**CH.14 : Economic analysis of public projects**

**- Method used : 1) (B/C) = ( Benefit / cost )**

**2) ( B–C) = ( Benefit – Cost )**

\*Benefit = ( Benefit – Disbenifit )

\*Cost = (Cost – saving )

**Multi alternatives** :

By (B/C) use Incremental

By (B-C) use Ranking

**Example :**

|  |  |  |  |
| --- | --- | --- | --- |
| C | B | A |  |
| 600000 | 450000 | 300000 | Aw Beneifit |
| 487500 | 375000 | 225000 | Aw Cost |
| 177000 | 112500 | 63000 | Aw Disbenifit |
| 82500 | 60000 | 22500 | Aw saving |

**a) find (B/C) for each project .**

= = 1.1704 > 1

= = 1.0714 > 1

= = 1.0444 > 1

Economical ! All these are

**b) Use (B/C) ratio (Use Incremental)**

=

= = 0.8933 < 1

=0.92 < 1

So , A is selected

**C ) Use ( B- C) (Use Ranking)**

= ( 450 000 – 112 500) – (375 000 – 60 000) = 22 500

So , A is Selected (biggest)

**See Example 14.2 & 14.3 & 14.4**

**CH.16 Cost Terminlogy**

Total Cost = = + X

: Fixied , = variable

R : Cost of each unit (SP)

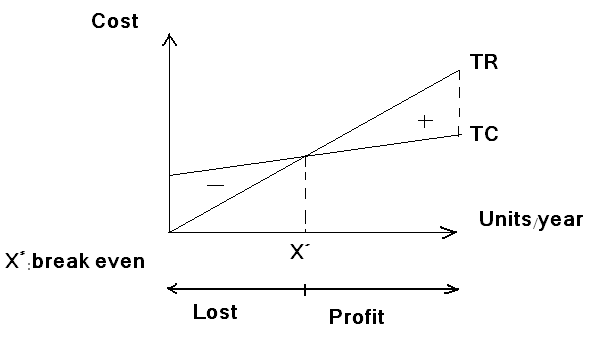
X : Cost of Units

**= -**

**=**

: Marginal Cost

Marginal revenue



**Ex.1**

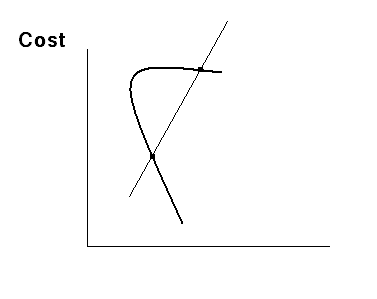
**Cost ( TC ) and selling price ( SP ) functions , with respect to the annual production volume ( t) as follows :**

**TC = 1000 + 2t SR**

**TR (t) = 6t – 0.001 SR / Unit**

**a) Over what range of production is profit possible ?**

**\* Break even point**



TR – TC = 0

6 t – 0.001 - 1000 -2t = 0

4t – 0.001 - 1000 = 0

T1 = 267.949 Unit/year

T2 =3732.05 Unit/year

So , 267.949 ≤ t ≤ 3732.05

**b) Determine the level of production for maximum profit :**

= 0

Tp (t) = 4 t – 0.001 - 1000

= 4 -0.002t = 0

4 = 0.002 t = 2000 Unit/year

**C) Determine the level of production for maximum average profit per unit .**

= 0

ATP(t) = = 4 -0.001 t -

= - 0.001 + = 0

t = = 1000 Unit/year

**Ex.2**

**Tow machines (A&B) are being considered for a project investment . The variable cost and annual fixed shown in the following table :**

|  |  |  |
| --- | --- | --- |
| **Variable cost SR/unit** | **Fixed Cost SR** | **Machine** |
| **10.50** | **3600** | **A** |
| **8.25** | **4275** | **B** |

**a.What is the number of units/year for break-even between tow machines ?**

**b.If the estimated number of units/year is 1000 ,what the annual savings are estimated if machine (B) is purcgased instead of machine (A) ?**

**c.If machine (B) is producing 1000 units/year , what revenues/units must be generated in order to break-even ?**

a. (Tc)A= 3600 +10.5 X

(Tc)B =4275 + 8.25 X TcA=TcB » 4275 – 3600 = ( 10.5 – 8.25)

X = » X=300

b. (Tc)A= 3600 +10.5 (1000) = 14,100

(Tc)B =4275 + 8.25 (1000)= 12,525 » 14100 – 12 525 = 1575 SR

c. (Tc)B = R(x)

4275 + 8.25 x = R (x)

X= 1000 » 4275 + 8.25 (1000) = R (1000) » R = 12.525/ unit