GOVERNMENT POLYTECHNIC FOR GIRL'S AHMEDABAD

CIVIL ENGINEERING DEPARTMENT

"CONSTRUCTION PROJECT MANAGEMENT"

(3360603)

Method of Project Planning

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- **METHOD'S OF PROJECT PLANING**

Project planning is part of project management which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment Initially the project scope is defined and the appropriate methods for completing the project are determined.

Aims and objective:

(1) To explore time management and planning techniques
(2) The construct realistic timeline for your EPQ project
(3) To receive helpful personal study skills hints & tips from ambassadors.

Following are the various method project planning

1. Bar chart or Gantt chart

2. Critical Path Method-(CPM)

3. Program Evaluation and Review Technique-(PERT)

1.Bar chart or Gantt chart

* Definition:

- A GANTT chart is a type of BAR chart that illustrates a project schedule.

- GANTT charts have become a common technique for representing the phases and activities of a project.

- It was introduced by Henry Gantt around 1910-1915.

* STEPS OF BAR CHART:

- Analyze the project and specify the basic approach to be used.

- Break the project down into a reasonable number of activities to be scheduled.

- Estimate the time required to perform each activity.

- Place the activities in sequence of time.

Gantt Bar chart

Example - 1

Draw a bar chart for finilisation of design and work order for building project.

Activity	Description	Time of completion (week)
A	selection of site R survey	6
B	preparation of drawings	4
C	Design	8
D	rendering (NIT)	6
E	selection of contraction	2
F	preparation of specification R tender document	3
G	Award of work	1

Scale :-
x - axis = 1cm = 2 weeks
y - axis = 2 cm = 1 Activity
Project duration : 33 weeks
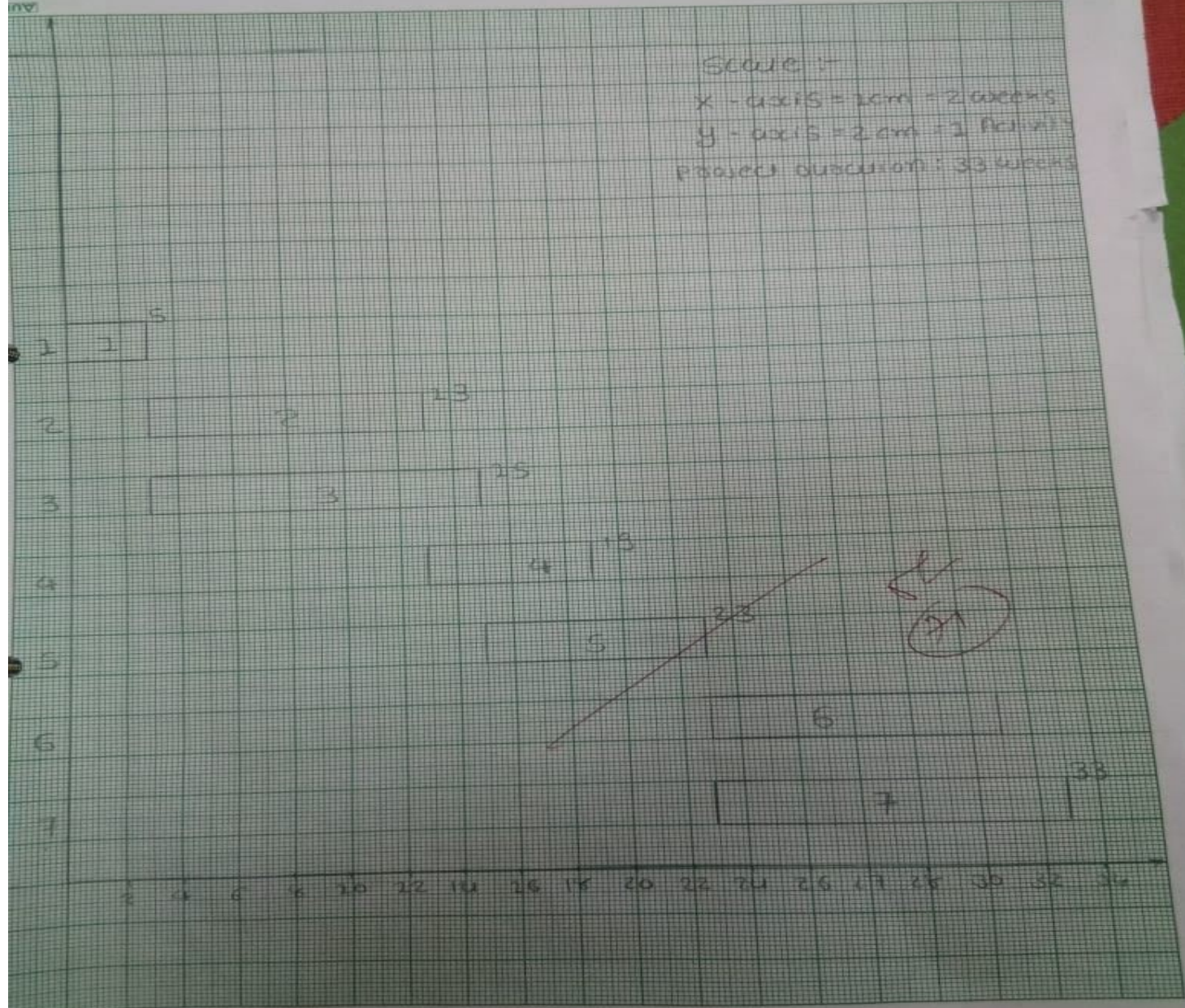
* PURPOSE

1. A bar chart is a visual tool that uses bars to compare data among categories.
2. A bar chart may run horizontally or vertically.
3. The important thing to know is that the longer the bar the greater its value.
4. Bar chart consist of two axes.

* ADVANTAGES AND DISADVANTAGES

ADVANTAGES
1. Easy to construct.

2. Gives earliest completion date.

3. Provides a schedule of earliest possible strart and finish times of activities.

DISADVANTAGES

1. Dependencies are more difficult to visualize.

2. Minor changes in data can cause major changes in the chart.

2.Critical Path Method-CPM

(1) CPM is a network diagramming technique used to predict total project duration.

(2) A critical path for a project is the series of activities that determines the earliest time by which the project can be completed.

(3) The critical path is the longest path through the network diagram.

STEP OF CRITICAL PATH METHOD

* Specify Each Activity

* Establish Dependencies

* Draw the Network Diagram

* Estimate Activity Completion Time

* Identify the Critical path

* Update the critical Path diagram to show progress

The construction project consist of
Activity the procudure Relation
are identified by their node No
indicated below.

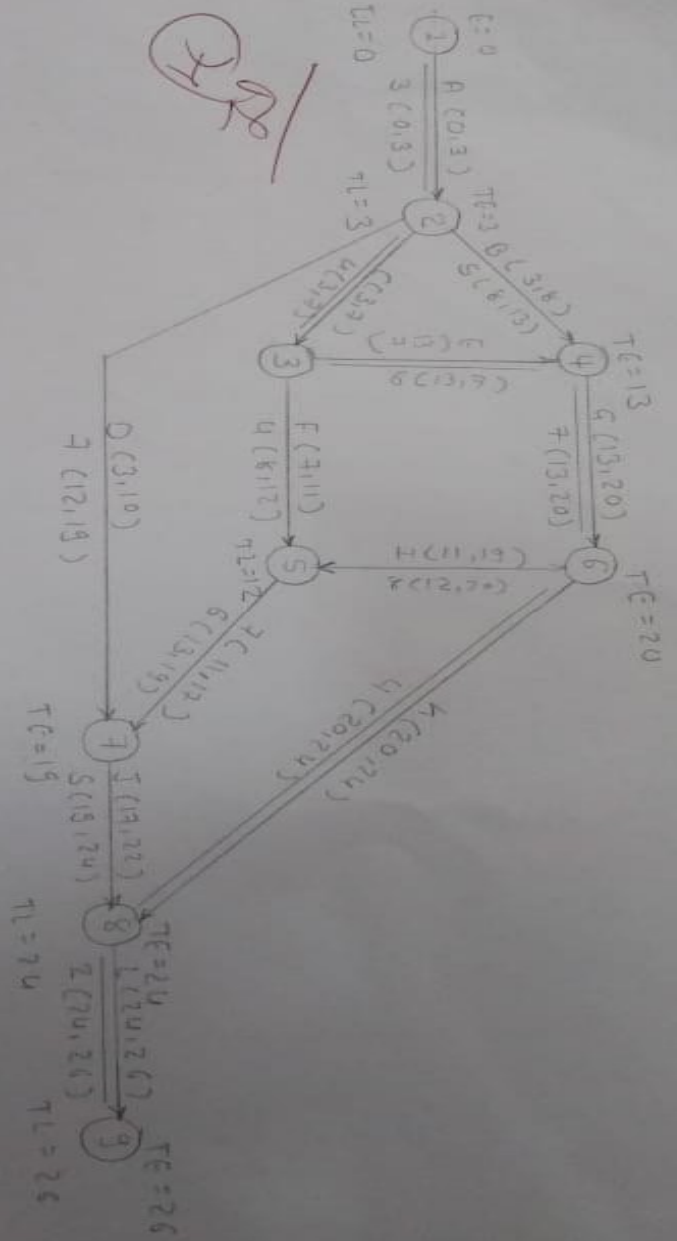| Activity	Indentification	Duration (w)
A	(1,2)	3
B	(2,4)	5
C	(2,3)	4
D	(2,7)	7
E	(3,4)	6
F	(3,5)	4
G	(4,6)	7
H	(5,6)	8
I	(5,7)	6
J	(7,8)	5
K	(6,8)	4
L	(8,9)	2

Earliest start time (EST)
Earliest finish time (EFT) = EST + D
latest start time (LST) = LFT - Dur
latest finish time (LFT)

E=0
TL=0

A (0,3)
3 (0,3)

TE=3
B (3,8)
S (8,13)

C (3,...)
4 (3,...)

E (3...)
G (13,7)

TE=13
G (13,20)
7 (13,20)

F (7,11)
4 (8,12)

H (11,19)
K (12,7*)

TE=20

D (3,10)
7 (12,19)

6 (13,11,...)

J (19,22)
K (20,24)

TE=19
S (13,24)

TE=24
L (24,26)
I (24,26)

TE=26
TL=26

Critical Path = A - C - E - G - H - L
= 3 - 4 - 6 - 7 - 4 - 2
Project duration = 26 days.

(2)

Activity	EST	EFT	LST	LFT	TF	FF	INDF	INFF	Remark
A	0	3	0	3	0	0	0	0	CA
B	3	8	8	13	5	5	5	0	
C	3	7	3	7	0	0	0	0	CA
D	3	10	12	19	9	7	7	2	
E	7	13	7	13	0	0	0	0	CA
F	7	11	8	12	1	0	-1	1	
G	13	20	13	20	0	0	0	0	CA
H	11	19	12	20	1	1	1	0	
I	11	17	13	19	2	0	-1	2	
J	17	20	19	24	2	2	0	0	
K	20	24	20	24	0	0	0	0	CA
L	24	26	24	0	0	0	0	0	CA

critical path = A - C - E - G - K - L

= 26 days

Purpose:

1.The critical path method is a step by step project management technic for process planning that defines critical and noncritical tasks with the goal of preventing time frame problems and process bottlenecks.

ADVANTAGES AND DISADVANTAGES

ADVANTAGES

- Maximize efficiency in the use of time.

- Improve efficiency and generate cost saving in the use of resources.

- Beneficial to monitoring cash flow.

- Identify potential problem in implementing operation.

DISADVANTAGES

- Usefulness may be limited in complex and large scale operation.

- Necessity of having clear and reliable information Skilled management and team philosophy is essential.

3.Program Evaluation and Review Technique-PERT

- Program Evaluation and review technique is a project management tool used to schedule, organize, and co-ordinate tasks within a project.

- PERT uses probabilistic time estimate based on using optimistic, most likely time, and pessimistic estimates of activity durations.

STEP OF PERT

- Identify the specific activities and milestone.

- Determine the proper sequence of the activities.

- Construct a network diagram.

- Estimate the time required for each activity.

- Determine the critical path

[Ex = 2]

The time Estimate for frequenc
to A.B and c are as follow

Engineer	optimistic Time (to)	Pessimistic Time (tP)	mos t. (
A	10	14	1
B	6	12	8
c	S	12	1

Determine the Expected time an
Gradient for each engineer has
reliable time.

$$t_{EA} = \frac{to + 4tm + tP}{6}$$

$$= \frac{10 + 4(12) + 14}{6}$$

$$= 12$$

$$t_{EB} = \frac{6 + 4(8) + 12}{6}$$

$$= 8.33$$

$$tEC = \frac{s + 4(10) + 12}{6}$$

$$= 9.5$$

Variation $(v) = \sigma^2$

$$= \left(\frac{tP - t0}{6}\right)^2$$

$$VA = \left(\frac{14 - 10}{6}\right)^2$$

$$= 0.44$$

$$VB = \left(\frac{12 - 6}{6}\right)^2$$

$$= 2$$

$$VC = \left(\frac{12 - 5}{6}\right)^2$$

$$= 1.361$$

$VA = 0.44$ mostly reliable

PURPOSE

- The provide a simple and secure method for users to open and follow PERT cases.
- To maximum the efficient of the subsequent PERT investigation.
- Explain the parts of a pert chart.
- Explain the pros and cons of using a pert chart.

ADVANTAGES AND DISADVANTAGES OF PERT

ADVANTAGES

- Effective in planning single project activities in any type of industry.
-Ideal technique for tactical level planning and operational level control of projects.
-Allows project managers to do 'what if' analysis on project activities.
-Gives logical plan of project for realistic schedule of activities.

DISADVANTAGES

- Time and labour intensive.
- Assumption of unlimited resources is big issue.
- Lack of functional ownership of estimates.
- Mostly only used on large, complex project.

THANK YOU