Synergy Value**

`Synergy Value = Value of Combined Entity (Post-Merger) − [Standalone Value of Acquirer + Standalone Value of Target]`

Positive synergy justifies paying a premium over the target's standalone value — can arise from cost savings, revenue enhancement, or tax benefits.

**Maximum Purchase Price (Break-even for Acquirer)**

`Maximum Price = Target's Standalone Value + Synergy Value expected to be realised`

Paying more than this means the Acquirer is transferring ALL the synergy value (and possibly more) to the Target's shareholders, destroying value for its own shareholders.

**Purchase Consideration (Net Asset / Net Payment Method)**

`Purchase Consideration = Agreed Value of Assets Taken Over − Agreed Value of Liabilities Taken Over`

Alternative methods include the Lump Sum method (a single negotiated figure) and the Shares Exchange method (using the swap ratio above).

## 2. Practical Application

**Accretion/Dilution — why it matters:** Even a strategically sound acquisition can be EPS-dilutive in the short run if the acquirer overpays or issues too many new shares — management/investors often scrutinise this heavily, even though EPS impact alone shouldn't be the sole basis for a merger decision.

**Swap ratio choice affects fairness perception:** Using EPS-based swap ratios can favour whichever company has a temporarily inflated/deflated EPS (e.g., due to one-off items) — a Fairness Opinion typically considers MULTIPLE bases (EPS, NAV, market price, DCF) and a blended/weighted ratio.

**Overpaying destroys value:** If the purchase price exceeds standalone value + realistically achievable synergy, the ACQUIRER's shareholders bear a wealth transfer to the TARGET's shareholders — a very common exam discussion point on M&A value destruction ("winner's curse").

## 3. Worked Illustrations

### Illustration 9.1 — Swap Ratio & New Shares Issued

Acquirer's EPS = ₹10; Target's EPS = ₹6. Target has 5,00,000 outstanding shares.

**Step 1 — Swap Ratio:** Swap Ratio = Target's EPS / Acquirer's EPS = 6/10 = **0.6**

**Step 2 — New Shares to be Issued:** 0.6 × 5,00,000 = **3,00,000 new shares**

**The Acquirer must issue 3,00,000 new shares (0.6 shares of Acquirer for every 1 share of Target) to Target's shareholders as merger consideration, based on the EPS-swap basis.**

### Illustration 9.2 — Post-Merger EPS & Accretion/Dilution Analysis

Acquirer: Net Income = ₹50,00,000, Existing Shares = 10,00,000 (Pre-merger EPS = ₹5). Target: Net Income = ₹20,00,000. New shares to be issued to Target's shareholders = 3,00,000. Expected annual synergy benefit = ₹5,00,000.

**Step 1 — Combined Net Income (post-merger, including synergy):** 50,00,000 + 20,00,000 + 5,00,000 = **₹75,00,000**

**Step 2 — Total shares post-merger:** 10,00,000 (existing) + 3,00,000 (new) = **13,00,000 shares**

**Step 3 — Post-Merger EPS:** 75,00,000 / 13,00,000 = **₹5.77**

**Step 4 — Compare to Pre-Merger EPS:** Pre-Merger EPS = ₹5.00; Post-Merger EPS = ₹5.77

**Since Post-Merger EPS (₹5.77) exceeds the Acquirer's Pre-Merger EPS (₹5.00), the deal is EPS-ACCRETIVE — a positive signal, though management should still assess whether the underlying strategic rationale and synergy assumptions are realistic.**

## 4. Practice MCQs (15 × 2 Marks)

**Q1. Swap Ratio based on EPS is calculated as:**

A. Acquirer's EPS / Target's EPS
B. Target's EPS / Acquirer's EPS
C. Acquirer's EPS × Target's EPS
D. Target's Net Income / Acquirer's Net Income

**Answer: B**

The EPS-based swap ratio divides the Target's EPS by the Acquirer's EPS to determine the exchange ratio for shares.

**Q2. A merger is considered "EPS-accretive" for the Acquirer when:**

A. Post-merger EPS is lower than pre-merger EPS
B. Post-merger EPS is higher than the Acquirer's pre-merger EPS
C. EPS is unaffected by the merger
D. The Target's shareholders receive no shares

**Answer: B**

Accretion means the deal increases the Acquirer's EPS relative to what it was before the merger.

**Q3. Synergy Value in an M&A transaction is defined as:**

A. The sum of the standalone values of both companies, with no additional benefit
B. The value of the combined entity MINUS the sum of the standalone values of the Acquirer and Target
C. Only the cost savings from headcount reduction
D. The purchase price paid, regardless of any value created

**Answer: B**

Synergy captures the INCREMENTAL value created by combining the two businesses, beyond what they were worth separately.

**Q4. If an Acquirer pays MORE than the Target's standalone value plus realistically achievable synergy, the result is typically:**

A. Value creation for the Acquirer's shareholders
B. A wealth transfer from the Acquirer's shareholders to the Target's shareholders, destroying value for the Acquirer
C. No impact on either company
D. Automatic EPS accretion

**Answer: B**

Overpaying beyond standalone value plus synergy transfers value to the Target's shareholders at the Acquirer shareholders' expense — the classic "winner's curse" in M&A.

**Q5. If Acquirer's EPS = ₹8 and Target's EPS = ₹4, the Swap Ratio (EPS basis) is:**

A. 0.5
B. 1.0
C. 2.0
D. 4.0

**Answer: A**

Swap Ratio = Target EPS/Acquirer EPS = 4/8 = 0.5.

**Q6. A Fairness Opinion for a merger typically evaluates the swap ratio using:**

A. Only the EPS basis, ignoring all other factors
B. Multiple bases (EPS, NAV, market price, DCF) to arrive at a balanced/weighted ratio
C. A ratio fixed arbitrarily by the Acquirer alone
D. Only the book value of assets

**Answer: B**

A robust fairness opinion considers several valuation bases to avoid bias from any single (potentially distorted) metric.

**Q7. Purchase Consideration under the Net Asset Method is computed as:**

A. Agreed Value of Assets taken over + Agreed Value of Liabilities taken over
B. Agreed Value of Assets taken over − Agreed Value of Liabilities taken over
C. Only the book value of share capital
D. Market capitalisation of the Acquirer

**Answer: B**

Under the Net Asset (Net Payment) Method, consideration equals the net value of identifiable assets taken over, after deducting liabilities assumed.

**Q8. Why is EPS accretion/dilution alone considered an insufficient basis for evaluating a merger?**

A. EPS is the only metric that ever matters
B. A deal can be EPS-accretive in the short run yet strategically unsound, or vice versa, depending on synergy realism and long-term value creation
C. EPS is unrelated to shareholder value
D. EPS accretion guarantees a good acquisition price was paid

**Answer: B**

A deal might show short-term EPS accretion (e.g., from favourable financing) while destroying long-term value, or vice versa — EPS impact should be one input among several, not the sole decision criterion.

**Q9. If a target has 2,00,000 shares outstanding and the agreed swap ratio is 0.8, the number of new shares the Acquirer must issue is:**

A. 1,00,000
B. 1,60,000
C. 2,00,000
D. 2,50,000

**Answer: B**

New Shares = Swap Ratio × Target's Shares = 0.8 × 2,00,000 = 1,60,000.

**Q10. The "Maximum Purchase Price" an Acquirer should rationally pay for a Target is:**

A. Any price the Target demands
B. The Target's standalone value plus the realistically achievable synergy value
C. Always equal to the Target's book value only
D. Unrelated to synergy considerations

**Answer: B**

Paying up to standalone value plus expected synergy ensures the Acquirer doesn't give away value created by the deal — paying more transfers value to the seller.

**Q11. Cash consideration (as opposed to share-swap consideration) in an M&A deal:**

A. Never affects the Acquirer's EPS
B. Avoids diluting the Acquirer's existing shareholders' ownership percentage, unlike issuing new shares
C. Is always preferred by Target shareholders over shares
D. Requires no valuation of the Target at all

**Answer: B**

Paying in cash (rather than issuing new shares) means existing Acquirer shareholders retain their same ownership percentage, avoiding equity dilution from new share issuance.

**Q12. Which of the following is a common SOURCE of synergy in mergers?**

A. Duplication of overlapping functions with no cost reduction
B. Cost savings from economies of scale, revenue enhancement from cross-selling, or tax benefits
C. Guaranteed EPS dilution
D. Automatic increase in the combined firm's risk with no offsetting benefit

**Answer: B**

Synergies commonly arise from cost reduction (economies of scale, eliminating duplicate functions), revenue growth (cross-selling, expanded market reach), or financial/tax efficiencies.

**Q13. A "reverse merger" typically refers to a situation where:**

A. A larger, publicly listed company acquires a much smaller private company in the conventional manner
B. A private company effectively takes control of (or merges into) a smaller, publicly listed "shell" company to achieve a public listing indirectly
C. Two identical-sized companies merge with no listing implications
D. A company simply changes its name

**Answer: B**

In a reverse merger, a private company gains public listing status by merging into an already-listed (often shell) company, bypassing a traditional IPO process.

**Q14. Cross-border mergers add complexity primarily due to:**

A. Identical regulatory, tax, and accounting frameworks across all countries
B. Differing regulatory approvals, tax regimes, currency/exchange rate risk, and cultural/legal integration challenges
C. No need for any valuation at all
D. Guaranteed synergy realisation with no execution risk

**Answer: B**

Cross-border deals must navigate multiple, often differing, legal, tax, regulatory, and currency environments, adding significant complexity beyond a domestic merger.

**Q15. A "defensive mechanism" against a hostile takeover, such as a poison pill, is primarily designed to:**

A. Make the target company more attractive and easier to acquire quickly
B. Make an unwanted/hostile acquisition more difficult, costly, or unattractive for the acquirer
C. Guarantee automatic approval of any takeover bid
D. Eliminate the need for any shareholder approval in mergers

**Answer: B**

Defensive mechanisms like poison pills are structured to deter or complicate an unsolicited/hostile takeover attempt, protecting the target from an undesired acquisition.