

## ALL THREE DCF PROBLEMS

### **DCF Valuation Problem – Alpha Manufacturing Ltd.**

#### **Narrative (Context for Students)**

Alpha Manufacturing Ltd. is a mid-sized Indian industrial components producer operating in the capital goods sector. Over the past five years, the company has demonstrated stable revenue growth and consistent profitability. Management is evaluating strategic capital allocation decisions and requires an estimate of the company's intrinsic value based on future free cash flows.

Your task is to build a **full Discounted Cash Flow (DCF) valuation model** using the assumptions provided below. You will forecast revenues and operating performance for the next five years, compute Free Cash Flow to Firm (FCFF), calculate the Weighted Average Cost of Capital (WACC), and derive Enterprise Value (EV), Equity Value, and intrinsic price per share.

This exercise is designed to assess your ability to structure a clean Excel financial model, distinguish between **inputs, calculations, and outputs**, and ensure internal consistency using proper checks. All monetary values must be expressed in **₹ crore**, using the Indian number format (i.e., lakhs and crores).

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#### **Tasks Assigned to Students**

1. **Set up the model structure** with clearly separated sections for Inputs, Forecast Calculations, FCFF Build, WACC Computation, Valuation, and Checks.
2. **Forecast the company's revenue and operating metrics** for FY25–FY29 using the input assumptions.
3. **Compute EBITDA, Depreciation, EBIT, Taxes, NOPAT, Capex, ΔWorking Capital, and FCFF** for each forecast year.
4. **Calculate the company's WACC** using CAPM for the cost of equity and the after-tax cost of debt.
5. **Discount the FCFFs** and compute the **Present Value of Explicit Cash Flows**.
6. **Estimate Terminal Value using the Gordon Growth Model** and compute its present value.
7. **Derive Enterprise Value (EV), Equity Value, and Per-Share Value**.
8. **Include at least three checks**, such as capital structure weights summing to 100%, WACC within logical bounds, and reasonableness of terminal value contribution.
9. **Format the model professionally**, ensuring inputs and outputs are visually distinguished, formulas are intact, and no hardcoding appears outside the Inputs section.

## Input Assumptions

INPUTS	
Currency Symbol	₹
Units	Crore
Historical Last Revenue (FY24)	₹1,500
EBITDA Margin (%)	19.0%
Depreciation (% of Revenue)	3.4%
Capex (% of Revenue)	5.0%
ΔWC (% of ΔRevenue)	2.0%
Revenue Growth Rate (%)	6.0%
Tax Rate (%)	30.0%
Risk-free Rate (%)	7.0%
Market Risk Premium (%)	6.0%
Beta	1.1
Pre-tax Cost of Debt (%)	9.0%
Equity Weight (%)	70.0%
Debt Weight (%)	30.0%
Terminal Growth Rate g (%)	4.0%
Debt (₹ crore)	₹350
Cash (₹ crore)	₹150

INPUTS	
Shares Outstanding (crore)	<b>12.00</b>

## Problem02— FMCG Case

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### Model 2: Consumer Goods (FMCG) – High Volume, Lower Capex

Change only the **inputs**, not the model layout.

#### Differences (20–30% change):

- Revenue growth slightly higher (e.g., 8% instead of 6%)
- EBITDA margin lower (e.g., 14–16% instead of 19%)
- Capex % much lower (1–2% instead of 5%)
- Working capital investment slightly higher (3–4% instead of 2%)
- Beta lower (0.7–0.9)
- Cost of debt lower (6–7%)
- Terminal growth higher (5–6%)

#### What students learn differently:

- FMCG companies have asset-light business models
- Lower depreciation and capex improve FCFF stability
- Valuation driven more by terminal value

This model forces students to see how business nature affects valuation.

## DCF Valuation Assignment — FMCG Company (Model 2)

### Background

You are valuing **FreshGlow Consumer Products Ltd.**, an FMCG manufacturer producing packaged foods and personal care items. The company has historically grown at a stable rate and maintains a strong brand presence across India. Management is considering expansion into rural markets and requires a valuation estimate for strategic planning purposes.

You have been provided with a set of financial assumptions as of fiscal year 2024, along with industry-consistent operating parameters. Your task is to develop a comprehensive Discounted Cash Flow valuation model to determine the intrinsic value per share.

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### Inputs Provided to You

Input	Value
Currency	₹ crore
Last Recorded Revenue (FY24)	1,800
EBITDA Margin	15%
Depreciation (% of Revenue)	2%
Capex (% of Revenue)	1.5%
ΔWC (% of ΔRevenue)	3.5%
Revenue Growth (FY25–FY29)	8%
Corporate Tax Rate	30%
Risk-free Rate	6.5%
Market Risk Premium	5.5%
Beta	0.85
Pre-tax Cost of Debt	7%
Capital Structure	60% Equity / 40% Debt

Input	Value
Terminal Growth	5%
Total Debt	₹250 crore
Cash Balance	₹220 crore
Shares Outstanding	15 crore

## ⌚ Tasks for Students

You must:

### 1. Build the forecast

- Project revenue for FY25–FY29
- Compute EBITDA, Depreciation, EBIT
- Apply tax → NOPAT
- Calculate Capex and ΔWorking Capital
- Derive FCFF for all years

### 2. Compute WACC

- Use CAPM for Cost of Equity
- Compute after-tax Cost of Debt
- Weight them using capital structure

### 3. Value the company

- Discount FCFFs
- Calculate Terminal Value
- Sum PV of cash flows → Enterprise Value
- Compute Equity Value
- Derive Value per Share

### 4. Include checks

- Capital structure weights sum to 1

- WACC within a reasonable range (3%-20%)
- Terminal value not excessively dominant

## 5. Format professionally

- Inputs in yellow
- Calculations in blue
- Outputs in green
- No hardcoding outside Inputs

## DCF Valuation Problem – Model 3 (Technology / SaaS Company)

### Background & Context

NovaCloud Technologies Ltd. is a fast-growing Indian SaaS (Software-as-a-Service) company providing subscription-based enterprise workflow tools. The company operates with high margins, scalable revenue, and relatively low capital intensity. Management plans to raise additional external capital and needs an intrinsic valuation of the firm based on future cash flows.

As a financial modeling analyst, your task is to build a **complete Discounted Cash Flow (DCF) Valuation Model** using the assumptions provided below. You must forecast financial performance, compute free cash flows, estimate the Weighted Average Cost of Capital (WACC), derive enterprise value, and compute the intrinsic value per share.

Your Excel workbook should be professionally structured, including inputs, **Forecast Calculations**, **FCFF**, **WACC Block**, **Valuation Summary**, and **Checks**. All monetary values must be expressed in **₹ crore**, using the Indian number format (lakhs, crores).

### INPUTS (Use Exactly These in Your Model)

INPUTS	Value
Currency Symbol	₹
Units	Crore
Historical Last Revenue (FY24)	₹950
EBITDA Margin (%)	28.0%
Depreciation (% of Revenue)	4.0%
Capex (% of Revenue)	3.0%
ΔWC (% of ΔRevenue)	6.0%
Revenue Growth Rate (%)	18.0%
Tax Rate (%)	25.0%
Risk-free Rate (%)	6.5%

INPUTS	Value
Market Risk Premium (%)	6.0%
Beta	1.35
Pre-tax Cost of Debt (%)	8.5%
Equity Weight (%)	75.0%
Debt Weight (%)	25.0%
Terminal Growth Rate g (%)	4.5%
Debt (₹ crore)	₹420
Cash (₹ crore)	₹310
Shares Outstanding (crore)	22.00

## ⌚ TASKS FOR STUDENTS

### 1. Build a clean Excel model with the following structure:

- Inputs (highlight in yellow)
- Forecast calculations (highlight in blue)
- WACC block (highlight in blue)
- Final valuation outputs (highlight in green)
- Model checks (highlight in orange or separate)

### 2. Forecast the following for FY25–FY29:

- Revenue
- EBITDA
- Depreciation
- EBIT

- Tax
  - NOPAT
  - Capex
  - ΔWorking Capital
  - Free Cash Flow to Firm (FCFF)
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### 3. Compute WACC

Use CAPM to compute the cost of equity:

$$Re = \text{Risk-free Rate} + \text{Beta} \times \text{Market Risk Premium}$$

Compute after-tax cost of debt:

$$Rd \times (1 - \text{Tax Rate})$$

Compute WACC:

$$WACC = (\text{Equity Weight} \times Re) + (\text{Debt Weight} \times Rd_{\text{after\_tax}})$$


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### 4. Discount the forecast FCFF using WACC

Calculate the Present Value of each explicit year FCFF.

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### 5. Compute the Terminal Value using the Gordon Growth Model

$$TV = \frac{FCFF_{FY29} \times (1 + g)}{WACC - g}$$

Discount the terminal value to present value.

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### 6. Derive valuation

- **Enterprise Value = PV(Explicit FCFF) + PV(Terminal Value)**
  - **Equity Value = Enterprise Value - Net Debt**
  - **Intrinsic Value Per Share = Equity Value / Shares Outstanding**
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**7. Include at least three check formulas**

(Examples)

- Equity Weight + Debt Weight = 100%
  - WACC between 5% and 25%
  - Terminal Value as % of Enterprise Value reasonable (< 90%)
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