

# Master Formula Sheet PCP-AI

Every formula in the Body of Knowledge, defined once — a study aid for candidates



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**How to use this sheet.** Formulas are grouped by discipline and cite the Knowledge Area where they are taught and worked. Candidates are expected to know the core formulas; this sheet is a study aid and is not provided in the examination. Symbols follow the Body of Knowledge's master symbol table throughout.

All symbols are defined once here and used identically across the book (Style Spine §4). Currency in USD (+SAR where useful); ratios/indices to 2 dp; adverse amounts in parentheses.

## — A1. Accounting & financial reporting (Domains 1–2)

| Formula                                                                                              | Meaning                                              | Domain        |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------|
| $A = L + E$                                                                                          | The accounting equation                              | 1.1.1         |
| $\text{Retained earnings} = \text{Opening} + \text{Income} - \text{Expenses} - \text{Distributions}$ | Equity movement                                      | 1.1.1         |
| $\Sigma \text{ Debits} = \Sigma \text{ Credits}$                                                     | Double-entry invariant                               | 1.1.3         |
| $\text{Annual depreciation} = (\text{Cost} - \text{Residual}) / \text{Useful life}$                  | Straight-line depreciation                           | 1.3.4         |
| $\text{Carrying amount} = \text{Cost} - \text{Accumulated depreciation} (- \text{impairment})$       | Net book value                                       | 1.3.4         |
| $\text{Expected value} = \Sigma (\text{probability}_i \times \text{outcome}_i)$                      | Provision (large population); variable consideration | 1.4.3 / 2.2.4 |
| $\text{Present value} = \text{Future amount} / (1 + r)^n$                                            | Discounting a provision/amount                       | 1.4.3         |
| $\text{PoC} = \text{Costs incurred to date} / \text{Total estimated costs}$                          | Percentage of completion (cost-to-cost)              | 2.2.6         |
| $\text{Cumulative revenue} = \text{PoC} \times \text{Transaction price}$                             | IFRS 15 over-time revenue                            | 2.2.6         |
| $\text{Allocated price}_i = \text{Transaction price} \times (\text{SSP}_i / \Sigma \text{ SSP})$     | IFRS 15 allocation                                   | 2.2.5         |
| $\text{Capitalised borrowing cost} = \text{weighted-avg qualifying expenditure} \times \text{rate}$  | IAS 23                                               | 2.4.4         |

## — A2. Budgeting, cost & performance (Domains 3–5)

| Formula                                                                                                       | Meaning                              | Domain |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------|--------|
| $BAC = \Sigma \text{ control-account budgets} + \text{contingency reserve}$                                   | Budget at completion (cost baseline) | 3.1.4  |
| $\text{Total budget} = BAC + \text{management reserve}$                                                       | Total authorised budget              | 3.1.4  |
| $\text{Analogous estimate} = \text{past cost} \times (\text{this driver} / \text{past driver})$               | Analogous estimating                 | 3.2.2  |
| $\text{Parametric estimate} = \text{parameter} \times \text{rate}$                                            | Parametric estimating                | 3.2.2  |
| $\text{Total cost} = \text{Fixed} + (\text{Variable per unit} \times \text{Volume})$                          | Cost behaviour                       | 5.1.1  |
| $OAR = \text{Budgeted overhead} / \text{Budgeted activity base}$                                              | Overhead absorption rate             | 5.1.3  |
| $\text{Over/(under)-absorption} = \text{Overhead absorbed} - \text{Overhead incurred}$                        | Absorption variance                  | 5.1.3  |
| $\text{Cost-to-date (control)} = \text{Actuals} + \text{Accruals}$                                            | True cost-to-date                    | 5.2.1  |
| $\text{Price variance} = (\text{Actual price} - \text{Standard price}) \times \text{Actual quantity}$         | Variance decomposition               | 4.2.3  |
| $\text{Quantity variance} = (\text{Actual quantity} - \text{Standard quantity}) \times \text{Standard price}$ | Variance decomposition               | 4.2.3  |

## — A3. Earned value & forecasting (Domains 3, 6, 9)

| Formula                                                                                                            | Meaning                                                                                                   | Domain |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------|
| $CV = EV - AC$                                                                                                     | Cost variance                                                                                             | 6.2.1  |
| $SV = EV - PV$                                                                                                     | Schedule variance                                                                                         | 6.2.1  |
| $CPI = EV / AC$                                                                                                    | Cost performance index                                                                                    | 6.2.2  |
| $SPI = EV / PV$                                                                                                    | Schedule performance index                                                                                | 6.2.2  |
| $TCPI \text{ (to BAC)} = (BAC - EV) / (BAC - AC)$                                                                  | To-complete performance index                                                                             | 6.2.3  |
| $TCPI \text{ (to EAC)} = (BAC - EV) / (EAC - AC)$                                                                  | To-complete performance index — to meet a revised EAC                                                     | 6.2.3  |
| $EAC = AC + ETC$                                                                                                   | Estimate at completion (identity)                                                                         | 6.3.1  |
| $EAC = AC + (BAC - EV)$                                                                                            | EAC — remaining work at budgeted rate                                                                     | 6.3.2  |
| $EAC = BAC / CPI$                                                                                                  | EAC — remaining work at current CPI                                                                       | 6.3.2  |
| $EAC = AC + (BAC - EV) / (CPI \times SPI)$                                                                         | EAC — cost & schedule compound                                                                            | 6.3.2  |
| $VAC = BAC - EAC$                                                                                                  | Variance at completion                                                                                    | 6.3.4  |
| $ES = M + (EV - PV_M) / (PV_{M+1} - PV_M)$                                                                         | Earned schedule — interpolate between the months bracketing EV (cumulative $PV_M \leq EV \leq PV_{M+1}$ ) | 6.4.3  |
| $SV(t) = ES - AT; SPI(t) = ES / AT$                                                                                | Earned schedule (time-based)                                                                              | 6.4.3  |
| $\% \text{ complete} = \text{points completed} / \text{total planned points}; EV = \% \text{ complete} \times BAC$ | AgileEVM                                                                                                  | 9.5.3  |

## — A4. Scheduling & risk (Domains 10, 12)

| Formula                                                | Meaning                            | Domain |
|--------------------------------------------------------|------------------------------------|--------|
| $EF = ES + \text{duration}; LS = LF - \text{duration}$ | Forward / backward pass            | 10.2   |
| $\text{Total float} = LS - ES (= LF - EF)$             | Slack without delaying the project | 10.2.4 |
| $\text{Free float} = \min(\text{successor ES}) - EF$   | Slack without delaying a successor | 10.2.4 |
| $tE = (0 + 4M + P) / 6; \sigma = (P - 0) / 6$          | PERT three-point estimate          | 10.1.4 |
| $EMV = \text{probability} \times \text{impact}$        | Expected monetary value (risk)     | 12.2.3 |

## — A5. Commercial (Domain 7)

| Formula                                                                                                                  | Meaning                     | Domain |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------|
| $\text{Fee} = \text{target fee} + \text{contractor share} \times (\text{target cost} - \text{actual cost})$              | CPIF incentive fee          | 7.1.3  |
| $\text{Pain/gain share} = \text{share ratio} \times (\text{actual} - \text{target})$                                     | Target-cost mechanism       | 7.1.4  |
| $\text{LD exposure} = \text{LD rate} \times \text{days late}$                                                            | Liquidated damages          | 7.2.3  |
| $\text{Amount due} = (\sum \% \text{ complete} \times \text{item amount}) - \text{retention} - \text{previous payments}$ | Interim payment application | 7.4.3  |

## — A6. Process cycles & working capital (Domain 11)

| Formula                                                                             | Meaning                                 | Domain |
|-------------------------------------------------------------------------------------|-----------------------------------------|--------|
| $\text{DSO} = \text{Receivables} / \text{Daily revenue}$                            | Days sales outstanding                  | 11.1.3 |
| $\text{DIO} = \text{Inventory} / \text{Daily COGS}$                                 | Days inventory outstanding              | 11.A.1 |
| $\text{DPO} = \text{Payables} / \text{Daily COGS}$                                  | Days payables outstanding               | 11.A.1 |
| $\text{CCC} = \text{DSO} + \text{DIO} - \text{DPO}$                                 | Cash-conversion cycle                   | 11.A.1 |
| $\text{Cash freed} \approx \text{DSO reduction (days)} \times \text{daily revenue}$ | Working capital released by cutting DSO | 11.A.1 |