**IMPORTANT COSTING FORMULAS-mainly for CA-IPCC,CS-Inter,CWA-Inter & to some extent helpful for CA final**

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**STANDARD COSTING**

**(a)Material cost variances**

**(1)price variance=(Sp-AP)\*aq consumed**

**(2)usage variance=(SQAO-Aq) sp**

**(3)mix variance=(RSQ-AQ) \*SP**

**(4)yield variance=(SQAO-RSQ)sp or (SQ-AQ)weighted avg std price**

**(B) labour variances**

**(1) labour rate variance =(SR-AR)AHP**

**(2)labour efficiency variance=(SHAO-AHW)SR**

**(3)Idle time variance=Idle hrs\*SR**

**(4)yield variance=(SHAO-RSH)SR**

**(5)labour mix variance or gang variance=(RSH-ASH)SP**

**(c) variable overhead variances**

**(1) expenditure variance=(SR- AR)AHW**

**(2)Efficiency variance=(SH-AHW)SR**

**(d) fixed overhead variances**

**(1)volume variance=recovered(actual hrs\*budgeted rate /hr)-budgeted hrs**

**(2)expenditure variance=budgeted oh- actual**

**(3) capacity variance=(AHW-budgted hrs)recovery rate/hr**

**(4)calendar variance=(actual days- budgeted days)\*recovery rate/day**

**(5) efficiency variance=(SHAO-AHW)\*recovery rate/hr**

**(E) Total cost/price/oh variance =Expenditure variance+ efficiency variance**

**(F) volume variance=efficiency variance + capacity variance**

**(G) sales variance(turnover based)**

**(a) sales price variance=(BSP-AP)AQ**

**(b) sales volume variance=(BQ-AQ)BSP**

**(c) sales mix variance=(RSQ-AQ sold) BSP**

**(d)sales yield variance=(SQ-RSQ)BSP**

**(e) sales qty variance=budgeted sales- revised std sales**

**(H) Sales variance( margin based/profit variance)**

**(a) sales margin price variance=(BSP-ASP)AQ**

**(b) sales margin qty/volume variance=(BQ-AQ)budgeted margin p.u.**

**(c ) yield variance= (BQ-RSQ) BM/unit**

**(d) mix variance=(RSQ-AQ) Bm/unit**

**(I) market variance**

**(a) market size variance=budget market share % \*(budgeted industry sale-actual industry sale)budgeted contribution p.u.**

**(b) market share variance= change in share \*Actual industry sale\*weighted avg budgeted contribution p.u.**

**PLANNING OPERATING VARIANCE**

**ORIGINAL REVISED ACTUAL**

**(qty\* rate=amount) (original qty\*revised rate=amt) (actual qty\*actual**

**Rate=actual amount)**

**(a)planning variance=sp\*sq-sq\*rsp i.e. original-revised (UNCONTROLLABLE VARIANCE)**

**(b) operating variance= sq\*rsp- aq\*ap i.e. revised –actual (CONTROLLABLE VARIANCE)**

**(i) price variance =(rsp-ap)aq consumed**

**(ii)usage variance=(rsq-aq)rsp**

**(iii) mix variance=(rsq-aq)rsp**

**(iv)yield variance=(Sq-Rsq)RSP**

**(c) total variance=planning+ operational variance**

**(d) traditional variance=original – actual**

**RECONCILIATION STATEMENT**

**(A)ABSORPTION**

**Budgeted profit**

**+/-sales variance(price/volume variance)-based on profit**

**+/- cost variances**

**DM(price & usage variance)/DL(rate & efficiency) /D oh(expenditure & efficiency)/ fixed oh (expenditure/volume)**

**ACTUAL PROFIT**

**(B)MARGINAL**

**As above but volume variance based on budgeted contribution per unit.**

**And fixed oh volume variance not to be computed**

**SAMPLE BALANCED SCORECARD**

**GROWTH FACTOR PRICE RECOVERY FACTOR PRODUCTIVITY**

**(A)revenue effect of (a)revenue effect of price favourable/**

**Growth Sales price variance adverse material**

**(sales vol.variance (BSP-AP)aq sold usage variance**

**(BQ-AQ)\*BSP (b)cost effect of price**

**(B)cost effect of growth (material price variance)**

**(total cost variance) (i) (SR-AR)AQ purchased**

**(BQ-AQ)budgeted VC (ii)fixed oh expenditure variance**

**=budgeted –actual**

**(III) any other cost effect**

**BUDGETARY CONTROL**

**OBJECTIVE- To compare actual performance with the budgeted performance to find out varaiance and to avoid these variance in future**

**CONTROL RATIOS-**

**(1)Activity ratio=SHAO/Budgeted hrs\*100**

**(2)Capacity ratio=AHW/budgeted hrs\*100**

**(3) Efficiency ratio=SHAO/AHW\*100**

**BUDGETS-**

**(1)SALES BUDGET-**

**Particulars qty rate pu. Amount**

**(2) CASH BUDGET**

**Opening balance**

**+receipts**

**-payments**

**Closing balance**

**(3)PRODUCTION BUDGET**

**Sales budget**

**+closing budget**

**=total production**

**-opening stock**

**=production budget**

**(4)RAW MATERIAL CONSUMPTION BUDGET**

**Raw material consumed p.u. of finished goods\*total units of finished goods**

**(5)PURCHASE BUDGET**

**Consumption of raw material**

**+closing stock of raw material**

**-opening stock**

**COST SHEET/SINGLE COSTING/OUTPUT COSTING/UNIT COSTING**

|  |  |
| --- | --- |
| **DIRECT MATERIAL**  **Op stock**  **+purchases(including carriage inwards,freight)**  **-closing stock**  **RAW MATERIAL CONSUMED**  **DIRECT LABOUR**  **DIRECT EXPENSES**  **PRIME/DIRECT/IDENTIFIED COST**  **MANUFACTURING OH/FACTORY OH**  **-SCRAP**  **+DEPRECIATION ON PLANT AND MACHINERY**  **GROSS WORKS COST**  **+OP WIP**  **-CLOSING WIP**  **NET FACTORY COST**  **+ADMINISTRATION & OFFICE EXPENSE**  **COST OF PRODUCTION**  **+OP STOCK OF FINISHED GOODS**  **COST OF GOODS AVAILABLE**  **-CL STOCK OF FINISHED GOODS**  **COST OF GOODS SOLD**  **+SELLING & DISTRIBUTION OH**  **COST OF SALES**  **+PROFIT**  **SALES** | XXX  XXX  XXX  XXXX |

**PRODUCTION A/C**

|  |  |  |  |
| --- | --- | --- | --- |
| **To op stock of rm**  **Purchase of rm**  **Freight/carriage**  **To rm consumed**  **Direct labour**  **Direct expense**  **To prime cost**  **To factory oh**  **To dep on P &M**  **To Gross factory cost**  **To opening stock of wip**  **To factory cost**  **To office & administration oh**  **To cost of production**  **To opening stock of finished goods**  **To cost of goods sold**  **To selling and distribution oh**  **To cost of sales**  **profit** |  | **By rm consumed**  **By cl stock of rm**  **By prime cost**  **By gross factory cost**  **By closing stock of wip**  **By factory cost**  **By cost of production**  **By closing stock of finished goods**  **By cost of goods sold**  **By cost of sales**  **sales** |  |

**LABOUR COSTING**

1. **LABOUR TURNOVER RATE**
2. **Separation method(period wise)=no. of employees separated/avg no. of employees \*100**
3. **Replacement method(period wise)=no. of replacements/avg no. of workers \*100**
4. **Flux rate method = no. of separations+no. of replacements/avg workers\*100**
5. **Equivalent annual rate=turnover rate\* 365days/no. of days in the relevant period\*100**

**(2)LABOUR EFFICIENCY RATE=actual output /std output \*100**

**Or = std time/actual time \*100**

1. **Straight –piece wage rate=actual output \* straight piece rate/piece**
2. **FORMULA ORIENTED BONUS SCHEME/INCENTIVE PLAN**

|  |  |
| --- | --- |
| **1.Halsey plan**  **2.Halsey wier plan**  **3.Rowan plan**  **4.Merricks-multiple piece rate system**  **5.Bath scheme**  **6.bedeaux system**  **7.Gantt task & bonus system**  **8.emerson plan**  **9)taylor’s differential rate system** | **Total earnings=time taken\*hourly rate+ time saved \*hourly rate \*50%**  **Total earnings=time taken\*hourly rate +time saved \*hourly rate\*30%**  **Total earnings = time taken\*hourly rate +time saved/SHAO\*actual time\*hourly rate**  **Total earnings=actual output\*differential piece rate**  **Where,diff piece rate**  **Efficiency level -differential piece**  **Rate**  **<=83% 100%straight piece wage**  **>83%-100% 110%**  **>100% 120%**  **Total earnings = ^(std hrs\*hrs worked) \*hrly wage rate**  **Total earnings=total no. of B’s\*wage rate per B**  **Wage rate per B =wage per minute**  **Total no. of B=total minutes worked+75%minutes saved**  **Level of efficiency total wages**  **<100% time wages**  **100% time wages+20%bonus**  **>100% straight piece wage rate+20%bonus**  **Total earnings=time wages + bonus (x% of time wages)**  **Level efficiency bonus**  **<=662/3% NIL**  **>662/3%-100% x% increase in steps**  **& comes to maximum**  **Level of 20% at 100 %**  **Efficiency**  **>100% 20%+1% addition for**  **Every 1%additional efficiency in excess of 100%**  **Total earnings=actual output\*differential piece rate**  **Differential piece rate means**  **Level of efficiency differential piece**  **Rate**  **Upto 100% 80%/83%(choice of company) of straight piece rate**  **100% or more 120/125%(as per the choice of company)** |

**Calculation of earnings**

**Normal wages**

**+overtime wages**

**+DA/Bonus**

**=gross wages earned by worker**

**-deduction from wages**

**(a) employees contribution to PF/ ESI**

**=net wages**

**LABOUR COST PER HOUR**

**Normal wages**

**+DA**

**+bonus**

**+employer’s contribution to PF/ESI**

**+leave salary**

**+expenditure on amenities**

**Total labour cost**

**/working hrs= labour cost/hr**

**CONTRACT ACCOUNT**

|  |  |  |  |
| --- | --- | --- | --- |
| **To plant or stores sent to site**  **To material purchased**  **To wages+accrued wages**  **To miscellenous expense & oh**  **To direct expense**  **To cost of contract to date b/d**  **To notional profit**  **To P & L**  **To reserve (WIP)** |  | **By plant/store/material c/d(closing balance)**  **By cost of contract to date( b/f)**  **By contractee a/c (escalation clause)**  **By wip**  **Value of work certified**  **Value of work uncertified**  **By notional profit b/d** |  |

**Notional profit=value of work certified+ cost of work uncertified-cost of contract to date**

**Estimated profit=total contract price- total estimated cost**

**Total estimated cost=cost of contract to date + estimated additional cost+ provision for contingencies**

**% of work certified= value of work certified/total contract price\*100**

**PARAMETERS OF TRANSFERING AMOUNT TO P & L ACCOUNT ON THE BASIS OF WORK CERTIFIED**

|  |  |
| --- | --- |
| **% of work certified to date**  **(1)<25%**  **(2)25-50%**  **(3)50% or more**  **(4) near completion stage** | **Amount to be transferred to p & L a/c**  **Nil**  **1/3\*notional profit\*cash received/work certified**  **2/3\*notional profit\*cash received/work certified**  **(a)estimated profit\*work certified/contract price**  **(b) estimated profit\*work certified/contract price\*cash received/work certified**  **(C) estimated profit \*cash received /work certified\* cost of contract to date/total estimated cost** |

**MARGINAL COSTING**

**(1)Contribution=sales- variable cost**

**(2) profit volume ratio(P/V)= contribution/sales\*100**

**Or =fixed cost/BEP(value)**

**Or =change in profit/change in sales\*100**

**(3) Break Even point(BEP)**

**In units =Fixed cost/contribution p.u.**

**In value = Fixed cost/p/v ratio**

**(4) composite BEP**

**In units =composite FC/composite contribution p.u.(i.e. total units\*cont. p.u/total units)**

**(5) Sales for desired profit**

**In units =FC+desired profit/cont. p.u**

**In value = FC+ desired profit/ P/v ratio**

**(6) margin of safety= margin of safety/sales\*100**

**MOS= actual sales – BEP sales**

**MOS(units) =profit/contribution pu.**

**MOs value = profit/p/v ratio**

**(7) profit= sales-vc or sales\*p/v ratio-FC**

**MATERIAL COSTING**

1. **Material turnover ratio= material consumption/avg stock**
2. **Input-output ratio= Input/output \*100**
3. **EOQ=^2UP/s u=annual usage ,p cost of placing and receiving 1order,s = storage & carrying cost including interest per unit per annum**
4. **Total ordering+ storage & carrying cost = ^2UPS**
5. **No of orders ina yr=annual usage /eoq**
6. **Time gap between 2 orders=365days/12months/52weeks //no.of orders**
7. **Order point/re order level=safety stock/ minimum stock or buffer stock**

**+ avg requirement during lead time**

**Or Reorder level=maximum usage rate \*maximum lead time**

1. **Minimum stock =ROL-(avg usage rate \*avg lead time)**
2. **Maximum stock=ROL+ Roq/Eoq –(minimum usage rate \*minimum lead time)**

**Or minimum stock + Roq /eoq**

**10) avg stock =(minimum stock + maximum stock)**

**11) danger level = emergency period\* avg usage time**

**12) required qty=difference in fixed cost/difference in vc p.u.**

**(13)MATERIAL COST STATEMENT**

**Material purchase cost**

**-trade discount**

**Purchase cost after discount**

**+sales tax/container cost**

**Invoice value**

**+insurance charges**

**+freight/delivery charges**

**-resale value of the container**

**NET purchase cost**

**+stores overhead(if any)**

**TOTAL MATERIAL COST**

**OPERATING COSTING(mainly in transport industry)**

**Operating cost statement**

**Standing charges xxx per tone-km**

**Running charges xxx do**

**TOTAL COST PU PER TONNE KM**

**VARIABLE MAINTENANCE COST PER KM=difference in total maintenance/difference in total kms**

**FIXED MAINTENANCE= Total maintenance –variable maintenance**

**OVERHEAD**

1. **DIRECT MATERIAL COST METHOD=amount of factory overhead/cost of direct material used\*100**
2. **DIRECT LABOUR COST METHOD=amount of factory OH/cost of direct labour\*100**
3. **PRIME COST METHOD= amount of factory OH/ prime cost \*100**
4. **MACHINE HOUR RATE METHOD/general or blanket rate=Amount of factory OH/machine hours\*100**
5. **LABOUR HOUR RATE METHOD= amount of factory OH /total no. of direct labour hours\*100**
6. **NO. OF JOBS /CUSTOMER’S METHOD=total annual production OH /total no. of jobs \*100**
7. **OFFICE OH ABSORPTION METHOD**
8. **As a % of factory cost=total administration oh/total factory cost\*100**
9. **Similarly it can be calculated on the basis of factory oh/sales/conversion cost/GP**

**(8)selling OH Recovery /absorption rate**

**(a) as per article=total selling & distribution OH/no. of products sold**

**(b)As a percentage of works cost/selling price= total selling & distribution OH/total sales\*100**

**RECONCILTIATION OF COST & FINANCIAL ACCOUNTS**

|  |  |  |
| --- | --- | --- |
| **Particulars**  **Profit in cost books**  **+excess recoveries in cost**  **-under recoveries in cost** | **+** | **-** |

**Costing p&l**

|  |  |  |  |
| --- | --- | --- | --- |
| **To op stock**  **To dm/dl/dw**  **To overheads**  **To profit** |  | **by sales**  **by closing stock**  **-wip**  **Finished goods** |  |

**OPERATING CYCLE**

**Operating cycle =R+W+F+D-C**

**Where , R= raw material holding period**

**R=(Avg stock of raw material)(no. of days in a yr)/total annual consumption of Raw material**

**W=WIP holding period**

**W= (avg stock of WIP)(no. of days in a yr)/total annual cost of production**

**F= Finished Goods holding period**

**F=(avg stock of finished goods)(no of days in a yr)/total annual cost of goods sold**

**D=Debtors collection period**

**D=(avg debtor balance)(no. of days in a yr)/total annual credit sales**

**C= credit payment period**

**C=(Avg creditors balance)( no. of days in a yr)/total annual credit purchases**

**LEVERAGE ANALYSIS ,EBIT- EPS ANALYSIS**

**(1)without preference dividend**

**(a) operating leverage=% change in EBIT or operating profit/%change in sales**

**Or,contribution/EBIT**

**(b) financial leverage=%change in EBT/% change in EBIT**

**Or , exisiting EBIT/existing EBT**

**(c) combined leverage=% change in EBT/ % change in sales**

**Or , existing contribution/existing EBT**

**Or, DCL= DOL\*DFL**

**(2) with preference dividend**

**(a) DOL= contribution/contribution-FC**

**(b) DFL= EBIT/EBT- (PD/1-tax)**

**(c) DCL= contribution /EBIT-(PD/1-tax)**

**INCOME STATEMENT**

**Sales**

**-Variable cost**

**=contribution**

**-fixed cost**

**=EBIT**

**-Interest**

**=EBT**

**-tax**

**=PAT/EAT**

**-preference dividend**

**=earning available to equity shareholders**

**EPS( earning available /no. of shares)**

**P/E ratio**

**MP/Share=EPS\*P/E ratio**

**FINANCIAL BEP=I +(pd/1-t)**