



B.Com Honours

Semester III

Calicut University

BUSINESS ANALYTICS TOOLS

Course Code: COM3MN209 • Module 4 Notes

Module IV: Performing Computations and Aggregations using Excel

Covers advanced Excel mathematical, logical, lookup, conditional aggregation, and financial functions used in corporate financial modeling.

Unit 14: Formulas & Operators – Relative vs. Absolute Cell Referencing

Relative Referencing (A1): Adjusts positionally when copied across cells.

Absolute Referencing (\$A\$1): Locks row and column coordinates permanently using dollar signs (\$). Toggle via F4 key.

Unit 15: Array Formulas & Multi-Worksheet Aggregations

Executing multi-cell array calculations (legacy Ctrl + Shift + Enter or dynamic arrays). 3D formulas aggregating across multiple worksheets (e.g., =SUM(Sheet1:Sheet4!B5)).

Unit 16: Managing Formulas, Named Ranges, & Audit Tracing

Assigning descriptive Names to Cell Ranges (Name Manager Ctrl + F3), Error Checking (#N/A, #VALUE!, #REF!), and Tracing Precedents / Dependents.

Unit 17: Conditional Formulas & Aggregations (IF, SUMIFS, COUNTIFS)

```
=SUMIFS(Sum_Range, Criteria_Range1, Criteria1, Criteria_Range2, Criteria2)
```

Calculates conditional totals across multiple intersecting business criteria.

Unit 18: Advanced Lookup & Text Functions (VLOOKUP, INDEX-MATCH)

```
=INDEX(Return_Range, MATCH(Lookup_Value, Lookup_Range, 0))
```

Overcomes VLOOKUP limitations by enabling leftward lookups and dynamic column indexing.

Unit 19: Financial & Inbuilt Statistical Functions (PV, FV, PMT, NPV, IRR)

PMT Function: =PMT(rate, nper, pv) calculates loan EMI.

NPV & IRR Functions: Evaluate discounted net present value and internal rate of return for capital budgeting proposals.

Practical Problem 2 (Excel Financial Function & INDEX-MATCH Solved Computation): Part A (Loan EMI via

PMT Function): A firm takes a commercial loan of Rs. 12,00,000 at 12% p.a. for a 3-year tenure (36 months).

Calculate monthly loan payment (EMI) using Excel PMT formula syntax.

Part B (Dynamic Lookup via INDEX-MATCH): Given employee data table (Col A: EMP_ID, Col B: Department,

Col C: Salary). Retrieve Salary for EMP_ID "E-504" located in Row 8 using INDEX-MATCH formula.

Step-by-Step Solved Excel Computations:

- **Part A (Financial PMT EMI Computation):**

Monthly Rate ($r = 12\% / 12 = 1\% = 0.01$). Tenure ($nper = 36$ ext{ months}). Principal ($pv = 12,00,000$).

Excel Syntax: `=PMT(0.01, 36, -1200000)`

Calculated Output = **Rs. 39,862 per month.**

- **Part B (INDEX-MATCH Dynamic Lookup):**

Target EMP_ID = "E-504".

Excel Syntax: `=INDEX(C2:C100, MATCH("E-504", A2:A100, 0))`

Working Note: MATCH("E-504", A2:A100, 0) returns row index 7. INDEX(C2:C100, 7) returns exact salary amount Rs. 85,000 directly!

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