CRACUSING

8/11/16

Total Cost Made Is :- Total cost of Project is made up.

1) Direct
2) Indirect

Direct Cost :- Direct cost is that cost which can be directly identify with the execution of different activity

Labour cost, Material cost equipment cost

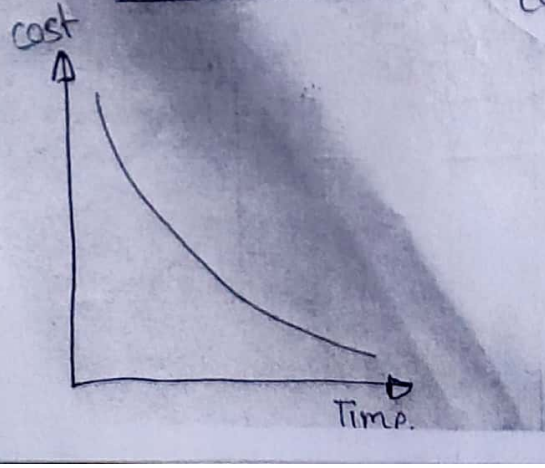
Indirect Cost:- These are the expanses within different activities of the project but are anest as a whole

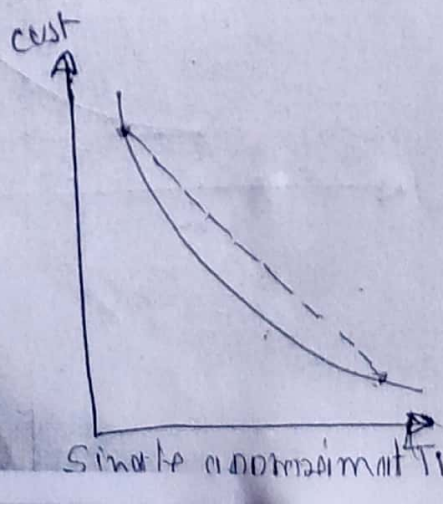
Ex - Storage charges, licenses & fees, supervision charges, stablisement charges, plenties loss of revenue, outtage losses.

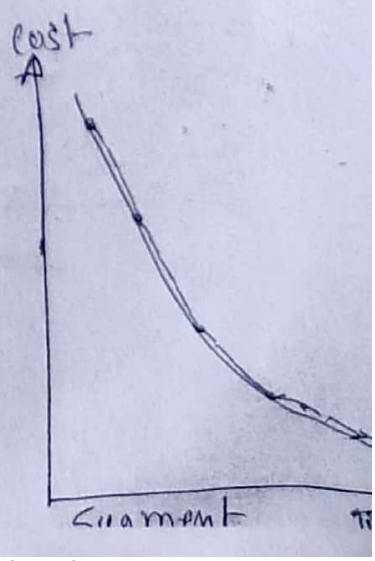
Outage losses :- Loss of benifit for the period during which the project has not being completed and **paleny** for delay.

Time v/s cost relationship :-

(1) **Direct cost** :-

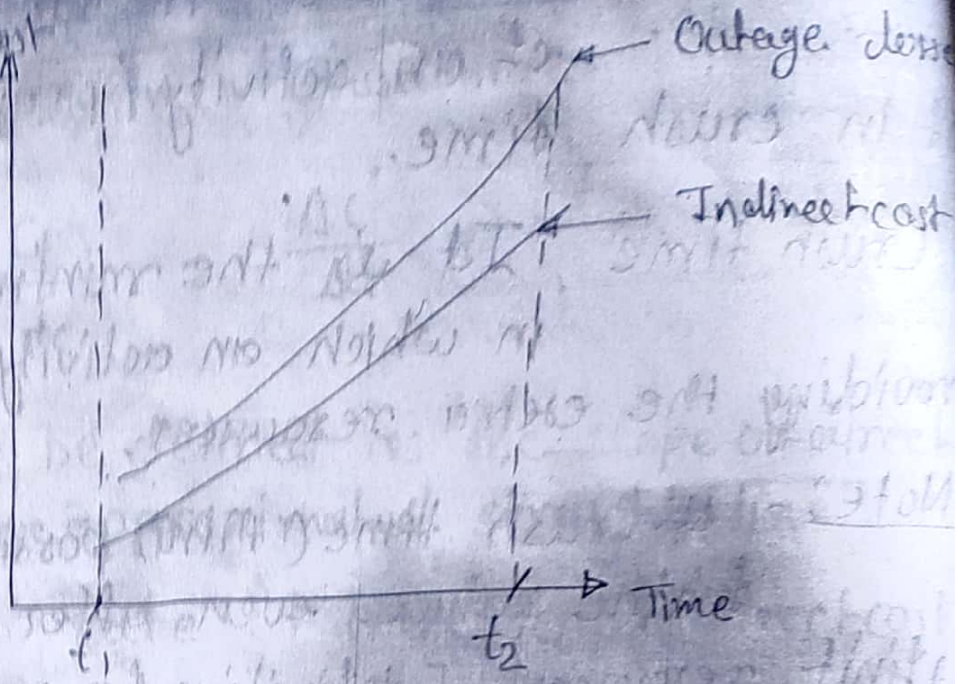




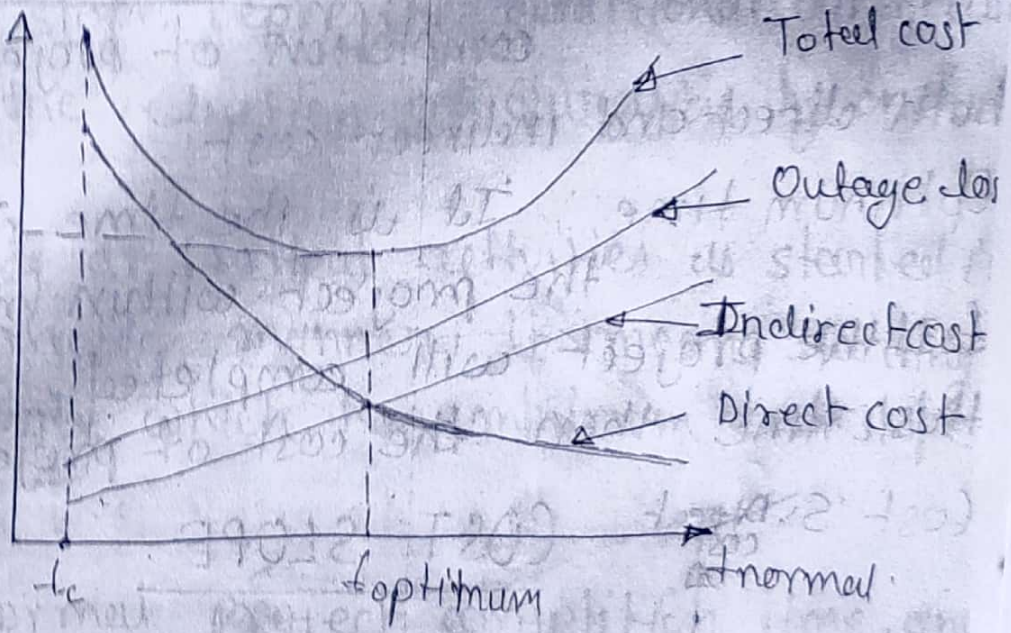


Generally direct cost decrease with time.

Indirect cost :-



Total cost Time



In a project cost of project can also be divided in

(i) Normal cost (ii) Crust cost [for direct cost of definition]

(i) Normal Cost :- This is the direct cost required to complete the activity in normal duration

(ii) Normal / Standard time :- This is normally estimated time for the completion of an activity or project.

Crash cost :- This is the direct cost corresponding of an activity / project to complete in crash time.

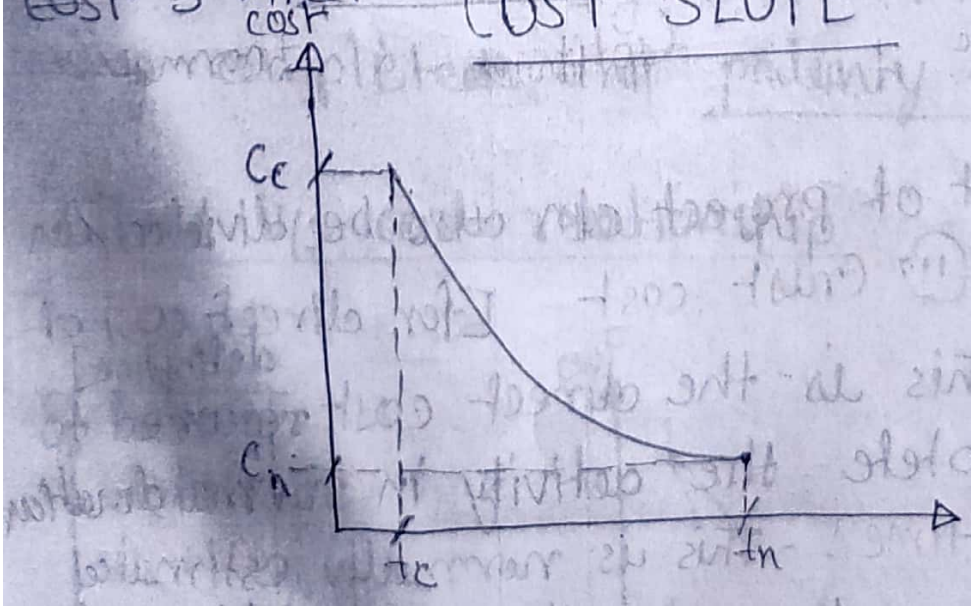
Crash time It is the minimum possible time in which an activity can be completed by providing the extra resources.

Note :- Crash time (Mini. possible time) can't be further reduce. even after providing the infinit resources. [definition for project]

Optimum Cost :- It is minimum cost required for completion of project (including both direct and indirect cost

Optimum time :- It is the time required to complete the project within minimum cost If the project will completed before and after this time then the cost of project will increase

COST SLOPE



Cost slop = $\frac{\text{Crash cost} - \text{Normal Time Cost}}{\text{Normal time} - \text{Crash time}}$

$= \frac{C_c - C_t}{t_n - t_c} = \frac{\Delta C}{\Delta t}$

Cost slope may be defined as the slope of direc cost v/s time curve approximated straight line

(or) It is rate of increase of direct co per unt decrease in time.

(or) Cost slope represent additional direct c required for the reduction of duration by one of time

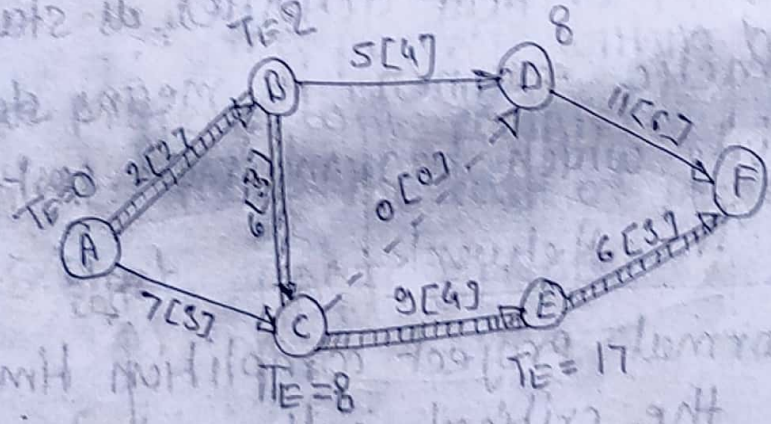
Note :- Crushing of Critical activities is started a systematic manner it means startin with the activity which has minimum cost slop

How to crush the Network :-

1. Find the normal project complition time. a also find the critical path.
2. Find the cost slope of each activity
3. Start crushing with the activity having minimum co slope along the critical path.
4. Repeat the above process. While doing the cru it may be possible that sum other path ma also become critical in such cases parallel crushi of the activities along the critical path is done.

Determine the min. cost and optimum duration of a project. The Indirect cost of the project is 800 /day

Activity	t_n	C_n	t_c	C_c	Cost slope $= \frac{C_c - C_n}{t_n - t_c}$
A-B	2	10000	2	10000	0
A-C	7	5000	3	9000	1000
B-C	6	3000	3	4200	400
B-D	5	2000	4	2500	500
C-D	0	0	0	0	0
C-E	9	6000	4	9000	600
D-F	11	6000	6	10000	800
E-f	6	7000	3	9100	700



Total project time = 23 days.

Critical path - [A-B-C-E-F]

Direct cost = 39000

Indirect cost = 23×800 = 18400 /

Total cost = 57400/-

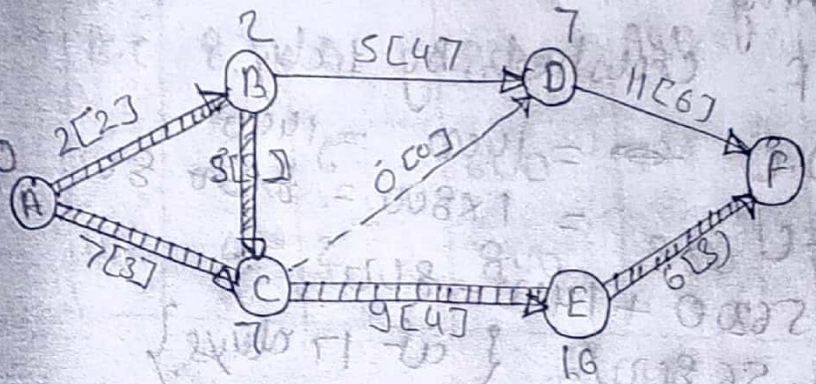
give minimum cost slope

check for crushing

1st stage Crushing :- Activity B-C crushed by 1 day

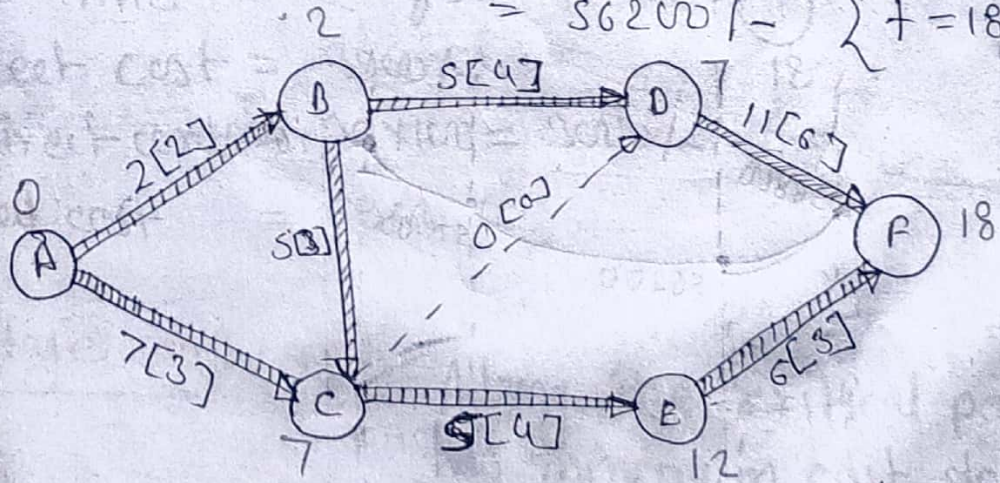
increase in D.C = 400
decrease in I.C = 800

Total cost = 57400 + DC - IC = 57400 + 400 - 800
= 57000/-



2nd stage crushing, cash activity CE, by 4 days.

Increase in D.C. = 4 × 600 = 2400/-
Decrease in I.C = 4 × 800 = 3200/-
Total cost = 57000 + 2400 - 3200
= 56200/- {t = 18 days}



In above network, more than one critical path is available and parallel crushing of activity along every critical path.

Possibility (1) → Activity A-C, B-C, B-D
Cost = 1000 + 400 + 500 = 1900

possibility (ii) → D-F, E-F

cost → 800+700 = 1500

possibility (iii) activity D-F, C-E

cost slope → 600+800 = 1400

3rd stage crushing.

Activity CE & DF crushed by 1 day.

Increase in D.C → = 1400 = 1400

Decrease in I.C = 1×800 = ~~8200~~ 800

Total Cost = 5620 + 1400 - 800

= 56800/- {at 17 days}

As the total cost of project is increased by 600 [56200 to 56800] so the optimum cost (mini. cost) of project is 56200 in 18 day so optimum time for completion of project is 18 days.